# **Health Research Retreat 2021**

# **Resource Document**



# NATIONAL INSTITUTES OF HEALTH

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# LIST OF ACRONYMS

АЈК	Azad Jammu & Kashmir	мисн	Maternal, Newborn & Child Health
BHU	Basic Health Unit	M/o	Ministry of National Health Services,
BoD	Burden of Disease	NHSR&C	Regulation & Coordination
CBOs	Community Based Organizations	MSU	Mobile Service Unit
сст	Conditional Cash Transfer	NCD	Non-communicable disease
СММ	Community Midwife	NGOs	Non-governmental Organizations
CSOs	Civil Society Organizations	ODA	Official Development Assistance
DHIS	District Health Information System	PCI	Planning Commission
DOH	Department of Health		Performa 1
DRAP	Drug Regulatory Authority of Pakistan	РНС	Primary Health Care
FP	Family Planning	ΡΜΑ	Pakistan Medical Association
GAVI	Global Alliance for Vaccines	PMDC	Pakistan Medical & Dental Council
	& Immunization	PNC	Pakistan Nursing Council
GDP	Gross Domestic Product	PPP	Public Private Partnership
HR	Human Resource	RHC	Rural Health Center
НТА	Health Technology Assessment	RMNCAH	1
IHR	International Health		Newborn, Child & Adolescent Health
	Regulations	SBA	Skilled Birth Attendant
IPC	Inter-provincial Coordination	SDGs	Sustainable Development Goals
INGOs	International Non-governmental Organizations	UNICEF	United Nations International Children's Emergency Fund
т	Information Technology	wно	World Health Organization
LHW	Lady Health Worker	WMO	Woman Medical Office
M&E	Monitoring & Evaluation		
мснс	Mother & Child Health Center		
MDGs	Millennium Development Goals		
	*		

MIS Management Information System

# FOREWORD

THIS VISION WILL SERVE AS INSPIRATION AND GUIDING ROADMAP FOR ALL THOSE IMPLEMENTING REFORMS BY STRENGTHENING HEALTH SYSTEMS.

Pakistan undertook a major constitutional reform in 2011 with the 18th amendment, which resulted in abolishment of Ministry of Health and subsequent devolution of powers, notably strategy development and program implementation. It also led to the establishment of Federal Legislative.

Lists I & II, indicating the federal functions in the devolved system.

To execute the federal functions, Ministry of National Health Services, Regulation, and Coordination (M/o NHSR&C) was recreated in 2013 with the mandate to provide a common strategic vision to guide the health sector according to the Government of Pakistan's Vision 2025, which is to achieve universal health coverage through efficient, equitable, accessible, and affordable health services to its entire populace; to coordinate public health and population welfare at national and international levels; fulfill international obligations and commitments; provide oversight for provincial and national health regulatory bodies; enforce drug regulations, and regulation of medical profession and education.

HEALTH SYSTEMS. The National Health Vision is a significant achievement of the current government. It is my pleasure and privilege as the Minister for State M/o NHSR&C to launch the National Health Vision (2016–2025) for the Islamic Republic of Pakistan. This vision will serve as inspiration and guiding roadmap for all those implementing reforms by strengthening health systems. It has been prepared in accordance with the needs of a devolved and decentralized system, and I strongly believe that, with the help of this vision document, the federation of Pakistan and its provinces will be able to achieve the targets set in SDGs.

I acknowledge the dedication and effort of all staff under the leadership of the Secretary and the DG, M/o NHSR&C.

The Government of Pakistan is committed to ensuring equity and quality through the delivery of essential preventive and curative care services to every citizen of Pakistan. I pray that we see this vision fulfilled by 2025.

— Saira Afzal Tarar, Minister for State

# MESSAGE

THE GOVERNMENT OF PAKISTAN IS EXPLORING AVENUES TO MOBILIZE MORE RESOURCES FOR HEALTH SECTOR

The Government of Pakistan is cognizant of the fact that investment in the health sector is of utmost importance, and would like to ensure that its population is healthy and has equitable access to quality health services.

With the 18th Constitutional Amendment and devolution of health as a subject to the provincial governments, the federal government being the main interface with international community, required a National Health Vision encompassing medium-term goals aligned with Pakistan's Vision 2025, and global commitments and instruments for discharging constitutional federal functions.

The Government of Pakistan has pledged to increase health sector allocation to 3 percent of GDP by the next decade. Further, the Government of Pakistan is open to exploring avenues of mutual interest with development partners to mobilize more resources by adopting a plan that will allow the health sector to fulfill its role in economic development and global security.

SECTOR. Since the re-creation of the Ministry of National Health Services, Regulation & Coordination in 2013, we have reviewed our priorities and capacity. We have examined our structure through a functional alignment process, and as we work to consolidate these changes by improving our skills, systems, and structures, we will enhance our ability to deliver improved outcomes.

The National Health Vision (2016–25) defines our purpose and priorities. It takes its guidance from in-depth consultations with the line ministries, provinces/regions, development partners, nongovernmental organisations, civil and private sector entities, and evolves from national priorities in tandem with regional/global reforms and initiatives.

Finally, I would like to acknowledge and thank all those who have contributed to the creation of this vision.

-Muhammad Ayub Shaikh, Secretary

# ACKNOWLEDGMENTS

The National Health Vision 2016–25 is a result of the Pakistan Vision 2025 that was developed by the Ministry of Planning, Development & Reforms. It solidifies the intent for placing financial resources and is a roadmap for the development of a prosperous and healthy Pakistan.

This vision document is the product of many meetings, discussions, and debates over a year, under the aegis of the Ministry of National Health Services, Regulation & Coordination, with eventual consensus involving every section of the society. This vision is owned by both the political and administrative leadership of the health sector and the overall political and administrative arena of the country.

It is worth noting the coordination efforts of the Health Planning, Systems Strengthening and Information Analysis Unit (HPSIU) of the Ministry under the able leadership of director programs and the assistance from development partners, among them JSI/USAID, WHO, and World Bank. I would like to give my special thanks to the Provincial Health Ministers, Secretaries of Health, Director Generals' Health Services, and colleagues from all health and line departments for contributing to the process.

The making of Pakistan National Health Vision 2016–2025 is indebted to Ms. Saira Afzal Tarar, Minister for State for Health, who initiated the political dialogue with provincial leadership and articulated the importance of such a vision to the Prime Minister of Pakistan. The Federal Minister for Planning & Development Prof. Ahsan Iqbal's encouragement was a key factor in initiating the process. I am also grateful to the trust and confidence that the Federal Secretary Health placed in the team during the development process.

My special gratitude is due to Dr. Shehla Zaidi from AKU as a resource person and the lead consultant Dr. Babar Tasneem Shaikh from HSA, who painstakingly helped with various drafts of the document. The vision could not have materialized without their input.

I am also grateful to the contribution of Dr. Nasir Idrees, Dr. Syed Mursalin, Dr. Adnan Khan, Mr Ayaz Kiani, and Dr. Shahzad Ali Khan, who worked on the thematic areas of the vision. Many more individuals and institutions gave their time and feedback to create this forward-looking document.

In the end, I pray for the achievement of the targets set in the National Health Vision 2016–2025.

- Dr. Assad Hafeez, Director General

# DECLARATION BY FEDERAL AND PROVINCIAL MINISTERS OF HEALTH National Health Vision 2016-2025 Consultative Meeting

# 30<sup>th</sup> August, 2016 Marriot Hotel Islamabad

The National Health Vision Document (2016-2025) is unified National Common Health Vision with agreed priorities covering eight thematic areas. We pledge to work together for better health of all especially for women and children of Pakistan and therefore we endorse this document.

S.#	Name & Designation	Province/Region	Signatures
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# VISION STATEMENT

To improve the health of all Pakistanis, particularly women and children by providing universal access to affordable, quality, essential health services which are delivered through a resilient and responsive health system, capable of attaining the Sustainable Development Goals and fulfilling its other global health responsibilities.

#### I. BACKGROUND<sup>1</sup>

The 2011 devolution of health to the provinces created challenges as well as opportunities. It is expected that the health benefits gained from federal support will lead to more equitable health system coverage, in line with provincial priorities. The provincial health departments and the re-established Ministry of National Health Services, Regulation and Coordination (M/ONHSR&C) are taking their new roles as indicated in the federal legislative list parts I & II.

- Political devolution within Pakistan charged provincial health care systems with planning health care delivery structures, programs, and services. This responsibility and leadership is important because the targets of health-related Millennium Development Goals (MDGs) were not completely achieved, and far more effort is required to work toward the even more challenging targets of the Sustainable Development Goals (SDGs).
- Since July 2011, there has been a lack of consensus on a national vision that reflects aspirations for better health of the people of the country as a whole. A national vision document on health that is aligned with the country's vision 2025 and international health priorities, and is based on provincial realities, is needed. This is within the framework of post-18th Amendment Constitutional roles/responsibilities.



<sup>&</sup>lt;sup>1</sup> All references used to cite facts and figures are available on request from the HPSIU-M/o NHSR&C.



- Despite several social, economic, political, and cross-border challenges compounded by successive natural catastrophes, the health indicators of Pakistan have shown improvement in the last 25 years. However it still lags behind some regional countries.
- The average life expectancy has increased from 59 years in 1990 to 67 years in 2015. The last maternal mortality ratio recorded (2006-2007) was 276 per 100,000 live births, but this has improved significantly in the past decade, due to wide outreach of the national lady health worker program, and skilled birth attendance availability. Infant and under 5 mortality rates have also improved (from 72/1000 to 66/1000 live births). However, the neonatal mortality rate has remained stagnant, and stillbirth rates have increased (43/1000 live births).
- Pakistan is facing high rates of communicable and non-communicable diseases, resulting in a double **burden of disease** (BOD), which is disproportionately higher among the poor. Communicable diseases, pregnancy related health conditions, and malnutrition constitute about half of the BOD. In young children, diarrhoea and respiratory illness remain the major killers. Maternal deaths due to preventable causes such as sepsis, haemorrhage, and hypertensive crises are common. Pakistan is one of three remaining countries where polio is endemic. Moreover, Pakistan has endemic rates of hepatitis B and C in the general population, with 7.6% affected individuals-the fifth-highest tuberculosis burden in the world. The country has a focal geographical area of malaria endemicity, and an established HIV concentration among high-risk groups. Other vaccine-preventable diseases and emerging infections call for strengthened disease surveillance and response systems uniformly across the country. Pakistan has one of the highest prevalence of under-weight children in South Asia. Stunting, micro nutrient deficiencies, and low birth-weight babies contribute to already high levels of child mortality. Many of these conditions could be controlled by relatively low-cost interventions and clinical best practices utilized at primary and secondary care levels.
- **Non-communicable diseases**, along with injuries and mental health, constitute the other half of the BoD. These, unlike communicable diseases, affect adults of (otherwise) economically productive age. Yet the common underlying factors for non-communicable diseases, including lifestyle, nutrition, and smoking, have not been addressed adequately. Pakistan is ranked seventh-highest in the world for diabetes prevalence. One-in-four adults over 18 years of age is hypertensive, and smoking levels are high (38% among men and 7% among women). Rising but still under-estimated rates of cancer and cardiopulmonary disease remain largely ignored. Poverty, low literacy, unemployment, gender discrimination, and a huge treatment gap have led to an invisible burden of mental health problems. Disability due to blindness and other causes is also high, and services for disabled people, including provision of devices to improve

# 2. PAKISTAN AT THE CROSSROADS FOR HEALTH: CHALLENGES

their quality of life, are limited. Injuries, which account for more than 11% of the total BOD, are likely to rise with increasing road traffic, urbanization, and conflict.

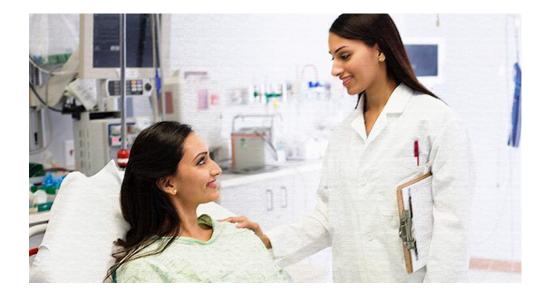
- **Population Growth:** The BOD is rendered worse by an increasing population, and Pakistan is now the sixth-most populous country in the world. A decline in the population growth rate has been slow. The current growth rate of 1.9% per annum is driven by an increasing age at first marriage in urban areas; yet contraceptive prevalence, at only 35%, is far below that of other countries in the region. Unmet need for birth spacing is around 25%, and the health system must develop strategies to close this gap.
- Health Access and Inequities: Pakistan has seen progress in access to health care services through contracting primary health care facilities. However, gains are uneven across service areas because out-of-pocket expenditures is still approximately 70% despite the primary, secondary, and tertiary health care network. Though skilled birth attendance has improved from 18% in late 1990s to 58% in 2015, only one-third of women make the required minimum number of antenatal visits, and only 2% attend the recommended postnatal (after 1–2 days of delivery) visit. Despite an overall reduction in polio cases due to high vertical accountability, rates of routine immunization remain unacceptably low at 54%. Access to and affordability of essential medicines is low. Moreover, there are geographical disparities in coverage between provinces, districts, and rural-urban areas. Evidence shows that low-income groups are likely to have lower levels of health, nutrition, immunization, and family planning coverage.
- Health Systems: Pakistan has a mixed health system that includes the government or public sector, para-statal health system, private sector, civil society, and philanthropic donors. A major strength of the government's health care system in Pakistan is primary health care outreach, which is delivered at the community level by 100,000 lady health workers, a growing number of community midwives, and other community-based health workers who have earned community trust. Complementary, alternative, and traditional healing is also popular in Pakistan.
- Pakistan's health system faces challenges of vertical service delivery structures and low performance accountability within the government, creating efficiency and quality issues. Largely unregulated for quality of care and pricing, there is duplication of service delivery by the private sector, which contributes little towards preventive and promotive health services. The public sector is inadequately staffed and both job satisfaction and work environment need improvement. The overall health sector also faces an imbalance in the number, skill mix, and deployment of its workforce, and inadequate resource allocation across different levels (i.e., primary, secondary, and tertiary). The quality of medical and related education in the public and private sector needs to be improved, and actions encompassing social determinants within the health and social sectors must be taken, if a wider impact is to be achieved.



# 3. PURPOSE

- The purpose of this document is to provide an **overarching national vision** and a common direction that harmonizes provincial and federal efforts, and interprovincial/sectoral efforts to achieve desired health outcomes. This document provides a jointly developed account of strategic **directions** to achieve the common vision, and is a guideline for best practices for the provinces/areas to develop their respective policies and initiatives within their domains.
- The word "national" depicts **common political aspirations** of the provincial and the federal governments. This document has consonance with provincial and federal health policy frameworks, post devolution health sector strategies, and international commitments to which Pakistan is a signatory.
- Beyond the health sector, this document builds convergence with important national programs and policy such as the Pakistan Vision 2025, Poverty Reduction Strategy, and pro-poor social protection initiatives.
  - The National Health Vision strives to provide a responsive unified direction to overcome various health challenges, while ensuring adherence to universal health coverage as the ultimate goal. The principle values include:
    - a) Good governance
    - b) Innovation and transformation
    - c) Equity and pro-poor approach
    - d) Responsiveness
    - e) Transparency and accountability
    - f) Integration and cross-sectoral synergies
  - The delivery of high-quality health care services is a provincial responsibility and the directions indicated in this document are in concert with the provincial needs, expectations, and priorities. The national health vision aims to resonate with the ideals and expectations of provinces. The federal government will support and facilitate the provinces in developing and implementing their strategies by providing the overall vision and facilitating/advocating financial and technical resource mobilization to ensure that essential health services are accessible to all citizens.

# 4. GUIDING VALUES



# **5. OBJECTIVES**

The National Health Vision 2016–2025 has adopted the following objectives to improve the health and well-being of the Pakistanis:

- a) Provide a **unified vision** to improve health while ensuring provincial autonomy and diversity;
- b) Build **coherence** between federal and provincial efforts by consolidating progress, learning from experience, and moving towards universal health coverage;
- c) Facilitate synchronization across international reporting and treaties;
- d) Ensure **coordination** for regulation, information collection, surveillance, and research on improved health systems;
- e) Create a **foundational basis** for charting and implementing SDGs in partnership with other sectors.

# 6. THEMATIC PILLARS

The National Health Vision builds its narrative on eight thematic pillars to ensure access, coverage, quality, and safety— essential requisites for achieving the ultimate goal of universal health coverage in Pakistan. The challenges and strategic vision for each thematic pillar or domain are itemized below. These will form the basis of the over-arching technical support that the federal government will offer and coordinate for the provinces.

### PILLAR #1: Governance



#### Challenges

- Governance has been a constant challenge, undermining service delivery and budgetary investments. As in other sectors, **patronage** often has a significant role in determining the agenda for health policies and administration in Pakistan.
- The capacity to **regulate public and the private sector** health market (i.e., medical practice, pharmaceutical, and diagnostics) is weak.
- There is no uniform approach for managing the governance of health institutions, and capacity for contracting services is not optimal.

- Federal and provincial health authorities must rebuild their **stewardship of the health system** through professional independent advice and technical governance of health services planning. They must strive to become the frontline providers of essential health services provision and delivery.
- A steady and purposeful stewardship role of the provinces should bring structural changes to the health system. It is expected that **sector-wide strategic planning**, regulation, purchasing, financing, and separating service provision from its stewardship function.
- Health services reforms that are already underway should focus on strengthening government-provided services. **Innovative management** models that align with preventive primary health targets should be tested.
- Private sector should be seen as a partner in healthcare delivery and should be engaged and regulated through appropriate mechanisms. It should be engaged to meet national SDG targets.
- Increase share of public sector **budgets commitment** for governance strengthening, and establishing dedicated structures within provincial and federal ministries. Both government and private service providers will be involved in performance accountability and targeted service delivery.
- Accountability mechanisms must be put in place at all levels. Development of key performance indicators and output-based measures facilitate progression to performance-based models.

## PILLAR #2: Health Financing



#### Challenges

- Government spending on health has always been suboptimal (0.6% of GDP). Most health allocations are consumed by secondary and tertiary care, leaving a scant 15% for preventive and primary care.
- There are inefficiencies in the public health spending due to weak management systems, resulting in low utilization and eventual lapse of funds. Payments are not linked to performance.
- **Donor funding** has been minimal (<2% of total national health expenditure). The official donor assistance is far less than that committed in the Paris declaration, and should better align and coordinate with government strategies.
- Many population sub-groups lack **financial protection** and are at risk of catastrophic health expenditures.

- Government is cognizant that **adequate**, **responsive**, **and efficient health financing** is the cornerstone of a country's well-functioning health systems. Spending on health will be advocated as an "investment" to the line ministries, finance departments, and international development partners.
- Federal and provincial governments will increase **health allocations** as pledged in Pakistan Vision 2025 to 3% of GDP, to maximize the pay-offs from investing in health.
- **Priorities for health allocations** will be revisited, and a higher share for essential health service delivery, preventive programs, communication, capacity building of frontline health workers, and governance ensured.
- **Pro-poor social protection initiatives** (including the recent Prime Minister National Health Program) will continue to be financed and new initiatives (conditional cash transfers, vouchers) launched to facilitate access to essential primary and secondary health services and priority diseases, with a vision for coverage for the entire population, and protected through necessary legislation.
- There will be progressive movement toward **universal health coverage**. Reproductive, maternal, new-born, child and adolescent health and nutrition investments will be increased in phases.
- Governments will develop mechanisms to build capacity to implement **fiscal discipline**, **revisit formulae for district allocations** to maintain parity, and grant financial autonomy to health institutions.
- Federal and provincial governments will develop joint strategies to **enhance resource mobilization** for health from official development assistance/international development partners, private sector engagement, and taxes, such as sin tax.

## PILLAR #3: Packaging Health Services



#### Challenges

- There is now an established and increasing **double burden** of disease comprising noncommunicable diseases, mental health, and injuries, and communicable and infectious diseases such as TB, HIV, and hepatitis B and C. Additionally, the health needs of elderly and aging populations will become a major problem in the next few years.
- **Inadequate infrastructure** and standards, along with poor-quality services have weakened public trust, resulting in just 20% of the population using public-sector first-level health care services.
- Progress has been constrained by **fragmented service delivery**, inadequate resource commitment to preventive and promotive care, and imbalance in human resource (HR) deployment, and lack of skill mix.
- **Inequitable access**, urban-rural disparities, lack of private sector regulation, and nonconformity of essential services packages have rendered the health care delivery nonresponsive.

- Governments will improve **coverage and functionality** of primary and promotive health services (especially in peri-urban, urban slums, and rural areas), while ensuring the widening of **essential service packages** by introducing services in family medicine, new-born survival, birth spacing and contraceptives, non-communicable disease, mental health, under-nutrition, disability, gerontology, and other areas. Service quality will be ensured by implementing **minimum service delivery** standards at all levels.
- Government will encourage and support the integration of vertical **programmes** at the provincial level for optimal use of resources and better performance.
- Governments will enforce **public health laws** related to smoking, drug safety, organ donation and transplant, blood transfusion, environmental protection, food safety, etc.
- Efforts will be geared toward building **synergy with the private sector** in essential health services delivery (preventive and curative), reporting on key indicators, and for understanding its functioning, composition and possible outreach to the under-served.
- The entire health care system will be made **resilient to disasters** disasters (climate change, natural disasters, disease outbreak, etc.) through disaster mitigation responses and continued provision of services during acute crises and emergencies.

## PILLAR #4: Human Resources for Health



#### Challenges

- Human resources in health are critical to the provision of high-quality preventive, promotive, and curative services. Pakistan has one of the **world's lowest ratios** of doctors, dentists, nurses, and paramedics to population. Other pressing issues include maldistribution of HR, retention, and low work-place satisfaction levels. This results in significant staff turnover and brain drain at all levels.
- **Professional education** in health is sub-optimal and curricula do not reflect modern pedagogic techniques, international standards, or local requirements.
- Health practitioner licensing and renewal is weak and not linked to improved qualification, competence, performance, or continuous professional development. Institutional levers for gauging the **performance of health staff** are weak.
- **Coverage by community health workers** is stagnant, and their numbers and quality are below required standards.

- Medical and related health education will be tailored to the health needs of the population, and will focus on **social determinants of health**, ethics, and public health law. Continuous professional development will be institutionalized across both public and private sectors in conjunction with associations, and will be linked with health professionals re-licensing.
- Owing to the rapidly growing population, disease patterns, and health needs, the workforce will be expanded and strengthened.
- Government will focus on appropriate and adequate HR **skill mix** and task shifting, where required. Public health, family medicine, and allied health institutions will be nurtured and institutionalized to increase the cadre of managers, regulators, administrators, family physicians and specialized allied health staff.
- **Responsive management** will be introduced at health departments, and incentives will be offered to boost performance and make rural appointments attractive given.
- **HR database** at provincial and national levels will be created to facilitate forecasting of workforce development.
- Comprehensive **national HR**, **nursing**, **and allied health work force strategies** based on the National Health Vision may be considered.

PILLAR #5: Health Information System and Research



#### Challenges

- Health information systems in Pakistan are fragmented and vertical. They respond to or serve primarily the vertical health programmes and District Health Information. Consequently, health indicator data collected by various systems may show conflicting results.
- Demographic health and social and living measurement surveys cannot fully compensate for the **lack of reliable ongoing monitoring data**. These surveys too require analytical capacity, which has been limited to date.
- Although information systems are critical for planning, resource allocation, and health care delivery, in Pakistan it is impractical because the information systems **lack accuracy**, **quality, reliability, and links to decision makers.**
- **Research is often conducted in silos,** seldom relevant to local issues, and if often of poor quality because of limited capacity and resources. Compounding this is the disconnect between researchers, implementers, and policy makers.

- **Innovative technologies** will be incorporated into district health information systems to facilitate evidence-based decision-making. Provincial and national platforms for **transforming evidence into policy** will also be encouraged.
- Governments will **build coherence** across health information systems, and will invest in systems to monitor SDG and national health target progress and vital statistics such as births and deaths.
- The national health vision calls for a transition from medical to **national health research** that prioritizes areas according to local requirements. A **central hub for information repository,** standardization, and quality will be developed with assistance from provinces. This hub will promote evidence-based decision making, policy formulation, and health systems research.
- Strengthened information systems at national, provincial, and district levels will lead to an effective, **integrated disease surveillance and response system**, with a particular focus on early warning system.
- Government will establish a collaborative mechanism for high-quality research on **national priority areas**, and will help regulating the research environment.

## PILLAR #6: Essential Medicines and Technology



#### Challenges

- Health sector technologies have not been introduced through a needs assessment process, leading to an **unchecked misuse**. The curren mechanisms to determine the appropriateness of health supplies, diagnostics, medicines, and laboratory reagents are not evidence-based.
- The essential services package does not identify the type or number of equipment, supplies, or medicines needed to deliver the defined services for a specific health facility. This encourages **irrational procurement**, use, and spending on technology and results in the loss of precious resources.
- There are problems related to **quality and price** of drugs and prescription. Medicine pricing is a contentious issue between regulators and the industry.
- Plans for a **health technology assessment (HTA)** through the use of pharmacoeconomics, pharmacoepidemiology, and pharmacovigilance have not advanced.

- Create HTA capacity at federal, provincial, and district levels; and vigilantly monitor the selection, quality, price, and use of technology, equipment, and medicine as per international standards.
- Collect evidence and best practices on medicine-related policy, legislation, and operative guidelines to develop standard treatment guidelines. Establis an entity (e.g., NICE-UK) to oversee adherence to standard treatment guidelines and best practices.
- The federal and provincial governments will ensure that appropriate regulations for the control of drugs, devices, diagnostics, and biological reagents across the country are established to ensure quality control and patient safety.
- Pharmaceutical industry will be encouraged to provide innovative and affordable solutions to patients, and to introduce a pharmacovigilance program at the federal level and at provincial collection centres.
- Drug pricing policy will be implemented to protect the public interest by regulating prices of essential medicines. Appropriate policies for orphan drugs, alternative medicines, and medical devices will also be put in place.
- Strengthen the Drug Regulatory Authority of Pakistan and revisi legislation to regulate drugs, human organ donations, blood transfusions, and all therapeutic goods.



#### Challenges

- Public health professionals are becoming increasingly aware that their field is affected by the **political, social, economic, and developmental context** in which they operate.
- Illiteracy, unemployment, gender inequality, food insecurity, rapid urbanization, environmental degradation, natural disasters and the lack of access to safe drinking water and sanitation all have **negative effects on the health** of individuals and communities.
- A large number of **preventable deaths** and disabilities among children, pregnant/ lactating women, young adults, and the aging population could be averted but action lies beyond the scope and mandate of the health sector.
- **Population growth** calls for concrete steps to increase the contraceptive prevalence rate and reduce the total fertility rate.

- There will be renewed and synergistic focus on **cross-sectoral actions** to advance health, with a particular focus on communicable and non- communicable disease including mental health and malnutrition. The concepts of **"One Health"** and **"Health in all Policies"** will be promoted.
- Government will strive to develop a common vision, framework, and platform with **stakeholders** from across sectors to work on health-related priorities such as population, education, food security, agriculture and livestock, housing, sanitation, water, environment, and disaster management.
- Government will embark upon advocacy, planning, legislation, regulation, behavioural change communication, information exchange, and evidence-based decision making through **joint efforts with various sectors** in pursuit of the SDGs.
- Efforts will be geared towards **recognition of community involvement**. Women empowerment, and local/ rural development will be the key channels for cross-sectoral action.

## PILLAR #8: Global Health Responsibilities



#### Challenges

- **SDGs** and the broader sustainability agenda demand much more effort than the MDGs, and must include addressing the root causes of poverty and investments in human development that benefits all people.
- Achieving **international public health security** is one of the main challenges arising from the new and complex landscape of public health. Treaties such as International Health Regulations (IHR-2005) and Global Health Security Agenda (GHSA) require core capacities that have not been developed at federal or provincial levels.
- Progress on other **treaties and commitments** such as the Framework Convention on Tobacco Control (FCTC),Mental Health Gap Action Programme (mH-GAP) reproductive, maternal, new-born, child, and adolescent health, Family Planning 2020, etc. are hindered by a lack of coordination.

- The new global **sustainable development agenda** will be reflected in all health strategies and plans, and the government will be provided appropriate technical support and expertise.
- Mechanisms for coordination across sectors and between provinces and federal ministries, including **integrated disease surveillance and response** indicated in the IHR 2005 and GHSA, will be established to prevent, detect, and respond to events that may constitute a public health emergency.
- Adapt best practices for **polio eradication** and apply to other priorities, particularly expanded programme for immunization and vaccine-preventable disease surveillance.
- Government will develop a strategic and **coordinated approach** to facilitate adherence to SDGs and other international treaties, by providing an enabling environment and guidance to all the stakeholders.

# 7. MONITORING AND EVALUATION

- The M/o NHSR&C will develop a monitoring and evaluation (M&E) framework for the National Health Vision 2016–2025. It will link and coordinate with the planning commission for SDG reporting, provincial/area/regional health departments for alignment with strategies.
- The M&E plan will detail the specific roles of various facets of the health system including processes of data acquisition, flow, analysis, use, and feedback; resource requirements; institutional/organizational infrastructure needs; analysis of available competency and capacity; and specific indicators and their timelines for gauging performance and results. It will also define how different levels of government might use data and information from the system and suggest corrective actions where needed.
- The M&E framework and its operational plan will focus on progress toward outcomes by developing a mix of tools and approaches relevant to the proposed objectives, activities, and targets. Monitoring data will be verified independently (via third parties). Provincial health systems strengthening units (or equivalent entities) will track the nation's health progress.
- A high-level interprovincial health and population forum will oversee implementation of the National Health Vision 2016–2025 and will endorse reports for presentation to Parliament.

#### Process: Realizing a Shared National Vision

## 8. ANNEXURE

- The need for a common binding national health vision was articulated and endorsed during a series of meetings in 2013–14 between federal and provincial ministries of health and respective provincial chief ministers. The process was led by the federal M/o NHSR&C.
- 2. An inter-ministerial forum for the coordination and accountability of the National Health Vision health was established. Each province identified technical focal points, while technical team at federal ministry coordinated the process.
- 3. In May 2015, M/o NHSR&C held a preparatory meeting with key resource persons to initiate the process of discussion/deliberation, and prepare recommendations on how to proceed with each thematic pillar, and to develop a national policy framework for health.
- 4. The M/o NHSR&C hired a consultant to develop a concept note for each thematic pillar to present to participants at the larger technical meeting.
- 5. This was followed by a series of technical consultative meetings with all stakeholders. Meetings on each thematic pillar were held from January to February 2016 to determine the roles and responsibilities and enhance coordination between the federal Ministry and provincial health departments and regional and special areas. Approximately 300 experts representing the planning commission, line ministries, provincial departments of health and population, UN agencies, health development partners, community service/ community-based organizations, nongovernmental organizations, experts, academics, etc.2 participated in the consultative process, which led to a draft of the health vision document.
- 6. For consensus building at the policy level, a series of meetings with the Minister of State for M/o NHSR&C and provincial chief ministers, health ministers, chief secretaries, and their teams were held to get their views and comments on the framework of National Health Vision document.3 Recommendations supported by scientific evidence and global best practices were collated for feedback from provinces. The meetings were held in Punjab (6th July, 2015); Khyber Pakhtunkhwa (19th August, 2015); Sindh (30th November, 2015); and Baluchistan (10th December, 2015). The meetings were also an opportunity to visit each province in a post-devolved setup with provincial health sector strategies in place.
- 7. The draft vision document was uploaded on the ministry's website for a month in order to seek inputs from the wider public.
- 8. The final draft of the document was shared with all stakeholders in August 2015, and comments and views were incorporated.
- 9. On 30th August 2016, the final National Health Vision 2016–2025 was unveiled and endorsed by all federal and provincial ministers.

<sup>2</sup> List of participants of all meetings are available on request from the HPSIU-M/O NHSR&C.

<sup>3</sup> Minutes of all the meetings are available on request from the HPSIUa.

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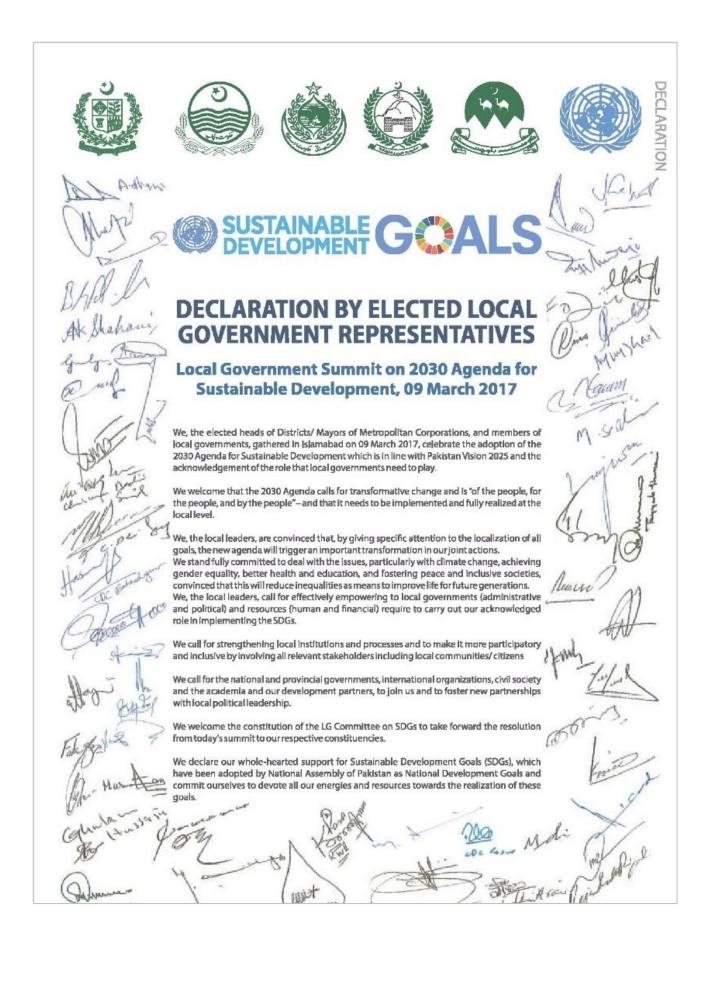
Ministry of National Health Services, Regulations & Coordination, Goernment of Pakistan LG&RD Complex, G/5-2, Islamabad. Tel: 051 9245933 Website: www.nhsrc.gov.pk Pakistan's Implementation of the 2030 Agenda for Sustainable Development Voluntary National Review



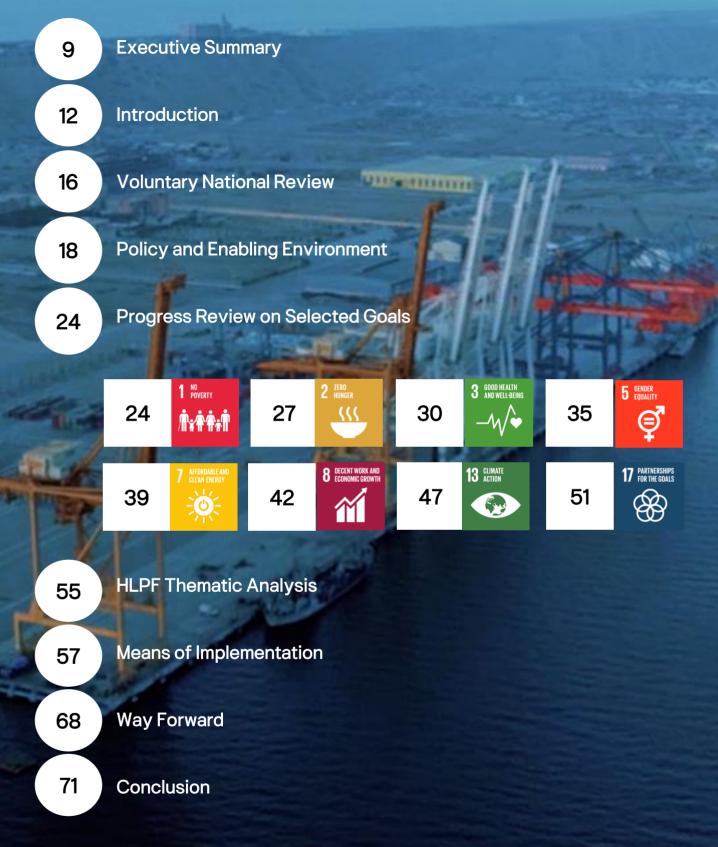


Government Of Pakistan





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# LIST OF ACRONYMS

AAP	Accelerated Action Plan
AEDB	Alternative Energy Development Board
AEE	Association of Energy Engineers
AJ&K	Azad Jammu and Kashmir
ANR	Agriculture and Natural Resource
BCDGS	Balochistan Comprehensive Development & Growth Strategy
BHUs	Basic Health Unit
BISP	Benazir Income Support Programme
BNPMC	Balochistan Nutrition Programme for Mothers & Children
CBOs	Community Based Organizations
CFM	Citizen Feedback Model
CMI	Census of Manufacturing Industries
CPEC	China Pakistan Economic Corridor
CPEC	
CPW CRVS	Critical Pathways
	Civil Registration and Vital Statistics
CSOs	Civil Society Organizations
CSR	Corporate Social Responsibility
DEAs	District Education Authorities
DHEs	District Health Authorities
DRM	Disaster risk management
DRR	Disaster Risk Reduction
ECCE	Early Childhood Care and Education
ECD	Early Childhood Development
ECOSOC	The Economic and Social Council
ECP	Elections Commission of Pakistan
EMIS	Education Information Management System
EOBI	Employees Old-Age Benefits Institution
EPI	Expanded Programme for Immunization
EU	European Union
FBR	Federal Bureau of Revenue
FDI	Foreign Direct Investment
FIES	Food Insecurity Experience Scale
FIFA	Fédération Internationale de Football Association
FPSC	Federal Public Service Commission
GB	Gilgit-Baltistan
GDP	Gross Domestic Product
GHG	Greenhouse gas emissions
GIS	Geographic information system
GLOF	Glacial Lake Outburst Floods
GPI	Gender Parity Index
GRAP	Gender Reforms Action Plan
GSP+	Generalised Scheme of Preferences
HBWs	Home-based workers
HIES	Household Integrated Economic Survey
HIV	Human Immuno-Deficiency Virus
HLPF	High-Level Political Forum
HMIS	District Health Information System
HRH	Human resources for health



	Inter-Agency Expert Group
ICT	Information & Communication Technology
IDPs	Internally Displaced Persons
IHR	International health regulations
IMF	International Monetary Fund
IMR	Infant mortality rate
INDC	Intended Nationally Determined Contributions
IP	Iran-Pakistan
IT	Information Technology
IYCF	Infant and young child feeding
KP	Khyber Pakhtunkhwa
LFS	Labour Force Survey
LG	Local Government
LHW	Lady Health Workers
LHWP	Lady Health Workers Programme
LNG	Liquefied natural gas
LSOs	Local Support Organizations
M&E	Monitoring and Evaluation
MAF	Million-acre feet
MAPS	Mainstreaming, acceleration and policy support
MDGs	Millennium Development Goals
MEAL	Monitoring, Evaluation, Accountability and Learning
MICS	Multiple Indicator Cluster Survey
MIS	Management Information Systems
MMR	Maternal Mortality Ratio
MNHSRC	Ministry of National Health Services, Regulation and Coordination
MNSC	Multi-Sectoral Nutrition Strategy
MoCC	Ministry of Climate Change
MoFA	Ministry of Foreign Affairs
MoPDR	Ministry of Planning, Development and Reform
MoPDR MPI	Ministry of Planning, Development and Reform Multidimensional Poverty Index
	Multidimensional Poverty Index
MPI	
MPI MW	Multidimensional Poverty Index Megawatt
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	National Casia a succesia Daviateur
NSR	National Socioeconomic Registry
ODA	Official Development Assistance
OSH	Occupational safety and health
PBM	Pakistan Bait-ul Mal
PBS	Pakistan Bureau of Statistics
PDGN	Pakistan Dietary Guidelines for Better Nutrition
PDHS	Pakistan Demographic and Health Survey
PINS	Pakistan Integrated Nutrition Strategy
PIPS	Pakistan Institute of Parliamentary Services
PITB	Punjab Information and Technology Board
PKR	Pakistani Rupee
PMCCC	Pakistan Committee on Climate Change
PMNS	Pakistan Multi-Sectoral Nutrition Strategy
PSDP	Public Sector Development Programme (PSDP)
PSLM	Pakistan Social and Living Standard Measurement
P&DDs	Planning and Development Departments
PTC	Provincial Technical Committee
PPPs	Public-Private Partnerships
PWDs	Persons with disabilities
R&D	Research and development
REDD+	Reducing Emission from Deforestation and Forest Degradation
RHCs	Rural Health Centres
RTSM	Real-time school monitoring
SACOSAN	South Asian Conference on Sanitation
SCCI	Sialkot Chamber of Commerce & Industry
SDF	Sindh Development Forum
SDGs	Sustainable Development Goals
SE4ALL	Sustainable Energy for All
SEZ	Special Economic Zones
SMEs	Small and medium-sized enterprises
SPRING	Stunting Prevention Rehabilitation Integrated Nutrition Gain
SUN	Scaling Up Nutrition
ΤΑΡΙ	Turkmenistan-Afghanistan-Pakistan-India
ТВ	Tuberculosis
ΤΕντά	Technical Education & Vocational Training Authority
UN	United Nations
USD	United States Dollar
USI	Universal Salt Iodization
VNR	Voluntary National Review
WASH	Water and Sanitation for Health



# **OPENING STATEMENT**

Pakistan affirmed its commitment to the 2030 Agenda for Sustainable Development by adopting the Sustainable Development Goals (SDGs) as its own national development agenda through a unanimous National Assembly Resolution in 2016. Since then, the country has made considerable progress by mainstreaming these goals in national policies and strategies, including the Five-Year Plan, provincial growth strategies and Pakistan's long-term development perspective. In 2018, the newly elected Government designed and approved a National SDGs Framework that envisages a national vision to prioritize and localize SDGs.

The country is making all possible efforts to establish institutional mechanisms in line with the 2030 Agenda. The newly elected government has a firm stance on strengthening institutions, ensuring meritocracy and introducing transparency at all levels. This is considered essential for translating our political vision into reality through efficient and effective management of available resources and improving quality of service delivery. With the establishment of federal and provincial SDG units, Pakistan has instituted monitoring and evaluation processes that are critical for supporting the SDGs' implementation, horizontal and vertical coordination, and strengthened collaborations with development partners, civil society organizations, think tanks, academia and the private sector. To ensure an enabling institutional environment, Parliamentary Taskforces are operating in national and provincial assemblies, closely overseeing progress on the SDGs. All such efforts are expected to accelerate the pace of Pakistan's progress on the SDGs.

The second smooth democratic transition of power in Pakistan is helping leverage partnerships across institutions and sectors to develop plans that can help alleviate poverty and improve social inclusivity; eliminate hunger and improve the health status of our people, while adopting the one health approach. Political commitment is highly supportive in embracing programmes that will help us alleviate poverty. We firmly believe that population planning, benefiting from the demographic dividend, and ensuring equal gender participation are the strongest drivers of sustained economic growth.

Through nation-wide and country-owned collaborative efforts, Pakistan is picking up the pace towards achieving the 2030 Agenda. I am pleased to share these positive and enabling developments in Pakistan's first Voluntary National Review. Nevertheless, several challenges remain – the task of planning and implementing the 2030 Agenda for Pakistan's rapidly growing population must necessarily incorporate diverse local contexts, build local capacities and strengthen institutions. The gigantic challenge of climate change alone requires intensive community mobilization efforts. Addressing these challenges means that we must take cue from the SDG wheel, which reminds us that development does not occur in silos – rather it is a sustained and integrated process dependent on creating synergies.

A cornerstone of implementing the SDG goals is building on existing alliances and forging new partnerships, leveraging technology and mobilizing innovative sources of finance. Hence, partnerships with a broad array of stakeholders including the private sector and the civil society, supported by international community, will continue to guide this process. We are undertaking deep structural reforms to place Pakistan on the path towards sustainable development, whereby the most vulnerable segments of society are protected, and development is inclusive. The Government is fully committed to harness the potential of our youth, leveraging the opportunities through innovative financing, making use of technologies, partnerships and cross-sectoral innovations to ensure that we deliver on our commitments and create a solid foundation that enables sustainable national development, regional growth and global prosperity.

#### Makhdum Khusro Bakhtyar

Federal Minister for Planning, Development & Reform Government of Pakistan



#### EXECUTIVE SUMMARY

Pakistan committed to the 2030 Agenda for Sustainable Development right from its inception, in 2015. In February 2016, it became the first country in the world to adopt the Sustainable Development Goals (SDGs) as part of its national development agenda through a National Assembly Resolution. Learning from the experience of the Millennium Development Goals (MDGs), Pakistan's national and provincial assemblies established SDG Taskforces to oversee progress on the goals.

In fact, Pakistan started a conversation around the post-2015 Agenda as early as 2013, when nationwide consultations helped identify the priorities that were weaved into Pakistan's national development perspective. These developments reflect Pakistan's commitment to the SDGs. More recently, the 12<sup>th</sup> Five-Year Plan and provincial medium-term development strategies are all aligned with the 2030 Agenda. Pakistan is progressing on several fronts – such as reducing poverty and child stunting, improving transparency and accountability, and promoting gender equality and women's empowerment. Pakistan's political commitment to these priorities supports the 2030 Agenda.

To improve vertical and horizontal coordination among different tiers of government and non-governmental stakeholders, seven SDG Support Units have been established at the federal, provincial and federally administered area levels. These units, guided by the federal Ministry of Planning, Development & Reform (MoPD&R) and provincial and administrative area Planning & Development Departments (P&DDs), have been instrumental in collating Pakistan's first Voluntary National Review (VNR). The review process encompassed several comprehensive and inclusive stakeholder consultations, spread over months, focusing on seven predetermined themes.

Pakistan has designed a comprehensive National SDG Framework which was approved by the National Economic Council (NEC), the country's highest economic policy-making forum, in March 2018. This Framework sets baselines and targets for SDG indicators and will feed into the SDGs' Monitoring and Evaluation Framework. The framework is now guiding the provinces and federally administered areas to determine their development priorities, based on local needs.

To bolster the implementation of the SDGs, the provinces have instituted Technical Committees and Thematic Clusters. The nomination of focal persons at all levels of government, down to the districts, is helping them to align their development priorities with the 2030 Agenda. This institutional arrangement has been instrumental in guiding the alignment of federal and provincial national policies, sectoral plans and growth strategies with the contours of the 2030 Agenda.

National data collection tools have been modified to improve data availability, with a focus on the inclusivity, equity and sustainability aspects of the SDGs. Transparency will be a major hallmark of monitoring and evaluation architecture. Pakistan completed its analysis of data gaps related to the SDGs as a stepping stone for monitoring and reporting progress.

Complementing these institutional reforms are several advocacy and awareness interventions across the country. Starting from the Local Government Summit in 2017, several events have been arranged to raise awareness among grassroots level public officials and parliamentarians, to prioritize the SDGs in legislative business in response to local needs. Civil society and academia are fully supportive of the Government in terms of achieving these targets. Pakistan is also working to implement the inclusive nature of the 2030 Agenda by developing communication platforms that cater to our cultural, linguistic and geographic diversity, to ensure that 'no one is left behind'. Since 2016, several policies and laws have been approved and promulgated. The greatest number of legislative frameworks relate to SDG 16 ('Peace, Justice and Strong Institutions'), SDG 8 ('Decent Work and Economic Growth') and SDG 4 ('Quality Education').

Commitment to poverty alleviation remains a key focus. Through Pakistan's multi-sectoral poverty reduction strategy and targeted interventions, progress has been made despite persistent challenges. Over the past

ten years, the poverty headcount has fallen by 26 percentage points and multi-dimensional poverty by 16 percentage points. The national poverty alleviation programme, *Ehsaas* (compassion), was launched in 2019 to expand social protection, safety nets and support human capital development throughout the country. This programme complements and expands the on-going, robust social protection programme for poor women. As the national resolve to eliminate poverty is firm, the size of assistance for the lowest strata has been enhanced. The National Socioeconomic Registry is being updated to target the poorest more effectively and to ensure that no one is left behind.

Stunting and malnutrition have decreased between 2013 and 2018 by 6 and 9 percentage points, respectively. Recognizing persistent nutrition challenges, a greater focus is being placed on these issues, underpinned by the allocation of resources. The prevalence of skilled birth attendance has improved by 17 percentage points while the neonatal mortality rate has fallen by 10 percentage points during the same period. The Lady Health Workers Programme, with its grassroots presence, has been instrumental in achieving these improvements. A new universal health coverage initiative, the *Sehat Sahulat* Programme, was launched in 2019 to provide health insurance coverage for those in need. Health sector reforms are underway, entailing a centralized integrated disease surveillance system and a strong inter-provincial information sharing mechanism.

Improving access to, and the quality of, education is a key national priority for Pakistan. Its focus is on improved school monitoring mechanisms, along with targeted interventions for out-of-school children. While the female literacy remains low, rising gross enrolment figures for girls' education show that Pakistan is on track to eliminate gender disparities in education. The results of promoting women's empowerment through education are being felt in other sectors, as women's labour force participation increases, unemployment among young women decreases, and a rising share of senior and middle management and professional positions are held by women.

Measures to improve water and sanitation are guided by the National Sanitation Policy 2006, and the National Water Policy 2018. Data reveals progress in these areas. The Government has also increased access to electricity by 8 percentage points in the past ten years. The proportion of the population who rely on clean fuels has risen by 11 percentage points<sup>1</sup> in the same period. This has a range of positive implications for health and environmental sustainability. It has also led to better employment prospects for youth, as have focused efforts to enhance market-based skills training.

Despite its miniscule carbon footprint, Pakistan faces the enormous and imminent impacts of global climate change. Therefore, climate adaptation is imperative for the country. Pakistan has initiated actions to protect the environment and contribute to minimizing the adverse impacts of climate change. Both climate adaptation and mitigation are reflected in the country's policy and implementation approach. After the successful completion of Pakistan's Billion Tree planting drive across 350,000 hectares – the first Bonn Challenge pledge to meet and surpass its target – Pakistan has scaled up the initiative to the 10 Billion Tree Tsunami. This five-year, country-wide tree planting drive aims to restore depleted forests and mitigate climate change. With the launch the Clean and Green Pakistan and Recharge Pakistan initiative, the country has taken the lead in 'nature-based solutions for ecosystem restoration' among developing countries, with the added benefits of safeguarding biodiversity and generating livelihood opportunities.

The recently elected government has launched the Naya (New) Pakistan Housing Program whereby houses will be constructed and offered on an affordable price to a much larger segment of population by offering them the facility to avail long term loans for purchasing them. The first phase of this project was launched in April 2019, and construction of 110,000 units was initiated in Quetta and Gwadar. The Government of Pakistan is keen to partner with the private sector for the "Naya (New) Pakistan Housing Project".

<sup>1</sup> Pakistan Social and Living Standard Measurement (PSLM) 2014-15

While Pakistan is well prepared to achieve the SDGs, several challenges remain. Financing the SDGs in a slow growth environment will be a trying task, compounded by the knowledge and technology gap in developing local solutions and improving efficiency through improved governance. Exploring innovative financing, developing a Responsible Business Framework and engaging local universities in devising local solutions for local problems is the strategy that Pakistan is pursuing.

Pakistan is advancing towards its commitment to the 2030 Agenda by working to strengthen institutional mechanisms, enhance awareness, create productive partnerships and improve coordination. A key aspect of its implementation strategy is strengthening existing alliances and forging new ones, while leveraging technology and mobilizing finance. Partnerships and close collaboration with a broad array of governmental, private sector, civil society, media stakeholders supplemented by regional and international support, will continue to be a major feature. Notwithstanding economic and financial challenges, Pakistan will continue to work towards achieving the SDGs through innovative, targeted and focused implementation strategies in the social, economic and environmental spheres.



# A Mar INTRODUCTION

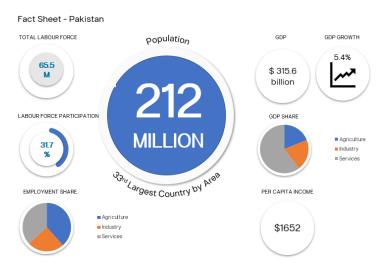
#### **1 INTRODUCTION**

#### 1.1 CONTEXT AND OBJECTIVES OF THE VOLUNTARY NATIONAL REVIEW

Pakistan committed to the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) in October 2015. Pakistan's first Voluntary National Review outlines the country's level of preparedness for achieving the SDGs, reports progress on several SDGs and puts forth future plans, which hinge on multi-stakeholder engagement, institutional mechanisms, the allocation of financial resources and the streamlining of policies.

#### 1.1.1 Country Context

Although growth and social development should go side by side, growth in Pakistan has not contributed to balanced social development in recent decades, primarily due to high levels of population growth. As a result, many of Pakistan's social indicators do not match significant levels of economic growth, averaging 4 per cent per year. This makes the Sustainable Development Goals a key priority for the country.



After committing to the 2030 Agenda for Sustainable Development in 2015, Pakistan became the first country in the world to adopt the SDGs as its own national development goals through a National Assembly Resolution in February 2016. At the same time, Pakistan's Parliament became the first to establish an SDG Unit dedicated solely to the 17 goals. Pakistan began working on the SDGs as early as 2013, when the United Nations selected Pakistan as one of the countries to conduct consultations on the post-2015 development agenda. The key development priorities were identified during consultations. These included peace and security, governance, inclusive economic growth, the rule of law, social development, gender equality and women's empowerment, sustainable low-cost energy, disaster response and preparedness, and the much-needed broader role of the developed world.<sup>2</sup> These priorities were incorporated in Pakistan's long-term perspective development document. In 2014, the National Assembly aligned its long-term Strategic Plan 2014-2018 with the post-2015 agenda. In 2017, National and Provincial Parliamentary Taskforces were created to focus on the SDGs<sup>3</sup> during parliamentary work.

Pakistan is a federation comprising four provinces (Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan), a federal capital (Islamabad Capital Territory) and two federally administered areas (Gilgit-Baltistan (GB) and Azad Jammu and Kashmir (AJ&K)). The Constitution provides for provincial autonomy, particularly in terms

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<sup>&</sup>lt;sup>2</sup> Pakistan Millennium Development Goals Report 2013 – Planning Commission, Government of Pakistan

<sup>&</sup>lt;sup>3</sup>DevWatch Newsletter Jan-March 2018, Issue 1 – National Assembly of Pakistan

of social service delivery, while the Federal Government's support of provincial efforts is a state responsibility. Key social sectors are primarily the responsibility of provincial governments – including health, education, climate change, human rights, population and social welfare, food and agriculture, water supply & sanitation while the Federal Government is responsible for coordination and international commitments. The Federal Government also exclusively retains functions related to finance, defense, natural resources and foreign affairs.

Pakistan's local government system is in place to bring the government closer to the people. This is enshrined in the Constitution, which empowers each province to set up its own local governments. The local government system in Pakistan is a three-tier system, integrated through a bottom-up planning approach. It is supported by the provinces' local government departments, with the Federal Ministry of Inter-Provincial Coordination ensuring national level coordination. Effective implementation of the 2030 Agenda in Pakistan hinges on the effectiveness of the local government system – a potentially viable tool for embedding the SDGs at the grassroots level. The goals' achievement ultimately depends on the ability of local and provincial governments to promote integrated, inclusive and sustainable development.

In 2018, major promising developments included Pakistan's third consecutive elections and second successive democratic transition of political power. This has allowed several institutions to grow stronger, including the Elections Commission of Pakistan (ECP), the National Accountability Bureau (NAB), the Supreme Court of Pakistan, and the electronic and print media.

#### 1.1.2 National Priorities

Since the adoption of SDGs, the country has worked to mainstream the SDGs in all its policies, plans and strategies. Pakistan's long-term development agenda, provincial development strategies and five-year plans are all aligned with the SDGs. All tiers of government are actively participating in the SDGs' implementation. In 2017, the first Local Government Summit on the SDGs identified education, employment, energy, water, and peace and governance as major issues to address. The Public Sector Development Programme (PSDP) has increased spending on energy, law and order, and security at the federal level. In tandem, education, health, and water and sanitation receive higher share of provincial budgets.

Based on the priorities highlighted by the public during consultations on the post-2015 agenda, and the debates undertaken during the Local Government Summit in 2017, an objective criterion – encompassing seven dimensions – was developed to prioritize national requirements. This seven-dimensional criterion guided inter-provincial discussions on identifying national priorities. Based on the outcomes of these discussions, a framework was devised to prioritize the SDGs in the Pakistani context. Accordingly, a National SDG Framework was prepared.

The National Economic Council, chaired by the Prime Minister, is Pakistan's highest forum for the approval of plans for the implementation of policies. In 2018, the National Economic Council approved the National SDGs Framework. The framework prioritizes the global goals into three categories. While all goals will be worked on simultaneously, Category 1 goals are those that require immediate attention to achieve rapid results which will pave the way for achieving the remaining goals. The framework's categories prioritize the goals as follows:

- Category 1 SDG 2 ('No Hunger'), SDG 3 ('Good Health and Well-Being'), SDG 4 ('Quality Education'), SDG 6 ('Clean Water and Sanitation'), SDG 7 ('Affordable and Clean Energy'), SDG 8 ('Decent Work and Economic Growth)' and SDG 16 ('Peace, Justice and Strong Institutions').
- Category 2 SDG 1 ('No Poverty'), SDG 5 ('Gender Equality'), SDG 9 ('Industry, Innovation and Infrastructure'), SDG 10 ('Reduced Inequalities'), SDG 11 ('Sustainable Cities and Communities') and SDG 17 ('Partnerships for the Goals').
- Category 3 SDG 12 ('Responsible Consumption and Production'), SDG 13 ('Climate Action'), SDG 14 ('Life below Sea') and SDG 15 ('Life on Land').





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#### 1.1.3 Targets for Sustainable Development

To be sustainable, Pakistan recognizes that the three core dimensions of development must be connected – social, economic and environmental. Working towards these three main dimensions of the SDGs compels us to seek for interconnectivity when devising policy frameworks. Lessons learned from the Millennium Development Goals (MDGs) in Pakistan speak to the need to devise integrated policies that connect these three dimensions of development. For instance, poverty reduction requires strong policies in terms of employment, social protection, better health and nutrition, and a clean environment. Similarly, ending stunting requires a clean environment, good hygiene within and outside of the home, proper nutrition, and better healthcare and health education. Following an integrated approach, Pakistan has made considerable progress on several fronts, including reducing poverty, reducing stunting among children, increasing school enrolment and promoting gender equality by reforming policies and introducing legislation to empower women. The National Assembly building has been 'greened' and is now solar powered, a symbolic move towards renewable energy sources.

To achieve Pakistan's sustainable development targets, effective coordination is required among all the stakeholders – including the Government, private sector, civil society and academia – in terms of devising and effectively implementing policies. To address financing and governance issues, the Government has engaged a group of experts to identify solutions. Similar deliberations are on-going to devise a mechanism for effective public-private partnerships (PPPs), and engagement with development partners and civil society. Academia and think tanks have established special SDG Units and SDG Centres of Excellence to spearhead research on different goals.

The overall target of all of these efforts is to improve living standards for the people of Pakistan, and to lift at least half of all impoverished persons out of poverty. Pakistan plans to achieve SDG targets by taking significant steps towards fostering human development, improving public service delivery, removing regional disparities in infrastructure development, and reviving the economy so that enough jobs are available for the educated and skilled. On the climate front, Pakistan's target is to further minimize its carbon footprint and take steps to safeguard the environment, such as large-scale tree planting campaigns and extending the country's forest cover.



1 70000 1929 1921	<ul> <li>1.2.1 – Reduce proportion of population living below the national poverty line from 29.5 percent (2013/14) to 9 percent</li> <li>1.2.2 – Reduce multi-dimensional poverty from 38.8 percent (2014/15) to 19 percent</li> <li>1.a.1 – Increase resources allocated by the government directly to poverty reduction programmes from 33 percent of Federal Consolidated budget (2014/15) to 45 percent</li> <li>1.a.2 – Increase total government spending on essential services from 18.1 per cent of Federal Consolidated budget (2014/15) to 25.3 percent</li> </ul>
	2.2.1 – Reduce stunting among children under 5 years of age from 44.8. percent (2012/13) to 10 percent (moderate) and 11.9 percent (severe)
3 AND INCOMENTAL AND INCOMES AND 	<ul> <li>3.2.1 – Reduce under-five mortality rate (per 1,000 live births) from 89 (2012/13) to 40</li> <li>3.2.2 – Reduce neonatal mortality rate (per 1,000 live births) from 55 (2012/13) to 25</li> <li>3.7.1 – Increase proportion of women of reproductive age (15–49 years) who have need for family planning satisfied with modern methods from 47 percent (2012/13) to 70 percent</li> <li>3.7.2 – Reduce adolescent birth rate (15-19 years) from 44 percent (2012/13) to 22 percent</li> </ul>
	<ul> <li>4.1.1 – Increase the minimum level of reading and mathematics proficiency of children and young people from 57 percent in 2014/15 to 100 percent</li> <li>4.5.1 – Increase education parity indices from 0.88 for primary and 0.87 for secondary (2014/15) to 1.0.</li> </ul>
5 REMARK	5.5.2 – Increase the proportion of women in managerial positions from 4.8 percent (2017/18) to 5 percent Increase the proportion of women in professionals from 38.1 percent (2012-13) to 45 percent
6 CLUM INTER AGE SANGTREM	<ul> <li>6.1.1 – Increase the proportion of population using safely managed drinking water services from 77 percent (2013-14) to 85 percent</li> <li>6.2.1 – Increase the proportion of population using (a) safely managed sanitation services from 73 percent (2014/15) to 80 percent</li> </ul>
7 MINIMALAN HAN INKEY	<ul> <li>7.1.1 – Increase access to electricity from 93.45 percent (2014/15) to 96 percent</li> <li>7.1.2 – Increase primary reliance on clean fuels and technology from 41.34 percent (2014/15) to 60 percent</li> <li>7.2.1 – Increase share of renewable energy total final energy consumption from 11 percent (2014/15) to 25 percent</li> </ul>
8 OLCLY WORK AND LODINING COMPANY	8.1.1 – Increase annual growth rate of real GDP per capita from 1.03 percent (2014/15) to 5 percent 8.2.1 – Increase annual growth rate of real GDP per employed person from 1.9 percent (2014/15) to 3.5 percent 8.3.1 – Reduce informal employment in non-agriculture employment from 73.6 percent (2014/15) to 65 percent 8.5.1 – Increase average hourly earnings of employees from PKR77.97 per hour (2014/15) - to PKR 233.91 per hour 8.5.2 – Reduce unemployment rate from 5.94 percent (2014/15) – to 3.5 percent
	<ul> <li>9.2.1 – Increase manufacturing value added from 13.56 percent of GDP &amp; 18,489 Per Capita (2015/16) to 16 percent of GDP &amp; 96,000 Per Capita</li> <li>9.2.2 – Increase manufacturing employment from 15.33 percent (2014/15) to 18 percent</li> <li>9.3.1 – Increase small-scale industries in total industry value added from 8.4 percent (2014/15) to 12 percent</li> <li>9.5.1 – Increase research and development expenditure as a proportion of GDP from 0.2 percent of GDP (2015/16) to 2 percent of GDP</li> </ul>
	10.1.1 – Improve growth rates of household expenditure or income per capita from national average of 9.26 percent by 1.5 times, and of bottom 40 percent of population= 7.41 percent (2014/15) by 2.5 times 10.2.1 – Reduce proportion of people living below 50 per cent of median income, from 16.6 percent (2014/15) to 10 percent
15 Utt. 	15.1.1 – Increase forest area as a proportion of total land area from 5 percent (2014-15) to 8 percent
17 PATIFIESHIPS FOR THE GALLS	17.1.1 – Increase total government revenue from 14.5 percent (2014-12) to 18 percent 17.1.2 – Increase proportion of domestic budget funded by domestic taxes from 56 percent (2017/18) to 65percent 17.3.2 – Increase remittances as a proportion of total GDP from 7.1 percent (2012/13) to 10 percent

#### Pakistan National Baseline and 2030 Targets





# VNR METHODOLOGY

#### 2 VOLUNTARY NATIONAL REVIEW

#### 2.1 ORGANIZATIONAL PROCESS

The MoPDR developed a process framework on the VNR objectives and scope, alongside its proposed methodology and a stakeholder engagement plan. Guidelines for preparing the review were shared with provinces and the federally administered areas. The first national multi-stakeholder consultation in the capital, Islamabad, was held on the 24<sup>th</sup> October 2018. The consultation acquainted a wider audience with the VNR and incorporated their feedback into the preparation process. The role of P&DDs was instrumental throughout the entire process, which involved conducting multi-stakeholder consultations and preparing provincial reports with extensive support of partners and subject matter experts.

#### 2.2 METHODOLOGICAL APPROACH: INCLUSIVITY

The cornerstone of the VNR process was multi-stakeholder engagement and a 'whole government' approach, which saw federal and provincial stakeholders working side-by-side to maximize inclusivity. Consultative sessions at the federal, provincial and federally administered areas levels included women parliamentarians, government officials, representatives of the private sector, development partners, civil society, think tanks and academia. These consultations were held in the provinces of Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan, and in the federally administered areas of Gilgit-Baltistan, Azad Jammu and Kashmir and Islamabad Capital Territory. To streamline these consultations, the scope was defined around seven thematic areas i.e. advocacy and awareness; legal and regulatory regime; institutional mechanisms; means of implementation (resources for the goals); key initiatives for the SDGs; challenges to localizing and implementing the goals; and monitoring, evaluation and reporting mechanisms.

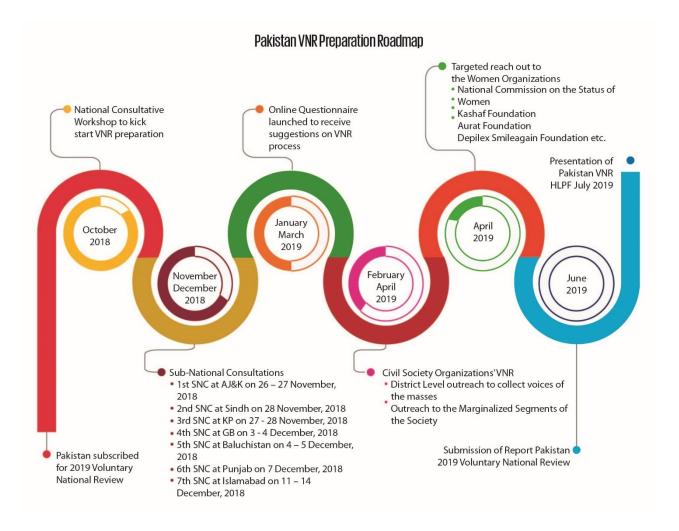
Stakeholders were divided into thematic clusters and groups, encompassing interrelated and cross-cutting SDGs. Focused discussions were held with these clusters and groups to identify local priorities and promote contextualization. In parallel, a series of consultations took place in the federal capital, federally administered areas and the provinces.

All consultations were designed to be participatory and collaborative. They included diverse stakeholders, who were encouraged to provide innovative solutions to existing challenges. The key findings of these consultations were compiled by the provinces and federally administered areas into sub-VNR reports. All of these reports were then collated at the MoPDR to articulate Pakistan's overall level of preparedness vis-à-vis the 2030 Agenda. Existing policies, plans and analyses related to public investment were also used to corroborate the alignment of the development environment in Pakistan with the country's commitment to achieving the SDGs.

In addition, a parallel consultation process was initiated in collaboration with civil society organizations. This process had the dual objective of informing the public at the grassroots level about the SDGs and the VNR, and to seek their input on improving policies and plans for achieving the SDGs. Similarly, a series of consultations was conducted with persons with disabilities to include their voice in the VNR. Pakistan's private sector conducted a number of separate consultations, whose inputs are included in this report.

A national level consultation deliberated on the draft VNR Report before it was finalized. The final report was shared with the Ministry of Foreign Affairs for submission to the UN DESA for the High-Level Political Forum (HLPF) meeting in July 2019.





#### 2.3 STAKEHOLDERS IN VNR CONSULTATIONS

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A wide array of stakeholders participated in VNR consultations at the federal, provincial and federally administered area levels. Key stakeholders from the public sector included relevant representatives from federal ministries and agencies, provincial and federally administered areas line departments, and district governments. Statistical organizations, including the Pakistan Bureau of Statistics (PBS), were important stakeholders at these consultations. Strong participation was also forthcoming from several civil society organizations (CSOs), think tanks, academia, the private sector, and international development partners. All consultations strived to include the voice of those representing marginalized groups, including women, transgender persons, children and persons with disabilities.



# 3

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## POLICY AND ENABLING ENVIRONMENT

#### 3 POLICY AND ENABLING ENVIRONMENT FOR ACHIEVING THE 2030 AGENDA

#### 3.1 OWNERSHIP, COMMITMENT AND PLANNING

Drawing on lessons learned from the MDGs, Pakistan adopted SDGs early on and followed a bottom-up approach to achieving the SDGs, adopting appropriate guidance and devising institutional arrangements right from the start. Unlike MDGs, Pakistan started with localization plans, disaggregated data and above all, a strong political will and country ownership.

#### 3.1.1 Unanimous adoption by the National Assembly

Pakistan's parliament was the first in the world to constitute SDG Taskforces, as did the National Assembly and each Provincial Assembly– all with the aim of overseeing progress. Pakistan's efforts at localizing the 2030 Agenda have been recognized nationally and internationally. In 2017, the Minister for PD&R was commended for his proactive efforts to support the institutional mechanism for achieving the SDGs in Pakistan. UNDP named him the 'Champion Minister' on the SDGs in Asia and the Pacific at a high-level regional SDG conference.

#### 3.1.2 National Advisory Committee (NAC) on the SDGs

The Minister for PD&R will chair the National Advisory Committee on the SDGs to respond to the universal and inclusive nature of this ambitious agenda. The Committee will include representatives from the federal and provincial governments and SDG Taskforces. It will also include representation from the National Assembly, the private sector and experts on women and poverty. The Committee will provide strategic leadership for achieving the SDGs, while guiding effective cross-sectoral and inter-provincial coordination. Provincial governments are also establishing Provincial Advisory Committees. Punjab has already notified its Committee to guide SDG implementation in the province, as well as to support the formulation of the provincial SDG Framework.

#### 3.1.3 2030 Agenda development perspective

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The Ministry of PD&R, with the consensus of all provinces, designed Pakistan's overarching national development framework which identifies seven pillars of reform, outlining quantifiable targets under each pillar. This provides a direction and aligns subsequent interventions towards achieving the national SDG goals. Extensive consultations with a wide array of stakeholders formed the basis of developing a national narrative and the identification of its seven priority areas or pillars – each of which is connected to the SDGs. In addition to its focus on economic prosperity, there is a firm national commitment to ensuring lasting social and environmental sustainability, with a focus on empowering those in most need and anticipating the SDGs' commitment to 'leave no one behind'.





#### **3.2 LEGISLATION FOR THE SDGS**

The National and Provincial Parliamentary Taskforces have a significant role to play in filling legislative gaps,

promulgating new legislative frameworks and amending existing laws to facilitate the SDGs' implementation. Composed of members of National and Provincial Assemblies, Taskforce members are aware of on-the-ground realities. Therefore, they are well-placed to strengthen legislation related to the SDGs with a view to mainstreaming the 2030 Agenda. These members will be equally instrumental in mainstreaming the 2030 Agenda in their constituencies. Gilgit-Baltistan's Parliamentary Taskforce includes one member from each of the districts, with 30 per cent representation of women, to keep track of the SDGs implementation. The National Assembly's Parliamentary SDG Secretariat has engaged various stakeholders to develop a structured framework and work plans around key priorities - such as health, education, climate change, human rights and child

#### Box 1: Centre of Excellence for training parliamentarians on the SDGs

The Pakistan Institute of Parliamentary Services (PIPS), an attached department of the National Assembly, was established in 2008 to strengthen understandings of, and capacities on, the SDGs among members of the Senate and Pakistan's national and provincial assemblies. As Pakistan was the first country to establish a Parliamentary MDG Taskforce Secretariat, a National Conference on the MDGs was held at PIPS in 2014. This was the precursor to action plans for shaping the social, economic and political landscape. Crucially, the event integrated the SDGs in the National Assembly's strategic framework and resulted in the creation of Parliamentary SDG Taskforces within national, provincial and administrative area assemblies – the first such move in the world.

Five PIPS Parliamentary Resource Centres, at the national and provincial levels, include SDG Secretariats to support Taskforce members in terms of research and legislation. PIPS has supported roundtables and conferences on the SDGs that bring together stakeholders from the parliament, ministries, civil society and other spheres to develop consensus on Pakistan's national narrative on the 2030 Agenda. Some 134 members of Taskforces and 500 other parliamentarians have attended these sessions. This has resulted in SDG-related legislation, backed by PIPS's technical research and advice. immunization. Its principle objective is to keep parliamentarians updated on progress made on the SDGs, especially in their constituencies. It encourages using this information to inform the design and implementation of effective legislation and oversight mechanisms.

Across Pakistan, multiple laws and regulations have been approved and promulgated to target core sustainable development issues. The greatest number of legislations approved and enacted by national and provincial assemblies concern SDG Goal 16 ('Peace, Justice and Strong Institutions'), SDG 8 ('Decent Work and Economic Growth') and SDG 4 ('Quality Education'). There will be more focus on SDG 6 ('Clean Water and Sanitation'), SDG 7 ('Affordable and Clean Energy'), SDG 12 ('Responsible Consumption and Production'), and all three goals on environmental sustainability and biodiversity – SDG 13 ('Climate Action'), SDG 14 ('Life below Sea') and SDG 15 ('Life on Land') in coming years.

#### Goals Legislation Region The Puniab Charities Act 2018 Puniab The Khyber Pakhtunkhwa Lissaail-e-Wal Mahroom Foundation (Amendment) Act, 2016 Khyber Pakhtunkhwa İ:++:İ The Balochistan Senior Citizens Act 2017 Balochistan The Sindh Animal Breeding Act, 2017 Sindh Sindh The Sindh Livestock Breeding Act, 2016 The Food Act Gilgit-Baltistan The Punjab Hepatitis Act 2018 Punjab The Sindh Safe Blood Transfusion Act 2017 Sindh The Khyber Pakhtunkhwa Mental Health Act 2017 Khyber Pakhtunkhwa The Balochistan Prohibition of Smoking in Cinema Houses (Balochistan Repeal) Act No. Balochistan 4 of 2018 The Khyber Pakhtunkhwa Free Compulsory Primary and Secondary Education Act, 2017 Khyber Pakhtunkhwa The Khyber Pakhtunkhwa Higher Education Academy of Research and Training Act, Khyber Pakhtunkhwa 2016 The National Commission on the Rights of Child Act, 2017 National The Protection of Women Against Violence Act 2016 Punjab The Sindh Protection Against Harassment of Women at Workplace Act 2018 Sindh The Domestic Violence (Protection and Prevention Act) AJ&K The National Energy Efficiency and Conservation Act, 2016 National The Marine Insurance Act, 2018 National The Punjab Prohibition of Child Labour at Brick Kilns Act 2016 Punjab The Sindh Home-Based Workers Act, 2018 Sindh 1 Sindh The Sindh Prohibition of Employment of Children Act, 2017 The Occupational Safety and Health Act, 2017 Sindh The Sindh Prohibition of Employment of Children Act, 2017 Sindh Balochistan The Balochistan Protection Against Harassment of Women at Work Place 2016 National The National Energy Efficiency and Conservation Act, 2016 Balochistan The Balochistan Mass transit Authority Act, 2017) The Khyber Pakhtunkhwa Lissaail-e-Wal Mahroom Foundation (Amendment) Act, 2016 Khyber Pakhtunkhwa The Balochistan Persons with Disabilities Act 2017 Balochistan •≘́i The Protection against Harassment of the Women at the Workplace AJ&K The Punjab Safe Cities Authority Act 2016 Punjab The Khyber Pakhtunkhwa Urban Mass Transit Act, 2016 AJ&K The Pakistan Climate Change Act, 2017 National Gilgit-Baltistan The GB Environmental Protection Act National The Plant Breeders' Rights Act, 2016 Punjab The Punjab Flood Plain Regulation Act 2016 The Sindh Animal Breeding Act, 2017 Sindh National The Prevention of Trafficking in Persons Act, 2018 The Alternative Dispute Resolution Act, 2017 National National The Prevention of Electronic Crimes Act, 2016 The Public Private Partnership Authority Act, 2017 National The Islamabad Capital Territory Local Government (Amendment) Act, 2016 ICT

#### Mapping of SDGs with Post 2015 Legislations

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#### **3.3 ALIGNING POLICIES WITH THE SDGS**

All tiers of government in Pakistan are aligning existing and new policies with the 2030 Agenda. To fast-track the SDGs, several new policies have been formulated and approved by relevant authorities. A significant proportion of these policies across the board focus on empowering women at home and at work, as well as and improving governance and accountability systems. Salient features of policy alignment include:

- i. Pakistan's 12th Five Year Plan (2018-23) is aligned with the SDGs' objectives of equity, inclusivity and sustainability.
- ii. Existing policies and plans not only target SDGs, but also focus on developing cross-sectoral synergies. Punjab's development framework, for example, has started assessing the impact of each of the province's development projects on the SDGs.
- iii. Sindh's Climate Change Policy 2018 and Early Childhood Care and Education (ECCE) Policy 2017 are aligned with the SDGs.
- Khyber Pakhtunkhwa's policy focus is on governance, justice, transparency and empowering women. As such, in line with the SDGs, the province's Sustainable Development Strategy (2018-23) emphasizes the promotion of equity, inclusivity and sustainability.
- v. Balochistan's Comprehensive Development & Growth Strategy (BCDGS) 2018-24 aims to leverage opportunities emanating from the 2030 Agenda and the China-Pakistan Economic Corridor (CPEC) initiative.
- vi. In Gilgit-Baltistan and Azad Jammu and Kashmir, the policy focus is on advocacy and raising awareness for achieving the SDGs.

#### 3.4 INTEGRATING THE THREE DIMENSIONS OF SUSTAINABLE DEVELOPMENT

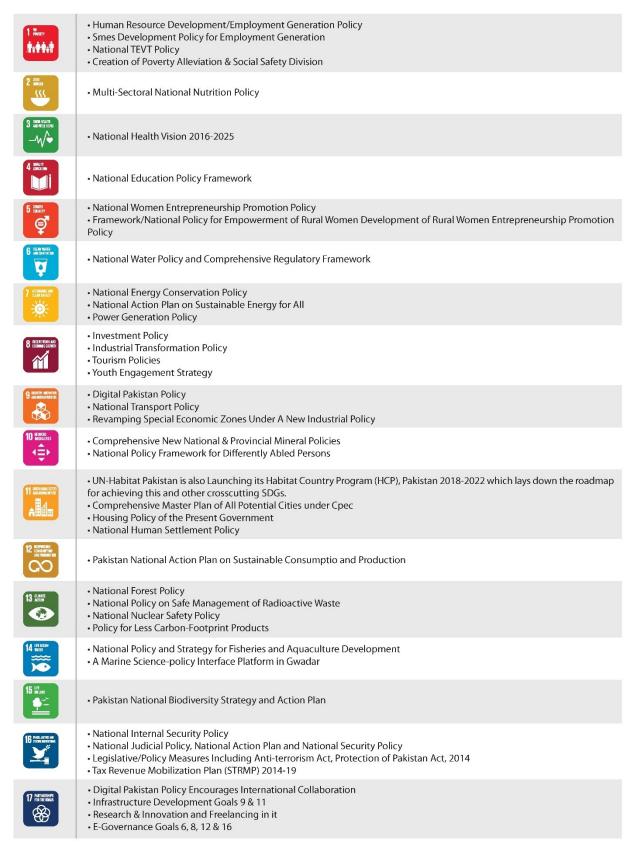
Several industrialized countries have experienced growth and development side by side, while many others where industrialization occurred more recently prioritized social indicators before moving towards higher growth. Environment issues in both types of countries were mainstreamed within the development agenda after social development and sustained economic growth had been achieved. This approach has put future generations around the globe at great risk. This is precisely why Pakistan, and a range of developing nations around the globe, are at high risk of climate change despite having relatively low carbon footprints. As such, Pakistan is working to prioritize social and environmental sustainability in its overall economic growth objectives.

Pakistan is prioritizing consistency in policies and better coordination among stakeholders. The interconnection of the SDGs' key dimensions (economic, social and environmental sustainability, coupled with improved governance) creates externalities when interact with each other. Pakistan is endeavouring to capitalize on positive externalities or 'synergies', while minimizing negative externalities or 'trade-offs'.

For instance, the two indicators of SDG target 3.9 (substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination) are SDG indicators 3.9.1 (Mortality rate attributed to household and ambient air pollution) and 3.9.2 (Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene) are monitored by two different departments in Pakistan from their respective perspective.



#### Mapping of SDGs with National Plans and Policies



Identifying trade-offs and minimizing their negative impact is the responsibility of experts, while solutions must be implemented by relevant government agencies. For this reason, it is necessary to understand the interlinkages between, and ways to synergize the outcomes of, Pakistan's policies, programmes and

projects. The MoPDR organized a training initiative on inter-linkages between different SDGs using leverage points for healthy debate and better coordination among stakeholders. This training was put in practice during the multi-stakeholder consultations for the development of Pakistan's VNR report. As such, for

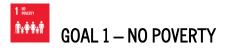
#### Box 2: Pak SDGs & Community Development Programme

In 2014, the Government of Pakistan established a 'Pak SDGs & Community Development Programme'. Its objective is to divert a sizable portion of public investments by the federal government to fulfil the basic needs of communities at the local level. The programme identifies demand-driven development needs and, through an agreed and approved mechanism, develops feasible projects in social and infrastructure sectors. These are implemented through public sector agencies. Provincial and district governments are encouraged to compete for matching federal grants and use these to meet the needs of local communities. Schemes are identified by local communities themselves, while a National Technical Committee evaluates feasible projects and allocates resources for their implementation. Preference is given to geographical pockets where people are deprived of basic civic services or basic infrastructure which would improve their living standards.

example, debates on poverty reduction included experts on employment, social protection, health, nutrition, governance, the environment and reducing inequalities.

Drawing on such experiences, Pakistan has developed a National SDG Framework that has been approved by the National Economic Council. As discussed in Chapter 2 and 7, the framework prioritizes the SDGs according to an objective criterion, encompassing seven dimensions. One of these dimensions is the multiplier effect of one target on others. The multiplier effect covers all four aforementioned dimensions of SDG targets wherever possible. Policy reviews were also undertaken, considering these four dimensions of the 2030 Agenda - such as reviews of policies on drinking water, energy for all, trade, nutrition, food security and water. These reviews strived to include all relevant SDG targets and indicators.

# PROGRESS REVIEW ON SELECTED GOALS





#### I. SDG 1 – AN OVERVIEW

In 2015-16, 24.3 per cent of Pakistan's population lived below the national poverty line<sup>4</sup>. This amounts to around 50 million people, comparable to the population of a country like Colombia, or the combined populations of Australia and Cameroon. According to Pakistan's multidimensional poverty index in 2014-15, 38.8 per cent of the population was multi-dimensionally poor<sup>5</sup>, with considerable regional variations. This indicates that an even larger proportion of the population is deprived across three critical dimensions – education, health and living standards. A significant proportion of population is faced with the risk of falling below the national poverty line if they experience sudden shocks.

#### II. PROGRESS, STATUS AND TRENDS

Over the past decade, there has been a persistent decline in poverty. Specifically, there has been a decline of 26 percentage points in terms of the national poverty line, and of over 16 percentage points in terms of the multidimensional poverty headcount. This trend is consistent with the international measure – that is, of the population living below the international poverty line (measured in terms of USD 1.9 per day in 2011), indicating persons facing 'extreme poverty'. The World Bank's PovCalNet<sup>6</sup> shows a decline of 10 percentage points in poverty in Pakistan between 2005 and 2015.

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<sup>&</sup>lt;sup>4</sup> National Poverty Report 2015-16, Planning Commission

<sup>&</sup>lt;sup>5</sup> Multi-dimensional Poverty in Pakistan 2016, Planning Commission

<sup>&</sup>lt;sup>6</sup> For more information, see: <u>http://iresearch.worldbank.org/PovcalNet/povDuplicateWB.aspx</u>

Goal 1: No Poverty				
2013/14	2015/16			
29.5%	24.3%			
Source: National Poverty Report 2015-16, Planning Commission				
2012/13	2014/15			
40.8%	38.8%			
	2013/14 29.5% 2012/13			

Sources: Multi-dimensional Poverty in Pakistan 2014-15, Planning Commission

#### III. KEY INITIATIVES

Progress on curbing poverty is attributable to Pakistan's multi-sectoral poverty reduction strategy. This encompasses targeted interventions, such as the Benazir Income Support Programme (BISP), alongside private philanthropy and improved access to microfinance for rural communities. Key initiatives include Pakistan Bait-ul Mal, the *Zakat* and *Ushr* programmes, the Employees' Old-Age Benefits Institution, the Worker's Welfare Funds and provincial Employees' Social Security Institutions. Poverty reduction has also been advanced through an improved law and order situation, greater political stability, the recovery of GDP growth, the sustained high level inflow of remittances, and the inclusive characteristics of the country's economic growth.

Since 2008, the BISP has disbursed PKR 267 billion (equivalent to USD 1.8 billion) to the poorest people in Pakistan<sup>7</sup>. This includes disbursements in the form of unconditional cash transfers to 5 million deserving families. The BISP also offers several conditional cash transfer initiatives. These include the *Waseela-e-Taleem* programme for education, through which over 2.2 million out-of-school children between 5 and 12 years of age, from some of the country's poorest families, have been enrolled in schools<sup>8</sup>. A total of 2 million such children will be enrolled over the next two years.

Other notable initiatives include enhancing public development spending to improve infrastructure and generate employment in the infrastructure sector. Further efforts include expanding access to key services, such as the endowment fund for education, scaling up nutrition and increasing the coverage of health insurance (through *Sehat Insaf* Cards and *Khidmat* Cards). This is expected to provide access to quality healthcare over 80 million people in the coming years. Moreover, *Panahgah* (Shalter Homes) is another initiative for homeless and poor segments of the society. Revamping skills development and self-employment schemes through youth business loan initiatives have proven to be effective. Successful efforts have been made to improve the generation and supply of energy ensuring that small- and medium-sized enterprises (SMEs) and businesses can produce undisrupted services and generate employment in the private sector. Similarly, increasing spending on education to empower Pakistan's youth has been vital, with the aim of making them productive citizens. Investing in early harvest projects under the framework of the China-Pakistan Economic Corridor (CPEC) is an important move to facilitate long-term socio-economic uplift. The new government has broadened the scope of CPEC by including poverty alleviation and agriculture development.



<sup>&</sup>lt;sup>7</sup> PRSP Secretariat, Ministry of Finance (www.finance.gov.pk.prsp\_report.html)

<sup>&</sup>lt;sup>8</sup> http://bisp.gov.pk/waseela-e-taleem/#1483601171650-18a0fceb-0516

The recently elected government in the country has whole heartedly embraced the responsibility of lifting millions of its people out of poverty. *Ehsaas* is one of the largest programs launched for the poor in Pakistan. To improve synergies among key initiatives and entities, while eliminating duplications and overlaps, the program provides an overarching strategy to protect the poor from any internal or external shocks. A primary component of this plan is coordinating the activities of organizations working on alleviating poverty, ensuring that they work on areas where they have a comparative advantage and encompasses multiple initiatives that are all targeted towards the betterment of the marginalized communities. Poverty Alleviation and Social Safety Division has been established with the mandate to introduce poverty reduction policies and bring the multiple poverty alleviation programs and interventions under one umbrella. It is further expected to strengthen the institutional capacity to effectively execute the *Ehsaas* program whose mandate involves 36 federal and provincial agencies and requires action on 115 policy parameters. The program focuses on reducing inequality; introducing safety nets for disadvantaged segments of the population; jobs and livelihoods; and human capital development. The program also aims to improve the nutritional status and reduce stunting in poverty-stricken communities.

#### IV. PRIORITIES AND TARGETS

In the coming years, Pakistan is committed to reducing poverty from 24.3 per cent to 19 per cent by 2023, while reducing the multidimensional poverty headcount from 38.8 per cent to 30 per cent over the same period. In addition, provincial social protection policies will be aligned with the provisions of the national framework for developing social protection policies. This will involve the planned creation of a database on the segments most in need, in order to ensure better targeting of poverty reduction measures.

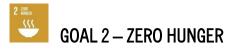
#### V. PLANNED INITIATIVES

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Corporate social responsibility (CSR) initiatives will be enhanced with a view to reducing poverty, in consultation with Pakistan's corporate and private sectors. A CSR framework will be compiled in collaboration with all relevant stakeholders to expand the outreach of CSR programmes for poverty reduction. The Benazir Income Support Programme's unconditional cash transfers will be linked with inflation to shield beneficiaries from price shocks. In addition, quarterly payments will be enhanced for the poorest, to ensure that transfers meet their needs.

The *Ehsaas* programme has developed a common metrics framework to improve the effectiveness of existing poverty programmes, through the design of robust implementation plans to build capacity, manage risks, and improve the performance of various organizations. Planned efforts of the *Ehsaas* programme include liaising with the private sector, identifying which of their practices can be replicated in the public sector, and using policy levers through which the private sector can enhance its impact. Under this programme, the Government will aim to increase expenditure on poverty alleviation to PKR 190 billion by 2020, in order to target those most in need – including widows, orphaned, and persons with disabilities.







#### I. SDG 2- AN OVERVIEW

Stunting and malnutrition are immense challenges for Pakistan, persisting despite an increase in food production (particularly in wheat, rice and milk) over the past 25 years. Rising agricultural output notwithstanding, the country's high population growth rate, inadequate distribution mechanisms and limited access to food underlie widespread malnutrition. Access constraints are prompted by high input costs and subsequent food price inflation, eroding poor people's ability to purchase sufficient nutritious foods. Poor hygiene and food intake practices further compound health and nutrition related issues.

High levels of malnutrition lead to low workforce productivity, costing Pakistan USD 7.6 billion, or 3 per cent of its Gross Domestic Product (GDP), every year<sup>9</sup>. Malnutrition not only adversely affects the country's GDP, it has serious implications for Pakistan's most important asset – its human resources. Malnutrition takes heavy toll on the population, especially on infants, children and women of reproductive age, most notably through high morbidity and mortality rates. Therefore, achieving the SDGs largely hinges upon eliminating hunger in all its forms.

#### II. PROGRESS, STATUS AND TRENDS

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Recent national surveys reveal improvements in nutrition indicators. A modest, but persistent improvement was recorded between 1990 and 2011, as the proportion of children suffering from stunting fell from 50 per cent to 43.7 per cent, and the proportion of underweight children under the age of five declined from 40.4

<sup>&</sup>lt;sup>9</sup> The Economic Consequences of Undernutrition in Pakistan: An Assessment of Losses 2017, Planning Commission

per cent to 31.5 per cent. The pace of progress is picking up as a result of targeted initiatives, as stunting fell to 37.6 per cent in 2017-18, and the prevalence of underweight children declined to 23 per cent<sup>10</sup>.

0010/10	
2012/13	2017/18
44.8%	37.6%
11%	7%
1.	

Source: Pakistan Demographic and Health Survey (PDHS), National Institute of Population Studies

#### III. KEY INITIATIVES

In 2011, the Pakistan Integrated Nutrition Strategy (PINS) was formulated to synergize interventions. In 2013, Pakistan joined the global Scaling Up Nutrition (SUN) movement, to scale up research, policy planning, monitoring mechanisms and coordinating among different stakeholders. In 2017, the Ministry of National Food Security and Research launched the country's first National Food Security Policy and began implementing multi-sectoral nutrition strategies.

With a particular focus on improving the nutritional status of women and children, the Pakistan Multi-Sectoral Nutrition Strategy 2018-25 (PMNS) and Pakistan Dietary Guidelines for Better Nutrition (PDGN) were prepared and launched. Leveraging public-private partnerships, a Food Fortification Programme is being implemented across 1,100 flour mills, and a Universal Salt Iodization (USI) Programme is operational in 110 districts.

Pakistan's provinces have also spearheaded a range of initiatives to improve nutrition. The Punjab Multi-Sectoral Nutrition Strategy (MNSC) 2015 augments the Health Integrated Reforms Programme and the Stunting Prevention Nutrition Programme. The province of Sindh is implementing an ambitious Nutrition Support Programme, backed by an Accelerated Action Plan for the Reduction of Stunting and Malnutrition. In Khyber Pakhtunkhwa, two notable initiatives include the Health Integrated Reforms Programme and the Stunting Prevention Rehabilitation Integrated Nutrition Gain (SPRING) project. Balochistan is implementing the Balochistan Nutrition Programme for Mothers & Children (BNPMC), alongside a Multi-Sectoral Nutrition-Specific and Sensitive Interventions Programme. Other key initiatives include:

- Tax exemptions on imports of food fortification equipment;
- Bio-fortified, zinc-rich variety of wheat, "Zincol 2016", to increase intakes of zinc and iron;
- Enactment of Balochistan's and Khyber Pakhtunkhwa's Protection and Promotion of Breastfeeding and Child Nutrition Acts, as well as the Punjab Infant Feeding Act;
- Initiation of a wheat flour food fortification programme with the use of iron, folic acid, zinc, Vitamin B12, and the fortification of edible oil ('ghee') with Vitamins A and D;
- Initiation of formulation of a National Policy Framework on Early Childhood Development (ECD);
- Utilizing evidence of the National Nutrition Survey 2017-18 for policy planning and programming; and
- Increased investments in nutrition-specific interventions and nutrition-sensitive approaches in the health, agriculture, social protection, and water, sanitation and hygiene (WASH) sectors to overcome malnutrition and stunting.

<sup>10</sup> Pakistan Demographic and Health Survey 2018, NIPS

#### IV. CHALLENGES AND LESSONS LEARNED

Changing centuries-old traditional cultural dietary practices is also challenging. Efforts to date suggest that expanding the coverage, and improving the quality of education offers a vital lever for effectively addressing malnutrition in the country.

#### V. PRIORITIES AND TARGETS

Achieving 'zero hunger' and addressing malnutrition are among the Government's top priorities. During his first address to the nation in 2018, the Prime Minister of Pakistan affirmed his resolve to deal with poverty, hunger and stunting. Medium-term development targets have been formulated to achieve SDG 2. The overall strategy comprises enhancing nutrition awareness, institutional strengthening, improving coordination mechanisms, and mitigating data gaps.

#### VI. PLANNED INITIATIVES

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Over the next five years, a multi-pronged strategy will be implemented to curb hunger and improve the population's nutritional status. This will focus on multi-stakeholder coordination, raising awareness of healthy eating practices, institutional strengthening and engaging the private sector. Important initiatives include:

- Country-wide Nutrition Awareness and Institutional Strengthening Programme;
- Utilization of specialized nutritious products for stunting prevention in commercial and social protection sectors, through public-private partnerships;
- Initiation of a Multi-Sectoral Stunting, Malnutrition and Food Insecurity Prevention Project;
- Establishment of a National Centre for Human Nutrition;
- Development of a National Policy Framework on Early Childhood Development (ECD);
- Strengthening Pakistan's Monitoring, Evaluation, Accountability and Learning (MEAL) mechanism; and
- Establishment of a Nutrition Information Management System.







#### I. SDG 3 – AN OVERVIEW

Health remains a top priority for Pakistan. Catering to the healthcare needs of its burgeoning population is a mammoth task. Wide-ranging political will exists to improve the population's health status, as the country recognizes that investments in health promise positive results for the economy and society at large. SDG 3 is particularly important as a large segment of Pakistan's population lives below the poverty line. Improving their health is expected to directly translate into sustainable economic growth, as performance on health is closely tied to economic performance. While a range of health-related challenges exist, Pakistan has been taking dedicated steps towards improving the health status of its growing population.

#### II. PROGRESS, STATUS AND TRENDS

Pakistan's infant mortality rate (IMR) declined from 74 deaths per 1,000 live births in 2012-13, to 62 in 2017-18. In a similar vein, its Neonatal Mortality Rate fell from 55 deaths per 1,000 live births in 2012-13, to 42 in 2017-2018<sup>11</sup>. Estimates from 2015 indicate that the maternal mortality rate is 178 deaths per 100,000 live births<sup>12</sup>. Improvements in the status of maternal and neonatal health are reflective of improved access, providers' availability and competency, and stronger infrastructure, systems and policies in place. Pakistan is striving to increase its critical workforce from 1.45 to 4.45 per 1,000 persons, in line with World Health Organization (WHO) guidelines<sup>13</sup>. With a population growth rate of 2.4 per cent, and an unmet demand for contraceptives of



<sup>&</sup>lt;sup>11</sup> National Institute of Population Studies. 2019. Pakistan Demographic and Health Survey 2017-2018.

<sup>&</sup>lt;sup>12</sup> UNICEF. 2015. United Nations Maternal Mortality Estimation Inter-agency Group (WHO, UNICEF, UNFPA, United Nations Population Division and the World Bank)

<sup>&</sup>lt;sup>13</sup> Ministry of National Health Services, Regulations and Coordination. 2018. National Human Resource for Health Vision 2018-2030.

17.3 per cent, Pakistan's contraceptive prevalence rate in 2018 remained stagnant at 34.2 per cent. The fertility rate has slightly decreased from 3.8 per cent in 2012-13, to 3.6 per cent in 2017-18<sup>14</sup>.

The Government stands firm in its commitment to ensure full eradiation of polio through intensive efforts. Pakistan has tuberculosis incidence of 267 per 100,000 population<sup>15</sup>. The HIV prevalence rate is 0.1 percent, with status of concentrated epidemic in high risk groups exceeding 5 percent<sup>16</sup>. The mortality rate attributable to household and ambient air pollution is 173.6 persons per 100,000<sup>17</sup>. Mortality from non-communicable diseases (NCDs) is 24.7 percent<sup>18</sup>, with age-standardized NCD mortality rate at 713 per 100,000 population<sup>19</sup>. Pakistan is exploring dedicated action to curb the rising burden of NCDs.

Goal 3: Good Health and Well-Being				
Indicator	2013/14	2015/16		
3.1.1 Maternal mortality ratio		276		
3.1.2 Proportion of births attended by skilled health personnel	52%	69%		
3.2.1 Under-five mortality rate	89	74		
3.2.2 Neonatal mortality rate	55	42		
3.7.1 Proportion of women of reproductive age (aged 15–49 years) who have their need for family planning satisfied with modern methods	49	47		
3.7.2 Adolescent birth rate (aged 10-14 years; aged 15-19 years) per 1,000 women in that age group		44		
3.b.1 Proportion of the target population (children age 12-23 months) covered by all vaccines included in their national programme	54%	66%		
Sources: Pakistan Demographic and Health Survey 2012-2013 and 2017-18				

#### III. KEY INITIATIVES

The National Health Vision Pakistan 2016-2025 (NHV) was launched, based on an intensive consultative exercise at the national level. The National Health Vision enables provincial health departments to contextualize their policy frameworks with a view to achieving universal health coverage. To this end, supportive provincial legislation has been introduced, including the Punjab Hepatitis Act 2018, the Sindh Occupation Safety and Health Act 2017, the Khyber Pakhtunkhwa Public Health (Surveillance and Response) Act 2017, the Khyber Pakhtunkhwa Mental Health Act 2017, and the Balochistan Juvenile Smoking Act 2018. Legislative frameworks have also sought to support training and research, such as the Pakistan Health Research Council Act 2016 and the Khyber Pakhtunkhwa Medical Teaching Institutions Reforms Act 2016. Alongside legislative initiatives, multiple actions have been taken by Pakistan's federal and provincial governments to advance health nationwide.

<sup>14</sup> Ibid.

<sup>&</sup>lt;sup>15</sup> WHO Extranet TB Data. 2017. Pakistan Country Tuberculosis Profile. Retrieved from: www.who.int/tb/data/en/

<sup>&</sup>lt;sup>16</sup> WHO EMRO. 2015. Pakistan Programmes HIV AIDS Status.

<sup>&</sup>lt;sup>17</sup> WHO Data. 2016. Pakistan estimates for Mortality rate attributed to household and ambient air pollution, age-standardized (per 100,000 population)

<sup>&</sup>lt;sup>18</sup> Our World in Data. 2016. Pakistan Country Profile

<sup>&</sup>lt;sup>19</sup> WHO Database. 2016. Total NCD Mortality Data. Retrieved from: apps.who.int/gho/data/view.main.2490

Notable successes and good practices include the marked improvement in the percentage of deliveries attended by a skilled birth attendant, rising from 52 per cent in 2012-13 to 69 per cent in 2017-18<sup>20</sup>. This is due to multiple, simultaneous initiatives by provincial Maternal and Child Health Programmes. These range from enhancing access by introducing rural ambulances and Mobile Health Units, to upgrading 1,000 Basic Health Units (BHUs) to offer 24/7 services in Punjab, Sick Newborn Care and telemedicine units, and other public-private-partnership models in Sindh. Health weeks celebrated across extensive network of public health facilities attracted millions and were valuable in early detection and timely initiation of treatments to many screened.

Immunization drive and the use of geographic information system (GIS)-enabled, real-time vaccinator mapping is another major initiative. Vaccination coverage under the Expanded Programme for Immunization (EPI) rose from 54 per cent in 2012-13 to 66 per cent in 2017-18<sup>21</sup>. This was supported by execution of immunization campaigns, through combined efforts of the government, UN agencies and other partner, for reaching millions of young children.

To address the long-standing challenge of filling vacancies in primary public health facilities in rural settings, the recent Central Induction Policy for post-graduate training awards additional points to doctors who have served for over two years in rural or remote areas. This policy has been pivotal in attracting health workers to previously non-functional government health facilities in remote locations, while encouraging the retention of human resources for health and ensuring doctors' availability in underserved districts. A health emergency programme was launched in the province of Balochistan to scale up medical equipment, supplies and the provision of medicines in health facilities.

To ensure universal health coverage and reduce out-of-pocket health expenses for people living below the poverty line, a micro-health insurance programme was introduced at the national level. To date, the *Sehat Sahulat* programme has provided healthcare to 3 million people in 44 districts. To overcome the challenges of a lack of timely, accurate data, the process of revitalizing the Civil Registration and Vital Statistics programme has been initiated at the national level, establishing much-needed data collection systems, processes and a central information repository.

#### IV. CHALLENGES AND LESSONS LEARNED

To bring healthcare services closer to Pakistan's population, a number of lessons learned have been identified for scaling up across the country. These include the availability of rural ambulance networks for pregnant women, the establishment of mobile health units, the upgrading of Basic Health Units, and the promulgation of legislation related to SDG 3. As noted above, these interventions have played a pivotal role in improving skilled birth attendance and deliveries in health facilities, directly affecting maternal and neonatal health.

Developing human resources for health (HRH) is central to achieving SDG 3, as health systems can only function when the health workforce is fully geared towards overcoming system challenges.

Compliance with international health regulations (IHR) is a critical area where Pakistan is seeking support to develop local capacities and systems that bolster the country's preparedness to prevent, detect and respond to health threats. Since 2016, the provinces of Punjab and Khyber Pakhtunkhwa have taken dedicated steps towards system strengthening. As part of Pakistan's plans to establish a Public Health Management Authority, a conceptual framework and draft public health legislation has been finalized in Punjab. Roll out has also been initiated in Khyber Pakhtunkhwa with the establishment of a Public Health

<sup>&</sup>lt;sup>20</sup> Ibid, 30.

<sup>&</sup>lt;sup>21</sup> Ibid, 30.

Surveillance Laboratory. The National Institute of Health is leading capacity building initiatives and operating a comprehensive National Reference Laboratory to spearhead disease surveillance. Pakistan is also looking to collaborate with countries that have successfully established systems and processes under the One Health approach.

#### V. PRIORITIES AND TARGETS

In order to make substantive progress on SDG 3, Pakistan's priorities include:

- substantially increasing spending on health;
- reducing the maternal mortality rate from 178 to less than 130 deaths per 100,000 live births;
- reducing the infant and neonatal mortality rates from 74 and 42 deaths per 1,000 live births to less than 40 and 30 deaths per 1,000 live births, respectively;
- reducing the fertility rate and improving modern contraceptive prevalence from 3.6 per cent to 3 percent;
- complying with international health regulations and improving preparedness;
- ensuring universal health coverage to make healthcare accessible, affordable and available to all;
- establishing a network of maternal and neonatal child health hospitals;
- improving diagnostic facilities at public sector health facilities;
- strengthening the quality and increasing the availability of the health workforce;
- addressing school health and mental health; and
- improving health data generation and utilization.

#### VI. PLANNED INITIATIVES

At present, national per capita spending on health is USD 36.2. The Government will work with provincial and partners to develop programmes and enhance health spending from the current 0.13 per cent of GDP to the internationally recommended 5 per cent through a gradual, phased approach.

To reduce maternal mortality, Pakistan will focus on increasing skilled birth attendance. This will involve enhancing access through upgraded Basic Health Units, and the establishment of maternal and child health hospitals. To enable effective family planning, pre- and post-pregnancy care, and neonatal care, the Lady Health Workers (LHW) programme will be revitalized through adequate training, support and a revised service structure. Similarly, initiatives to reduce infant and neonatal mortality will involve training for birth attendants on neonatal resuscitation and ensuring immunization for all.

To reduce the fertility rate and improve modern contraceptive prevalence, Pakistan will capitalize on economies of scale, integrating provincial Population Welfare and Health Departments to raise community awareness, and provide family planning commodities to families to promote optimal birth spacing.

With a view to complying with international health regulations (IHR) and ensuring preparedness, national and provincial public health management authorities will provide scientific advice on protecting health, quantify risks (and the effectiveness of interventions), and play a key role in public health stewardship. The formation of Provincial Technical Committees in Sindh and Balochistan will guide the mainstreaming of SDG 3.

Ensuring universal health coverage – so as to make healthcare accessible, affordable and available to all – the *Sehat Sahulat* programme will be scaled up to all of Pakistan's districts. Price regulation measures and drug quality control mechanisms will be introduced.

Improving public sector health facilities will encompass increasing the number of 24/7 Basic Health Units (BHUs) and Rural Health Clinics (RHCs) equipped with a basic package of services, staff and ambulance services. These efforts will be complemented by upgrading secondary care facilities through the provision of adequate equipment, specialist doctors and medicines. It will also involve introducing incentive



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programmes to attract more doctors, Lady Health Workers and nurses to Basic Health Units, particularly in remote or hard-to-reach areas.

A focus will be placed on improving diagnostic facilities at public sector health facilities, alongside prioritizing preventive and curative care for communicable diseases such as Hepatitis, tuberculosis and HIV.

To improve the quality, and increase the availability, of Pakistan's health workforce, training institutes for nurses and paramedical staff will be established nationwide. As part of efforts to promote school health, deworming programmes for school children and out-of-school children will be launched in collaboration with Education Departments, to be delivered through bi-annual cycles. A National Mental Health Policy will be developed, and the provinces will be encouraged to introduce initiatives to address mental health issues through improved service delivery and research.

Efforts to improve data generation and utilization will center on strengthening the Civil Registration and Vital Statistics programme, with a focused approach to collect data at the grassroots level. With WHO's support, the Islamabad Health Equity Model is being developed. This innovative model is expected to serve as a hallmark to facilitate high-risk mapping on prevalent diseases, allowing for endemic control. Similar centres of excellence will be established across the country, with learning documented and shared to inform scaling up.

Areas which require advice and support for achieving SDG 3 – in terms of finance, capacity-building, technology and partnerships – include realistic budgeting, health workforce training and management, and the use of technology. First, realistic funding needs to be ensured for the effective implementation of SDG 3's targets and related policies. There is a need for diversified financial inflows and for exploring co-sharing mechanisms. Global models for setting up a comprehensive health care financing system will be explored in order to define and develop local capacities to mobilize, pool and secure the equitable allocation of resources. In tandem, training for Pakistan's health workforce will be prioritized with adequate infrastructure, an experienced and well-trained faculty, and dedicated funding.

While there has been rapid progress on the integration of technologies in health, particularly for data monitoring, GIS-tracking and surveillance, these efforts need to be scaled up in Pakistan. Limited work has been done on artificial intelligence – such as machine learning for diagnostics, and local research and drug or technology development. Pakistan will strive to lessen reliance on international partners for drugs and supplies sourcing, in order to reduce the costs of drugs for the public and decrease out-of-pocket health expenses.







#### I. SDG 5 – AN OVERVIEW

Women make up 48.8 per cent of the Pakistan's population. There are 105 men for every 100 women in the country.<sup>22</sup> The female literacy rate of 49 per cent is relatively lower than the male literacy rate of 70 per cent. Although an estimated 60 million women are of working age, only 20 per cent participate in 'paid' labour<sup>23</sup>. Their retention in the labour market is challenged by competing family priorities, inflexible workplace policies and the structural gendered workplace barriers. These challenges not withstanding, efforts by the Government to increase women's representation in workforce, and dedicated quotas in different sectors continue. The International Monetary Fund (IMF) estimates that, by addressing the gender parity, Pakistan stands to gain USD 91.5 billion per year.<sup>24</sup> Working women continue to face wide sectoral and occupational segregation that can only be addressed by designing gender-responsive policies.

Women's participation is limited not just in labour, but also in decision-making, family planning, property and asset ownership and education-seeking. Pakistan recognizes gender equality as crucial for achieving the overall targets of all 17 SDGs, not just SDG 5, and that more women in leadership positions will play a major



<sup>&</sup>lt;sup>22</sup> Pakistan Bureau of Statistics, Government of Pakistan, 2017. National Census Report 2017, Islamabad: Government of Pakistan

<sup>&</sup>lt;sup>23</sup> Pakistan Bureau of Statistics., Labour Force Survey

<sup>&</sup>lt;sup>24</sup> International Monetary Fund, 2018. Pursuing Women's Economic Empowerment. Washington DC, International Monetary Fund.

role in closing the equity opportunity gap. By harnessing the full potential of the female workforce, for example, Pakistan will be able to spearhead economic equity.

The importance assigned to countering violence against women and girls is reflected in a range of national and provincial legislations and programmes developed in the recent years to address this problem and make SDG 5 a top priority for the country.

#### II. PROGRESS, STATUS AND TRENDS

Women's labour force participation is gradually increasing in Pakistan. There is also an increase in the number of young women, between the ages of 15-24 years of age, in higher education and entering professional categories in the workforce. As noted above, there continues to be a gender gap in education, with significant regional variations. Whereas the proportion of women working in managerial positions has marginally increased from 0.3 per cent in 2012-13, to 0.5 per cent in 2018, women are highly represented in certain sectors. For instance, women represent over 70 per cent of Pakistan's health workforce. Progressive legislations have been passed and workplace policies introduced to encourage more women to enter the labour market. With the establishment of provincial and national Commissions on the Status of Women, serious attempts to mainstream gender have been introduced by the Government. There have been dedicated efforts to ensure the adequate representation of women on forums, boards, organizations and in leadership positions. Following the adoption of the 2030 Agenda for Sustainable Development, there have been key societal wins - women today serve as pilots in the Pakistan Airforce, generals in the Armed Forces, occupy key political and bureaucratic positions, win Academy Awards (Oscars) and represent Pakistan at international sports events and conferences. Gender mainstreaming has also made it to the mainstream media, with the immense success of prime-time serials with strong educational content for changing behaviours around gender equality. With greater sensitization regarding the application of a gender lens, efforts are underway to increase women's representation in local governments from the current level of 16.1 per cent and improve girls' school enrolment.

Women's participation as voters has improved, with a 13 per cent increase in the total number of women registered voters between 2013 and 2017. Women's access to justice has also experienced improvements.

Goal 5: Gender Equality				
Indicator	2013/14	2015/16		
5.5.1 Proportion of seats held by women in (a) national parliaments and (b) local governments		18%		
5.5.2 Proportion of women in managerial positions*	2.7%	4.8%		
Sources: National Assembly of Dakistan Labour Force Survey, Dakistan Bureau of Statistics				

Sources: National Assembly of Pakistan, Labour Force Survey, Pakistan Bureau of Statistics

#### III. KEY INITIATIVES

Federal and provincial governments have taken a strong stance by introducing multiple initiatives to address gender parity. Many of these have been met by highly favourable feedback, such as the establishment a toll-free women helpline in Punjab, the Bolo Helpline and the establishment of women-only police station in Khyber Pakhtunkhwa, and the creation of training and rehabilitation centres in Sindh and across the country. National and provincial Commissions on the Status of Women have been at the forefront of efforts to promote gender equality and women's empowerment. The Maternity Benefits Act has been amended at the national and provincial levels. In addition to provincial Domestic Violence Protection and Prevention Act and

Protection against Harassment of Women at the Workplace Acts, have also been passed. Child Marriage Act establishes a minimum age for marriage to curb the practice of early or child marriages.

Following the adoption of the SDGs, the Government initiated dedicated efforts to achieve SDG 5, particularly SDG targets 5.5.1 and 5.5.2. These efforts began with the collection and reporting of gender-disaggregated data, alongside quota setting for women's employment in the public sector, and the requirement that women must have at least 33 per cent representation on the boards of statutory bodies and public sector organizations. A Gender Management Information System was launched in Punjab, while Sindh developed a Gender Reforms Action Plan (GRAP). Funds were allocated by both provinces for the establishment of day care centres at workplaces.

To address gender inequalities in policy design, programme planning, budgeting and resource allocation, trainings are organized for public sector officials on gender-responsive budgeting. These aim to ensure that policy-makers understand gender issues and nuances, while making conscious efforts to facilitate the achievement of women's rights and economic empowerment.

#### IV. CHALLENGES AND LESSONS LEARNED

Key efforts include annual reporting on gender parity, stocktaking on legislation and policy implementation for women empowerment's, and participation in policy-making. Such learning needs to be expanded and scaled up across the country. The introduction of Punjab's Gender Management Information System will be a pivotal initiative to be expanded, leading to the establishment of a comprehensive gender database. Another important lesson may be drawn from the provinces' successful establishment of dedicated funds for providing grants to organizations interested in establishing day care centers.

Gender is often considered an exclusive interest group, rather than a cross-cutting theme. Orientating decision-makers and policy-makers on gender-responsive design and planning is a key challenge facing the Government. Best practices and learning from other countries would help to institutionalize gender-responsive policy-making in Pakistan. In particular, Pakistan seeks partnerships and networking with other countries and UN agencies for shaping and strengthening programmes and initiatives that promote gender parity at all levels.

This entails designing gender-responsive budgets, using skills and tools to assess the different needs of women and men, their contributions within existing revenues, expenditures and allocations, and calls for adjusting budget policies to benefit all groups.

There is also a need to revise the methodology used for calculating gender gaps. Pakistan has raised technical concerns on the methodology adopted by the World Economic Forum's Gender Gap Report, and strongly feels that this should be addressed to reflect more valid and reliable scores on relevant indices. Technical experts in Pakistan are willing to work with the global community to developing a robust and transparent methodology in this context.

#### V. PRIORITIES AND TARGETS

Pakistan's key priorities related to SDG 5 include:

- effectively monitoring progress on the implementation of gender-responsive policy frameworks;
- creating structures to further support women in the labour market;
- establishing systems and structures to scientifically develop, implement, monitor and evaluate behavioural change communication interventions to promote gender parity at all levels;
- encouraging women entrepreneurs; and
- strengthening structures to combat violence against women.



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#### VI. PLANNED INITIATIVES

The 12th Five Year Plan (2018-2023) aims to Improve female labor force participation from 14.50% to 24.50%. Multiple initiatives are planned for empowering women and dedicated funds have been allocated for women development projects focusing on girl education and special loans for women entrepreneurs. A few legislative measures have been introduced for providing them with equal opportunity and for their workplace safety. The prime minister recently inaugurated the "one woman, one bank account plan" whereby 5.7 million women would be able to open their savings accounts.

The approval and institutionalization of the Gender Equality & Women Empowerment Policy (2019-2023) to create a conducive environment for women in society and the workplace, strive towards gender inclusivity in the labour force, support girls' education, and facilitate equitable economic opportunities for women. Structures will be created to support women in the labour market, including Women's Economic Empowerment and Social Entrepreneurship Centres under the Poverty Alleviation and Social Safety Division.

To encourage women entrepreneurs, ICT and skills development workshops will be undertaken, while interest-free micro finance loans will be provided to enable women to start their own businesses. Women entrepreneurs will also be supported through Women Business Incubation Centres. Structures will also be established to combat violence against women, most notably Shelter Homes for Women in Distress.





#### I. SDG 7 – AN OVERVIEW

Pakistan is an energy deficient country and relies heavily on fossil fuels to generate electricity. Imports account for almost 43 per cent of primary energy in the country, with large quantities of liquefied natural gas (LNG) imported to bridge the supply-demand gap. Energy prices are steadily increasing, creating significant affordability concerns. With its cross-cutting links with other global goals, SDG 7 is among the most important goals for Pakistan.

The uninterrupted supply of energy increases efficiency and economic growth. It is essential for reducing inequalities and generating employment. Pakistan requires immense investments in affordable, clean and renewable energy sources and technologies. The share of hydropower in Pakistan's total energy supply mix is approximately 30 per cent<sup>25</sup>.

#### II. PROGRESS, STATUS AND TRENDS

To accelerate progress on SDG 7, Pakistan has invested heavily in overcoming energy shortages, increasing energy generation and expanding access to electricity. Over the past ten years, access to electricity increased by 8 percentage points. The proportion of the population who rely on clean fuels and technologies risen by 11 percentage points<sup>26</sup> in the same period. An especially notable initiative was the construction and operationalization of the Quaid-e-Azam Solar Park – Pakistan's first utility scale, on-grid solar power plant of 1,000 MW. Several other solar plants have also been set up and many rural areas provided with small-scale solar panel systems to provide basic electricity for local households.



<sup>&</sup>lt;sup>25</sup> Energy Yearbook 2017

<sup>&</sup>lt;sup>26</sup> Pakistan Social and Living Standard Measurement (PSLM) 2014-15

The Jhimpir Wind Power Plant – whose total generation capacity is 50 MW – was installed in the province of Sindh's wind corridor, with the potential for producing 50,000 MW with its average wind speeds of over 7 metres per second. Thus far, Pakistan has installed wind turbines that generate up to 1396.4 MW of energy<sup>27</sup>.

Goal 7: Affordable and Clean Energy				
	2012/13	2014/15		
7.1.1 Proportion of population with access to electricity	93.22%	93.45%		
7.1.2 Proportion of population with primary reliance on clean fuels and technology	38.31%	41.34%		
7.2.1 Renewable energy share in the total final energy consumption		11.0%		
Source: Pakistan Social and Living Standards Measurement (PSLM), Pakistan Bureau of Statistics				

#### III. KEY INITIATIVES

In line with the maxim, "a megawatt saved is better than a megawatt produced", improving energy efficiency and conservation are among Pakistan's top priorities. To this end, a National Energy Efficiency and Conservation Authority (NEECA) has been established to identify energy efficiency and conservation opportunities. Initiatives on renewable energy focus on affordable energy. Efforts are underway to increase the share of renewables in Pakistan's energy supply mix to 20 per cent in 2025, and 30 per cent by 2030. The Alternative Energy Development Board (AEDB) has supported the private sector's installation of several renewable energy plants, including wind and solar power plants. The AEDB is also facilitating bagasse-based co-generation projects under the Framework for Power Co-generation (Bagasse/Biomass) 2013. Their efforts have enabled Pakistan to rise through the ranks of countries considered attractive for renewable energy investments – from 38<sup>th</sup> in 2016 to 26<sup>th</sup> in 2018.<sup>28</sup>

The national parliament took a major step towards adopting clean energy when the parliament building was turned into a sustainable, green building in 2016. The "Green Parliament of Pakistan" has the distinction of being "world's first largest solar-powered legislative building". In addition to reducing air pollution, it sets a standard for other government departments and private buildings.

#### IV. CHALLENGES AND LESSONS LEARNED

There is a need to simplify procedures, including legislative measures, to encourage private sector investments in public-private clean energy projects. Effective coordination is needed among entities responsible for promoting private investment. A lack of technical efficiency constrains Pakistan's ability to produce clean, affordable energy. This can be addressed through technology transfers, by adopting the latest efficient technologies, and by engaging with countries willing to invest in clean, renewable energy in Pakistan.

#### V. PRIORITIES AND TARGETS

Ensuring uninterrupted energy supplies through energy integration is a key priority. Pakistan is upgrading its Renewable Energy Policy to attract investment for an energy mix that is reliable, renewable and affordable. At the same time, the country is exploring ways of tapping its unconventional gas resource potential, in order

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<sup>&</sup>lt;sup>28</sup> Ernst & Young Global Limited (2018) *Renewable Energy Country Attractiveness Index 2018*. London: EY.



<sup>&</sup>lt;sup>27</sup> Alternate Energy Development Board (AEDB)

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to overcome shortage of gas. To supplement the indigenous gas supply, natural gas import projects will be actively pursued in the context of regional cooperation in the energy sector, such as the Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline project.

To mitigate high levels of fuel consumption in transport sector, electric vehicles are being introduced. Associated policy measures are also being implemented, while addressing the strengths, opportunities and limitations of such initiatives through fiscal incentives.

# VI. PLANNED INITIATIVES

Over the next five years, Pakistan aims to reduce its dependence on energy imports. It will progressively and substantially increase the share of indigenous, clean resources in the nation's energy supply mix to steer the sector towards sustainability. A newly formulated road map for a power market open to competition will also be implemented.

The Government has decided to solarize 20,000 schools in Punjab province, while focusing on remote areas. In the first phase of the "Ujala" program, 10,800 schools of South Punjab will be illuminated through installation of the solar panels.

The 'energy benchmarking' of public buildings is underway, with a view to enabling energy conservation, conversion to solar energy, and improving energy productivity and efficiency. The Sustainable Energy for All (SE4All) has been launched to achieve universal access to energy, while doubling the rate of improvement in energy efficiency and the share of renewable energy in the supply mix. A related National Action Plan 2018-30, finalized through a consultative process, will be launched in 2019. The 'Bright Balochistan' project will also be launched to provide energy to off-grid communities in the province through renewable technologies. In addition, a comprehensive programme for the conversion of Balochistan's agriculture tube wells to solar power will be rolled out.







# I. SDG 8 – AN OVERVIEW

Sustained, indigenous and inclusive growth is a high priority agenda of the present government of Pakistan. Entrepreneurship and the knowledge economy also rated high on the national agenda. Pakistan recognizes that a thriving, diverse economy – whose benefits are shared equitably by all members of society – is a necessary pathway to prosperity for all. Such prosperity, in turn, is a precursor to the well-being of the country's population and the protection of its environment. Pakistan's focus on sustainable, inclusive economic growth and decent work will be essential for addressing the challenges of a young, rapidly growing and urbanizing population, addressing underemployment and unemployment, and raising the living standard of people.

### II. PROGRESS, STATUS AND TRENDS

Pakistan has experienced steady economic growth in recent years, which reached a rate of 5.4 per cent in 2017-18. Agriculture has 19 percent share in the GDP, while manufacturing contributes 20.6 percent and services 60.4 percent in GDP. The overall average growth during the last five years was 4.8 percent. On average, the Agriculture sector grew by 2.1 percent, large scale manufacturing by 4.7 percent and Services grew by 5.5 percent. The unemployment rate is on the decline, falling to 5.8 per cent in 2017-18, compared to 6.24 per cent in 2012-13.<sup>29</sup> The proportion of informal workers in employment improved by 1.6 percentage points between 2014-15 and 2017-18. The proportion of children (aged 10-14 years) in employment also improved, from 8.6 per cent in 2014-15 to 7.5 per cent in 2017-18. The Government has affirmed renewed commitment to boosting trade, economic growth, jobs and safeguarding a decent standard of living for all. Pakistan has ratified all essential eight labour standards.

<sup>&</sup>lt;sup>29</sup> Pakistan Labour Force Survey 2017-18

Despite decline in the share of agriculture sector, this sector remains critical in achieving food security. A high population growth rate of 2.4 per cent, urbanization, nutrition needs and changing dietary preferences require a significant increase in crops, livestock and fish production, mainly by resource use intensification and productivity enhancement.

Pakistan has made substantial progress in improving business climate in recent years: Starting a business, registering property is now easy. This has been achieved by streamlining and automating administrative procedures, and resolving insolvency issues easier. Integrated portal for online registration of company, getting construction permits, improved reliability, transparency and quality in getting electricity, registering property and contract enforcement, reduced procedures and time required in paying taxes and trading across borders and protection of legal rights of creditors and debtors in getting credit are the hallmark of new simplified system.

The present government assigns high priority tourism development. This sector is dominated by private sector while public sector's role is limited as a facilitator. Foreign visitors visiting Pakistan have increased three times since 2014.

Vibrant financial sector is necessary for supporting growth. With the expansion of ICT, branchless banking has facilitated access to financial services. Improvement in financial inclusion leads to higher growth, increasing the access to start new startups, hence innovation which gives an opportunity that raises productivity and thus growth.

The China-Pakistan Economic Corridor (CPEC) agreement – a USD 59 billion<sup>30</sup> framework of regional connectivity – has created a large number of employment opportunities. Pakistan has also invested in several projects to support the CPEC initiative. CPEC infrastructure projects have begun to have a multiplier effect on overall employment creation and growth prospects. CPEC energy projects – centring on coal, solar, wind and hydropower – are helping to bridge critical energy shortages, benefitting industries and businesses.

Several Pakistani cities are now industrial hubs – including Sialkot, Gujranwala, Wazirabad, Gujrat, Hub, Faisalabad, Lahore and Karachi. Sialkot has been internationally recognized as a 'world-class manufacturing hub' for its productive business climate and entrepreneurial spirit. This small city accounts for 10–15 per cent of Pakistan's total exports, specializing in leather, sporting goods and surgical instruments. It is also the world's largest producer of hand-made footballs, accounting for 60 per cent of global production and supplying the official footballs used for the 2014 and 2018 FIFA World Cups. It is also the world's largest manufacturing hub for surgical instruments ... Sialkot's industries benefit from a clustering effect, where larger manufacturers liaise with smaller specialized industries, teaming up to complete export orders.

Goal 8: Decent Work and Economic Growth						
Indicator	2014/15	2017/18				
8.1.1 Annual growth rate of real GDP per capita $^{\!\!A}$	1.03%	2.82%				
8.3.1 Proportion of informal employment in non-agriculture employment, by sex <sup>B</sup>	Total=73.6% Male=73.7%, Female= 73.0%	Total: 72%, Male=72%, Female=71.8%				
8.5.1 Average hourly earnings of female and male employees (rupees) <sup>B</sup>	Total= Rs. 77.97 Male= Rs. 82.73 Female= Rs. 50.83	Total = Rs. 97. 67 Male = Rs. 103.86 Female = Rs. 61.89				
8.5.2 Unemployment rate, by sex <sup>B</sup>	Total=5.94 %, Male=3.78%, Female=2.15%	Total=5.79%, Male=3.92%, Female= 1.86%				

<sup>30</sup> https://cpec-centre.pk/wp-content/uploads/2018/03/Working-Paper-No-17.pdf.

Source A : Economic Survey of Pakistan, Ministry of Finance Source B: Labour Force Survey, Pakistan Bureau of Statistics

#### III. KEY INITIATIVES

To make businesses 'SDG-friendly', a Responsible Business Framework was created in consultation with relevant stakeholders. Punjab's government departments assess the impact of each public funded scheme on the SDGs, so that the province can prioritize schemes that best leverage private sector investment, solve energy constraints and develop modern infrastructure – all key areas for SDGs 8, 7 and 9. In collaboration with the Government of Pakistan, the Sialkot Chamber of Commerce & Industry (SCCI) established Sialkot International Airport, the first privately-owned public airport in the country to facilitate local exporters' access to overseas markets.

In line with international labour standards, Pakistan's provinces are introducing laws and devising labour policies to implement these standards. Occupational safety and health (OSH), hours of work, minimum wages and social protection systems are being strengthened. Federal and provincial governments are conducting the child labour surveys that will ultimately support policy-making to end all forms of child labour. One major component of the recently launched poverty alleviation programme, '*Ehsaas'*, is '*Mazdoor ka Ehsaas'* (compassion for labourers). Under this component, a Labour Expert Group is deliberating on ways to formalize Pakistan's informal workers. Punjab has launched a door-to-door campaign in select districts to identify and register domestic workers, with a view to enabling their access to social protection.

Through the Prime Minister's Youth Skills Development Programme, almost 147,000 unemployed youths were trained in different demand-oriented trades. The Prime Minister's National Internship Programme secured internships for 81,500 unemployed, educated youths in various public and private organizations. Further steps to increase productivity and promote decent work include:

- a focus on getting children who are engaged in work into school, and creating make-shift schools close the workplaces of child labourers;
- the creation of national incubation centres to promote entrepreneurship;
- public investments in infrastructure projects to create employment opportunities;
- prioritizing investments in energy projects to revive industries and generate employment;
- implementing legislation on improved work conditions and increased minimum wage;
- the revision of data collection tools to report on decent work, in line with SDG indicators; and
- a special agreement with Qatar for the creation of 100,000 jobs for Pakistanis.

#### IV. CHALLENGES AND LESSONS LEARNED

There is a need to address the 'skills mismatch' between available skills among the labour force and market demands. This can be pursued by upgrading skills development in collaboration with the private sector, with a view to introducing in-demand skills and enhancing the work force's productivity. Creating a Labour Market Information System would help to manage supply and demand issues, enabling skills development stakeholders to upgrade courses in response to market requirements. It is equally essential to address Pakistan's low female labour force participation rate by creating a conducive environment for women's employment, including through the provision of affordable transportation, day care facilities, flexible working hours, accommodation, and ensuring safe work environment. There is also a need to respond to local and international demand for specific skills and align it to the local production of skilled human resources.

Pakistan's experience points to the importance of improving labour productivity by investing in human capital, improving factories and machinery, providing on-the job training, ensuring appropriate safety measures, and ensuring job security and social security for all workers. Limited labour law enforcement may be addressed by strengthening the capacities of provincial labour departments, including through ICT

solutions. Programmes should also be designed to enhance the coverage of labour laws, so that these also apply to informal workers. More needs to be done to create a conducive business environment in which small businesses and enterprises can thrive, as well as to build on cities' potential for resource generation and employment. Access to finances for tourism sector needs to be enhanced manifold in view of the potential of the sector for employment promotion and revenue generation.

# V. PRIORITIES AND TARGETS

Pakistan's target is to achieve a 5.8 per cent rate of economic growth in the next five years. To meet SDG 8's target of sustainable growth, Pakistan needs to examine the investment climate and remove barriers to growth. Such growth requires greater investments in developing skilled human capital, demand-based skills development to enhance productivity, efforts to mitigate climate change, measures to support the 'ease of doing business', systems to document the economy, and creating secure, decent conditions for workers. The country plans to achieve these targets by upgrading technology, spearheading innovation and moving towards high value-added products that use labour intensive technologies which have already been prioritized in economic planning. Key priorities include:

- exploring possibilities for enhancing growth in service sectors to absorb trained human resources, particularly in the ICT and tourism sector;
- public investments in infrastructure projects under the CPEC initiative to boost the economy and generate employment;
- establishing IT parks to enhance Pakistan's capacity to become a hub for software and hardware;
- transforming the labour market from one characterized by low productivity and low wages, to one marked by high productivity and high wages, through skills development;
- pursuing international accreditation for Pakistani skills certifications and technical training so that foreign markets accept trained Pakistani workers; and
- strengthening the agricultural sector, as it accounts for the greatest proportion of employment in the country.
- Increase number of commercial bank accounts to 50 percent.
- Provision of fiscal incentives (i.e. tax reliefs, subsidized loan financing etc.) to attract the private investment in tourism sector.
- Development of archaeological sites and historical monuments as tourism products
- Increase in international tourist arrival through removal of avoidable restrictions at the points of entry as well as movement of tourists to resort areas.

# VI. PLANNED INITIATIVES

Notable initiatives planned for the coming years include:

- developing highly-skilled, well-trained human resources while creating more quality employment opportunities through industrialization;
- focusing on market-driven skills, particularly skills sets required for CPEC mega projects and in keeping with international market trends;
- increasing women's labour force participation by investing in skills development programmes, girls' education and creating a conducive environment for women's employment;
- expanding broadband penetration, to increase it from low rates of 26 per cent in March 2018, to enable the overall digitization;
- economy-wide digitization to promote tech-literacy to ensure that workers' benefit from the growing importance of technologies for Pakistan's economy;
- harnessing prospects for software exports and potentially new export markets;



- capitalizing on the potential of growth of the freelance sector from USD 1 billion to at least USD 5 billion;
- broadening financial institutions access to population without bank accounts., supported by timely digitization; and
- harnessing the potential of hospitality businesses and tourism.







#### I. SDG 13 – AN OVERVIEW

Pakistan is among the countries most affected by the impacts of climate change. This is manifested in recurrent, severe natural disasters – most prominently the cataclysmic Hindu Kush earthquake in 2005, devastating floods in 2010, 2011 and 2018, prolonged droughts and intense sporadic heat waves. Pakistan is experiencing high rates of deforestation, the loss of biodiversity, land degradation, soil erosion and desertification. As uncontrolled global patterns of economic production and consumption result in increased greenhouse gas emissions (GHG), prompting rising global temperatures, Pakistan is beset by the fallout of climate change. In comparison with other countries, Pakistan's contribution in global carbon emissions is low, warranting appropriate compensation.

#### II. PROGRESS, STATUS AND TRENDS

The energy sector in Pakistan is the main contributor of greenhouse gas emissions, accounting for 51 per cent of total emissions. It is followed by the agricultural and livestock sectors, which contribute 39 per cent. Together, these sectors contribute 90 per cent of Pakistan's total emissions. As a result of high population growth and urbanization, the country's natural ecosystems are being degraded, while water and air quality are deteriorating. The loss of biodiversity also points to overstretched ecosystems, posing immense challenges for environmental and socio-economic sustainability.

The average rate of deforestation between 2000 and 2005 was 2.1 per cent, due to weak governance mechanisms to halt deforestation. Forest cover has remained stagnant over the past decade, while land degradation is increasing at pace. Concerted efforts between 2013 and 2018 have resulted in progress in the country's environmental and climate governance structure, as a result of several developments:

- the implementation of the "Reducing Emission from Deforestation and Forest Degradation (REDD+) preparedness" project;
- the rehabilitation of nine irrigated plantations sites;
- the amendment of the Forest Act 1927 to allow the private sector to establish companies for accelerating afforestation.

#### III. KEY INITIATIVES

Pakistan ratified the Paris Agreement in 2016 and accepted the Doha Amendment to the Kyoto Protocol. Pakistan's Ministry of Climate Change (MoCC) revised the National Climate Change Policy of 2012 and the Framework for the Implementation of the Climate Change Policy in 2014 to align it with the international commitments. The Framework includes over 700 recommended actions, nearly 240 of which are considered priority actions, alongside 380 short-term, 108 medium-term and five long-term actions.

As a country prone to natural disasters, including flash floods, Pakistan has established disaster management authorities at the national, provincial and district levels. These work to implement, coordinate and monitor disaster management activities. They provide technical expertise to assess vulnerabilities, mitigate disaster risks, manage impacts, and promote general awareness of disaster management. The country's focus on disaster risk reduction (DRR) and disaster risk management (DRM) is a core feature of its partnership with the UN, as reflected in Outcome 6 (Resilience) of the *United Nations Sustainable Development Programme for Pakistan 2018–2022*. Pakistan revised the Biodiversity Action Plan for 2000 in 2016 and devised the National Forest Policy 2016 to protect and conserve the country's natural resource base.

In response to the challenge of deforestation, the Billion Tree Tsunami Afforestation Project in 2014 worked to restore depleted forests across 350,000 hectares of land, through tree planting (40 per cent) and natural regeneration (60 per cent). By fulfilling its goals in August 2017, many months ahead of schedule, Pakistan was the first Bonn Challenge pledge which not only reached its goal, but surpassed its commitment of 348,400 hectares. The project has set up around 13,000 private tree nurseries – safeguarding the environment, boosting local incomes, generating thousands of jobs and empowering women and youth in the province of Khyber Pakhtunkhwa.

Following the success of the 'Billion Tree Tsunami' initiative in the province of Khyber Pakhtunkhwa, the present Government launched the 'Clean and Green Pakistan' campaign. The initiative aims to make Pakistan pollution-free and counter the effects of climate change. The campaign will involve local communities' participation, engage focal persons at the provincial level, establish a fully resourced WASH Strategic and Reforms Unit, and undertake regular strategic consultations with multiple stakeholders under eco-system restoration initiative of the present government as part of UN Decade of Eco-System Restoration (2020-2030).

Following the success of the 'Billion Tree Tsunami' initiative in the province of Khyber Pakhtunkhwa, the Government launched the 'Clean and Green Pakistan' campaign. The initiative aims to make Pakistan pollution-free and counter the effects of climate change. The campaign will involve local communities' participation, engage focal persons at the provincial level, establish a fully resourced WASH Strategic and Reforms Unit, and undertake regular strategic consultations with multiple stakeholders.

Pakistan has revived the Federal Forestry Board to provide strategic direction for the implementation of the 10 Billion Tree Tsunami Programme, which aims to involve all stakeholders in the next five years. The Clean and Green Pakistan Programme is engaging stakeholders in reviving flora across the country by planting 100 million indigenous tree species.

The implementation of the Reducing Emissions from Deforestation and Forest Degradation (REED+) initiative has been converted into national monitoring system for forests. The conservation and protection of biodiversity has been a prime objective of the National Biodiversity Strategy and Action Plan (NBSAP) 2015,





which is being aligned with the strategic plan of the Convention of Biodiversity 2011-2020. Furthermore, the Ministry of Climate Change is implementing sustainable land management projects, focused on halting desertification and land degradation in arid and semi-arid parts of the country.

MoCC is working on 'Recharge Pakistan' project for better management and utilization of flood waters to restore and re-charge the groundwater. The project is being developed on the successful flood management model of China.

Pakistan has also secured funding (USD 37 million) for countering Glacier Lake Outburst Floods (GLOF-II) under the Green Climate Fund. These funds are being used to mitigate the impacts of floods in the upper Indus region, triggered by melting glaciers. Pakistan is prioritizing projects that pioneer climate smart livestock interventions, on-farm bio-energy generation, climate smart agriculture, improved resilience among farming communities and systems, the Pakistan Solar and Renewable Energy Project, waste-to-energy initiatives, and the conservation of mangrove ecosystems.

# IV. CHALLENGES AND LESSONS LEARNED

High population growth is most serious threat to Pakistan's future economic and environmental sustainability. It places additional burdens on existing resources and production processes, particularly in the agricultural sector. The proportion of the food insecure population is likely to increase in the wake of climate change, especially if anti-poverty measures do not expand access to food. Climate-related natural disasters are another major risk. As such, the Government is working to enhance the resilience of local communities to avert the adverse impacts of natural calamities. A low carbon path has financial implications worth between USD 8 and USD 17 billion per year towards 2050. Thus, Pakistan is working to increase the share of renewable energy in its energy supply mix. Upgrading technology to this end is the ultimate solution that Pakistan is working towards, with the help of partner countries and international organizations.

### V. PRIORITIES AND TARGETS

Pakistan is committed to adopt a low carbon trajectory and a pathway towards a 'green economy'. The Climate Change Policy 2017 lays out adaptation and mitigation strategies to reinforce, improve and respond to emerging challenges. By integrating all three dimensions of sustainable development into Pakistan's development paradigm, Pakistan aims to achieve the overarching goals of natural resource conservation, ecosystem and biodiversity protection, and climate change mitigation and adaptation.

Pakistan's priority is to implement policies for the sustainable management of ecosystems. These will aim to increase forest cover, combat desertification, protect biodiversity and conserve natural habitats. Specifically, the target is to increase forest cover by 1 percentage point – from 5.1 to 6.1 per cent – during the implementation of the 12<sup>th</sup> Five Year Plan. Protected areas for the conservation of wildlife, as a percentage of total land, is planned to be increased by 2 percentage points between 2017-18 and 2023. Environmental quality control measures will be introduced to monitor air and water quality, in line with the Government's recently devised strategy to ensure compliance with air and water quality standards.

The objectives of 12<sup>th</sup> Five Year Plan (2018-2023) clearly spell out the Government's future priorities:

- pursue economic growth by adequately mitigating and adapting to climate change impacts;
- integrate climate change and the environment in development planning, projects, programmes and policies including the SDGs;
- ensure sustainable forest management, biodiversity and wildlife conservation;
- control air, noise, water and soil pollution and waste management;
- launch awareness raising campaigns, enhance skills and institutional capacity of relevant stakeholders, including women.



# VI. PLANNED INITIATIVES

Pakistan plans to reduce its current greenhouse gas emissions by 20 per cent by 2030. Future mitigation strategies focus on reducing emissions in the energy and agriculture sectors. For the crop production and livestock sub-sectors, the Government will take advantage of available technologies to minimize waste and residuals. It will also introduce vehicular emission standards by phasing out old vehicles and adopting Euro 4 standards. Incentives will be provided to the manufacturing sector to produce commodities with a low carbon-foot print. Tax policies will be reviewed, exploring the possibility of introducing a 'polluter tax' to generate funds for climate-related mitigation and adaptation initiatives. Projects planned in the context of the 12<sup>th</sup> Five Year Plan will focus on the following thematic areas:

- scaling up Glacial Lake Outburst Flood risk reduction in northern Pakistan;
- transforming the country's most vulnerable agricultural zones to climate smart agriculture;
- integrated floodplains' management;
- 'greening' buildings;
- livelihood improvements for Balochistan's coastal communities;
- conservation and restoration of mangrove ecosystem; and
- rain water harvesting







# I. SDG 17 – AN OVERVIEW

Faced with the challenges of a trade imbalance, alongside a lack of foreign investment and domestic resource mobilization, Pakistan's achievement of the SDGs relies on the accelerated implementation of SDG 17 in all its dimensions. This includes domestic resource mobilization complemented by international development assistance, cooperation and the promotion of technological transfer, improved trade relations and a boost in exports. It also requires capacity building to effectively implement national plans and frameworks, the resolution of systemic issues through policy coherence and partnerships, and transparent data, monitoring and accountability systems. All of these elements will work in cohesion to enable Pakistan to achieve all 17 SDGs. The Government recognizes that improving governance will improve public service delivery and enhance the efficiency of public institutions. The country's future governance model will be based on equity and equality. According to existing arrangements and the distribution of responsibilities between Pakistan's federating units, provincial governments are responsible for many functions related to public service delivery at the grassroots level. As a result, Pakistan has prioritized multi-stakeholder partnerships across the country, with a focus on macroeconomic and fiscal stabilization through a renewed commitment to implement fundamental reforms.

# II. PROGRESS, STATUS AND TRENDS

Pakistan has made consistent progress on promoting partnerships, with the China-Pakistan Economic Corridor (CPEC) the most significant international initiative for the country. A comprehensive framework of regional connectivity, CPEC not only benefits socio-economic growth prospects in both countries is expected to generate positive spill overs in the broader region. Over the past five years, trade between the



two countries has grown rapidly, at an average of 18.8 per cent.<sup>31</sup> Bilateral investments have also increased, and China is now the largest foreign capital investor in Pakistan. Improved on-the-ground linkages of road, rail, and air transport is encouraging the free and frequent exchange of human resources, enhancing the volume of trade and business, and increasing the demand for the regional exchange of academic and cultural knowledge.

Pakistan is simultaneously pursuing to develop multi-stakeholder partnerships to create and share the knowledge, financial resources, expertise and technologies needed to achieve the SDGs. Cross-sectoral partnerships are being implemented at the federal and provincial levels, drawing together all tiers of government alongside civil society, the private sector, academia, international organizations – including UN agencies – donors and communities to localize, design and implement paths towards achieving the SDGs.

Pakistan's provinces have each launched governance reform agendas to improve service delivery, focusing on transparency and access, results-based management and resource mobilization. The Punjab Information Technology Board (PITB) uses technology to modernize governance and improve citizens' digital literacy. The Doing Business Reform Plan is also being implemented to support businesses and start-ups, with a view to improving the investment climate. Sindh's public sector reform initiative aims to mobilize revenues through an overhaul of tax policy, by improving administrative efficiency and by enhancing the performance of the public financial management and procurement system. In Khyber Pakhtunkhwa, police reforms have been the linchpin of the Government's efforts. These involve increasing quotas for women in the police to 10 per cent, forming women-only police stations and Women Complaint Cells in other selected stations. The Citizen Feedback Model (CFM) is another important reform adopted across the province, which collects users' feedback on the quality of public services accessed. In Balochistan, the Governance Support Project, implemented in partnership with academia, aims to improve the capacity of public officials in project management, monitoring and evaluation, appraisal, financial management and procurement. In addition, citizens in remote areas are being assisted to lodge complaints against corruption.

The Sindh Development Forum (SDF) is one of the most prominent examples of partnerships taking root across the country to push for sustainable, equitable change that leaves no one behind. Comprising a range of cross-sectoral stakeholders, the forum has developed a framework of cooperation in the province of Sindh for the next ten years. The framework prioritizes partnerships across nine themes in key socio-economic sectors, including education, health, and water and sanitation.

Pakistan is also promoting partnerships that focus on technological progress, supported by information and communications technology (ICT) usage. In early 2019, Pakistan's 'tele-density' stood at 77 per cent of the population. An estimated 32 per cent of population have access to the internet – an enormous increase compared to the past decade.<sup>32</sup>

Goal 17: Partnerships for the Goals					
Indicator	2013/14	2017/18			
17.1.1 Total government revenue as a proportion of GDP	14.5%	15.2%			
Source: Ministry of Finance					
	2013/14	2017/18			
17.3.1 Foreign direct investment (FDI), as a proportion of total domestic budget	3.2%	4.1%			
Source: State Bank of Pakistan Annual Report					



<sup>&</sup>lt;sup>31</sup> Ministry of Planning, Development & Reform (2017) *Long-Term Plan for China-Pakistan Economic Corridor (2017–2030).* Islamabad: CPEC Secretariat.

<sup>&</sup>lt;sup>32</sup> Pakistan Telecommunications Authority (2019).

	2013/14	2017/18
17.3.2 Volume of remittances (in United States dollars) as a proportion of total GDP	6.5%	6.9%
Source: State Bank of Pakistan		
	2016	2019
17.8.1 Proportion of individuals using the Internet (percent of population)	17.8%	33.1%
Source: Pakistan Telecommunication Authority		

### III. KEY INITIATIVES

Key partnerships to meet the needs of the 'furthest behind first', in line with the SDGs' overarching aims, include the SDG model *taluka* (a smaller administrative unit) in Islamkot, in the district of Tharparkar, Sindh. Tharparkar is one of the province's (and the country's) most deprived districts; 87 per cent of its population is multidimensional deprived. The Government identified Islamkot, one of the district's *talukas* and has worked to develop it as a model SDG *taluka* in partnership with non-government stakeholders and the private sector. A comprehensive plan to localize and implement the SDGs has been developed in the *taluka*. Areas of cooperation include education, healthcare, livelihoods and skills, infrastructure, water, gender equality and disaster management.

Pakistan is also moving towards opening up economically to the rest of the world, while leveraging trade opportunities in the region and beyond. The European Union (EU) has granted duty-free access to 96 per cent of Pakistani exports to the EU through the Generalised Scheme of Preferences (GSP+). This preferential tariff has helped Pakistani products to enter the EU market, as well as to sustain their share in it. This means that Pakistani products, such are textiles and garments which had been facing stiff competition, are finding it easier to access the EU market. Pakistan is also working to boost trade and tourism by enhancing productivity and opening its physical borders. To this end, an e-visa facility is available to 175 countries, while a visa-on-arrival facility has been extended to 50 countries in order to promote tourism nationwide.

Public-Private Partnership (PPP) Cells have been established to promote and facilitate partnerships through knowledge management and policy advice on project financing. Budgetary processes, including development funding, have been aligned for PPP financing based on an assessment of development portfolios and annual budgets.

Significant technological initiatives include the creation of the National Incubation Centre and the SDGs Tech Lab, which provide capacity support to the Federal Bureau of Revenue (FBR), Pakistan's revenue collection agency, and the Pakistan Bureau of Statistics (PBS), its data collection agency.

# IV. CHALLENGES AND LESSONS LEARNED

In order to accelerate the implementation of the SDGs, the Government is prioritizing innovative solutions on SDG 17 to serve all other goals. In addition to the lessons learned from the SDG model *Taluka* Islamkot, *PPP* Cells, trade and technological initiatives, Pakistan is also capitalizing on non-traditional partnerships with the private sector, leveraging their expertise to address development issues.

Implementing the SDGs requires ambitious financing. As such, Pakistan is working to mobilize domestic resources and private sector financing to meet these needs. Pakistan has also benefited from international development assistance, specifically Official Development Assistance (ODA), and partnerships with the UN. Nevertheless, a consistent and reliable supply of international financial aid flows will be much-needed to capitalize on Pakistan's preparedness to achieve the SDGs.





# V. PRIORITIES AND TARGETS

Governance reforms are a top priority agenda. Strengthening public institutions and the rule of law are the basis for restructuring efforts. The country's objective is to ensure that public institutions are free of political and other covert pressures. This reform process is spread across a range of issues – including performance evaluation, service delivery, the civil service, judicial systems and procedures, tax administration, procurement, financial management, policing, e-governance, property rights, and public sector enterprises. Pakistan aims to improve prioritized indicators under SDG 17. These include remittances, a major contributor to the economy. The target is that these will increase to 10 per cent of GDP<sup>33</sup> from the current 7 per cent by improving the quality of human resources and decreasing the costs of sending remittances from abroad back to Pakistan.

Another priority is improving domestic resource mobilization. Overall, the country's tax collection potential estimated at 26 per cent of GDP. The target is to reach 18 per cent by 2030. To this end, the Government's national revenue collection authority will be granted financial, managerial and operational authority. This will also allow the country to generate enough resources to finance 80 per cent of its domestic budget<sup>34</sup>, complemented by a higher national savings rate.

# VI. PLANNED INITIATIVES

Planned initiatives include a reform roadmap for the Federal Bureau of Revenue (FBR). Based on ICT platforms to create an efficient interface between tax payers and tax collectors, this initiative aims to evoke revenue acceleration through reforms, a revamped tax policy, the separation of policy and administration functions, and the digitization of processes.

The Ministry of Planning, Development & Reform is developing a Responsible Business Framework through a multi-stakeholder consultation process. A working group is simultaneously exploring innovative financing avenues, with a view to freeing up public funds where private sector investments are possible.

Pakistan has also enacted a new Digital Policy, under which avenues for international collaboration are being explored to promote research and innovation on all the SDGs. Specifically, this will involve the development of infrastructure promoted by National Incubation Centres targeting SDGs 9 ('Industry, Innovation and Infrastructure') and 11 ("Sustainable Cities and Communities"). It will also support human resources and entrepreneurship, thereby to SDGs 5 ('Gender Equality'), 8 ('Decent Work and Economic Growth'), 1 ('No Poverty') and 4 ('Quality Education'). A focus will also be placed on exporting software, manufacturing hardware locally, and enabling the delivery of public services through ICT.

Under CPEC, Pakistan will explore key areas of cooperation to accelerate growth combined with regional development, expanding trade and transport, and boosting economic interaction across Central Asia, South Asia, the Middle East, Africa and Europe. By 2030, this partnership is expected to have a robust sustainable economic growth mechanism in place, based on an integrated transport system, information network infrastructure, energy development and transmission, and special economic zones (SEZ).

The Government is taking up a planned reform agenda for strengthening the local government system, improving the implementation of public sector development programmes to ensure regional equality, improving the monitoring and evaluation system, upholding the rule of law, and enhancing corporate governance. These objectives can only be achieved by strengthening Pakistan's legal and regulatory framework, the capacity building of public functionaries, and civil service reforms.



 <sup>&</sup>lt;sup>33</sup> Ministry of Planning, Development & Reform (2018) Sustainable Development Goals (SDGs) National Framework – March 2018.
 <sup>34</sup> Ibid.

# HLPF THEMATIC ANALYSIS

# **5 HLPF THEMATIC ANALYSIS**

To measure existing disparities and the extent of uneven development, the country's Multidimensional Poverty Index (MPI) was developed in 2016. This sheds light on social, economic and geographical inequalities at the national, provincial and district levels. It also shows the impact of successive governments' policies and programmes on reducing different types of inequalities across Pakistan. Based on MPI estimates at district level, the Government is focusing on specific, targeted interventions in particular districts. Spatial analysis of the provision of education, healthcare, water supplies and access to sanitation, electricity and fuel for cooking, has supported efforts to set baselines for SDG indicators. All of these efforts assist the design and implementation of policies for more inclusive growth, the equitable distribution of resources and sustainable development for all.

Pakistan is moving towards a more pluralistic society, where the voices from the 'margins' both influence and shape public policy. Different actors are contributing to raising awareness of critical issues that limit social development and the trickle-down-impact of economic growth. Democratic institutions in Pakistan are instrumental for making decision-making processes more inclusive and participatory. The of national and provincial assemblies now include greater representation of women, minorities and underdeveloped areas. Information channels available to the public have multiplied as the country's print and electronic media enjoy greater freedom and independence, with minimal surveillance by the state apparatus. Civil society organizations (CSOs) are playing an active role in highlighting a range of issues related to the SDGs – from economic development to social injustice.

To strengthen democratic values in the governance system, grassroots participation has been ensured through local government institutions. The present Government's top priority is to make decision-making more participatory and inclusive by revamping local institutions. Therefore, the Prime Minister constituted a committee to restructure Pakistan's current local government system, under Article 140-A of the Constitution. The overarching goal of this restructuring process is to transfer power to stakeholders at the grassroots level, thereby enabling their engagement and empowerment.

Pakistan's principle resource distribution mechanism is based on the 'population share' 82 per cent while the remaining 18 per cent is allocated on the basis of poverty/backwardness (10.3 per cent), revenue collection/generation (5 per cent) and inverse population density (2.7 per cent). Allocations on the basis of poverty/backwardness have led to improvements in the provision of basic infrastructure in underdeveloped areas. The Multi-dimensional Poverty Index (MPI) – in its assessment of three core spheres of deprivation, namely education, health and living standards – improved by 10.5 percentage points between 2008-09 and 2014-15.

The Constitution of Pakistan guarantees education as a fundamental right for all citizens under Article 25-A. Accordingly, the state is responsible for providing free and compulsory education to all children between the ages of five and 16. Despite a continuous increase in budgetary allocations for the education after 2010 – when the 18<sup>th</sup> Constitutional Amendment 'devolved' responsibility for key social sectors such as education to the provinces – this increase has not had the desired results. Pakistan's Gender Parity Index (GPI) at the primary and secondary education levels remained at 0.8 in 2014-15. While access to education facilities has improved significantly in the past 20 years, net primary enrolment rates have not improved substantially. In response to the current state of education, the Supreme Court of Pakistan declared an 'education emergency'. This primarily aims to ensure a uniform education system, quality education, the enrolment of out-of-school children and skills development. To harness the potential of Pakistan's youth, the Government has taken a number of steps to empower talented, albeit less privileged, youth. Key initiatives include the Prime Minister's Youth Skills Training Programme, the Technical and Vocational Education and Training



(TVETA) Programme, the National Endowment Scholarships for Talent (NEST) and the Tuition Fee Reimbursement Programme.

The sluggish pace of economic growth over the last decade, coupled with high population growth rate of 2.4 per cent per year, contributed significantly to the slow growth of per capita income in Pakistan. Nevertheless, despite high levels of population growth, Pakistan has increased per capita income to a level that has contributed to a steadily decline in poverty since 2005-06.

Despite the challenges of addressing multi-faceted inequalities, the Government has displayed resilience by implementing policies and programmes to reduce existing gaps. Key policy initiatives undertaken to stabilize the economy include the recent IMF programme, reforms in tax collection, a reduction in subsidies, moves to rationalize utility charges and incentives for domestic investors.

Pakistan is striving to ensure a decent work environment for its labour force, particularly women and persons with disabilities. To assess the magnitude of child labour and to effectively enforce policies eradicate child labour, a national survey is underway. To encourage women's labour force participation, the Government has created guotas for jobs, particularly managerial positions, with a view to promoting gender equality. Climate change is the most pressing challenge for the sustainability of Pakistan's food, water and energy sectors the three main drivers of the economy. Pakistan is the seventh<sup>35</sup> most at risk country from the adverse impacts of climate change, despite its low carbon footprint. Climate change is also one of the major contributors to gender inequality and spatial inequalities, as women bear a disproportionate share of climateinduced vulnerabilities. Pakistan's agro-climatic zones are suffering from acute variations in temperatures, harming the livelihoods of great swathes of the population. To address these inequities, a National Climate Change Policy and implementation framework were developed. Recognizing the severity of climate change, the Prime Minister constituted the Prime Minister's Committee on Climate Change (PMCCC). The Committee has been instrumental in launching programs like '10 Billion Tree' drive aims to plant 10 Billion trees across the country over the next 5 years; the Glacial Lake outbursts floods program; and climate resilient urban settlements amongst others. The Clean and Green Pakistan Campaign was launched by the Prime Minister himself in Oct 2018 to fight pollution and global warming.

The Government has explicitly focused on empowering people in need by building knowledge systems. These include, for instance, the provision of internet facilities in remote locations and enhancing mobile phone coverage. The country's information and communications technology (ICT) policy encourages the private sector to invest in improving virtual connectivity for all the people in Pakistan. As a result, mobile phones have become a tool for the empowerment of the poor women and those living in remote areas. Overall, the Government of Pakistan's development planning, policies and programmes are increasingly focusing on inclusivity, equity and empowering people. It is further exploring innovative solutions for transforming conventional economic approaches to knowledge-based economy and ensuring sustainable economic development while exploiting the youth dividend. It is estimated that the government's new initiative like the Naya Pakistan Housing Project, the 10 billion tree drive and the implementation of National Financial Inclusion Strategy shall help generate opportunities for the 10 million youth population who are expected to enter the labor market over the next five years. The 12<sup>th</sup> Five Year Plan (2018-23) offers a balanced and equitable regional allocation ensuring unprecedent development of underperforming areas for a sustainable impact. 150,000 youth will be trained annually through the Prime Minister's Skill Development Program enhancing their employability opportunities.

<sup>&</sup>lt;sup>35</sup> https://germanwatch.org/sites/germanwatch.org/files/publication/20432.pdf

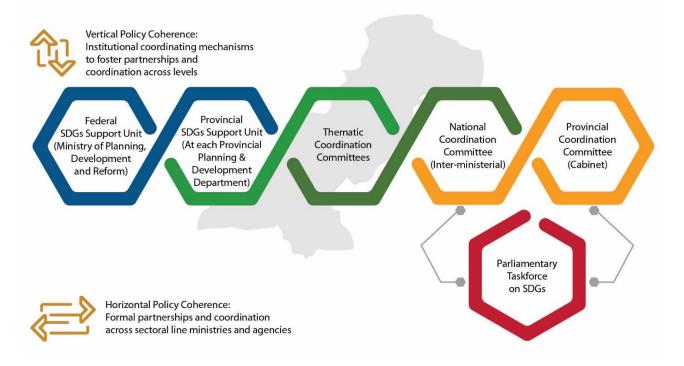
# MEANS OF IMPLEMENTATION

# **6 MEANS OF IMPLEMENTATION**

# 6.1 INSTITUTIONAL MECHANISM FOR THE SDGS

Pakistan has set-up a multi-tier institutional coordination mechanism to advance progress on the SDGs, encompassing governmental and non-governmental stakeholders. The National Initiative on the Sustainable Development Goals has been launched – a dedicated initiative for institutionalizing the 2030 Agenda with the objective of bolstering the Government's role as the central coordinating entity of major stakeholders to leverage partnerships for development. In parallel, all four provinces and three federally administered areas have created SDG Support Units within their P&DDs. These SDG Support Units are working closely with government counterparts and other stakeholders to improve coordination among all tiers of government and non-governmental actors. They provide technical support to government agencies (ministries and departments), including statistical offices, and liaise with the private sector, civil society and international organizations. A project board chaired by Secretary PD&R with representatives from the federal and provincial P&DDs and SDG units has been constituted at national level among the SDG Support units.

#### SDGs Mainstreaming - Institutional Mechanism for Coordination & Oversight



**Technical Committees, Clusters and Core Groups** have been notified in the provinces comprising experts, government representatives, the private sector and non-government stakeholders to guide the process of achieving the SDGs. These expert groups are called upon to deliberate on issues related to the SDGs, and to help the Government to develop or improve plans, policies and programmes for achieving the goals.

i. In Punjab, an Advisory Council has been constituted to oversee the prioritization and sequencing of the SDGs. It has since finalized provincial baselines and targets for the SDGs. Representatives from different sectors are part of the Council, which is supported by four Cluster Groups, formed to address social, economic, environmental, inclusivity and governance issues. These ensure horizontal and vertical policy coherence for designing Punjab's SDG Prioritization Framework, as well as the implementation of programmes and projects.

- ii. Sindh has established a Provincial Technical Committee (PTC) to guide the mainstreaming of the SDGs. In tandem, a Core Group advises on localizing the goals and formulating the province's SDG Prioritization Framework. Six additional Core Groups have been notified on different thematic areas to steer implementation efforts – specifically on health, education, agriculture, livestock & fisheries, local government and public health engineering, the environment & energy and corresponding subcommittees have also been formed.
- iii. Balochistan has notified a Provincial Technical Committee (PTC) to steer the localization of the goals and advise the SDG Support Unit. In addition, five Thematic Committees have been formed on employment generation and management, water, energy and the environment, health, agriculture and education. District Coordination Committees on the SDGs will help to align the province's Comprehensive Development and Growth Strategy 2018-2024 with the goals.
- iv. Khyber Pakhtunkhwa's Provincial Technical and Steering Committee is actively involved in mainstreaming the SDGs in the province, and oversees the localization of specific goals.
- v. The P&DD in AJ&K has established four Thematic Working Groups on the SDGs, with members from the government, academia, civil society, youth and the private sector. These working groups meet periodically to take stock of progress on the SDGs in the administrative area.

Azad Jammu and Kashmir	Sindh	Khyber Pakhtunkhwa	Gilgit-Baltistan			
Thematic Group A (SDGs 4, 5, 8, 9, 12, 16, 17)	Group A: Education, gender and peace-building (SDGs 4, 5, 10, 16)	Social Group	Thematic Group A (SDGs 8, 10, 12, 16, 17)			
Thematic Group B (SDGs 6, 8, 9, 10, 11, 12,13 14, 15, 16, 17)	Group B: Health and nutrition (SDGs 2, 3)	Economic Group	Thematic         Group         B           (SDGs 1, 2, 3, 4, 5, 6)			
Thematic Group C (SDGs 1, 2, 3, 9, 11, 16, 17)	Group C: Agriculture, livestock and fisheries (SDGs 2, 12)	Governance Group	Thematic Group C (SDGs 7, 9, 11, 13, 14, 15)			
Thematic Group D (SDGs 5, 7, 10,16, 17)	Group D: Local government, infrastructure and public health engineering (SDGs 6, 11)	Environment Group				
	Group E: Energy and the environment (SDG 7, 13, 14, 15)					
	Group F: Industries and employment (SDGs 1, 8, 9, 10, 12)					
Balochistan	Punjab	Islamabad (	Capital Territory			
Social and Economic Clusters	Social Cluster	Climate change				
Environment and Governance Clusters						
	Environment Cluster	Health and hygiene				
	Governance and inclusivity		Sustainable growth			
		Quality education				

Pakistan recognizes that transforming the 2030 Agenda into a reality on the ground depends on local champions and effective horizontal coordination at the national level. SDG focal persons have been



nominated by the MoPD&R, in collaboration with other federal ministries and specialized federal agencies for effective communication and information sharing. The group meets monthly to discuss progress, identify needs and suggest actions for the country's SDG Units. Provincial governments have followed this lead. For example, Punjab has nominated the district administrator (Deputy Commissioner) in each of its 36 districts as the focal person on the SDGs. Punjab has also constituted District SDG Committees for the implementation of the goals at the grassroots level. Balochistan and KP is engaged in a similar process. KP has set up a District Performance Management Framework, through which district authorities are evaluated using an online monitoring system. These efforts are important to prepare the lowest tier of government to align their development efforts with the 2030 Agenda.

# **6.2 LOCALIZING THE GOALS**

#### 6.2.1 Advocacy and awareness

The nature of the 2030 Agenda – universal, transformative and rights-based – directs the transition of the global goals into national, provincial and regional priorities.

#### Government

Recognizing that sensitizing public officials is necessary towards the localization of the SDGs, the MoPD&R organized Local Government Summit in the federal capital, Islamabad, in March 2017. Its objective was to initiate a dialogue among local government representatives – elected representatives and office holders – to share their insights on various aspects of the SDGs. Local government leaders, both Chairpersons and Deputy Chairpersons, from 75 districts deliberated on their understanding of the 2030 Agenda, and the challenges they foresee to its implementation in Pakistan.

The MoPD&R also organized workshops in divisional headquarters to sensitize various stakeholders on the SDG framework and the use of the Multidimensional Poverty Index (MPI) for planning, budgeting, measuring performance and improved targeting.

In addition, several awareness raising sessions for government officials and parliamentarians were periodically conducted across the country with a view to mainstreaming the SDGs. The Pakistan Institute of Parliamentary Services (PIPS) organized multiple sessions on the goals for Parliamentary Taskforces. The Government recognizes that such efforts are continuously required to maintain the momentum required to achieve the SDGs. To reach out to remote areas, additional efforts are also underway to ensure that no one is left behind.

A Strategic Foresight Workshop in Balochistan brought together a wide range of stakeholders, including senior government officials, to explore innovative, participatory strategic planning, policy formulation and solution design methods for the SDGs. A multi-stakeholder workshop in the province highlighted the need for integrating the SDGs into agriculture and natural resource management for effective public planning. A development network has also engaged leading civil society organizations (CSOs) to create synergies around mutual objectives related to the SDGs.

#### Civil society organizations (CSO)

The federally administered areas of Gilgit-Baltistan and Azad Jammu and Kashmir have made special efforts to reach out communities at the grassroots level in order to inform efforts to localize the SDGs. Several organizations in Gilgit-Baltistan, for instance, are working to strengthen local support organizations (LSOs) and community-based organizations (CBOs) by engaging citizens from multiple ethnic, linguistic and economic backgrounds to discuss the global SDG framework. These stakeholders identified education (SDG 4) as their top priority followed by health (SDG 3), infrastructure (SDG 9), poverty (SDG 1) and gender equality (SDG 5).



# Box 3: Citizens' engagement and perceptions on the SDGs

A comprehensive citizens' engagement activity was conducted in 42 districts, in collaboration with a civil society organization that works to improve the socioeconomic status of those in need. This activity gathered the perceptions of diverse segments of society, including women, youth, the elderly, persons with disabilities (PWDs) and transgender people. Such civil society stakeholder engagement sessions were conducted across all four provinces, as well as in Gilgit-Baltistan and Azad Jammu and Kashmir. The activities used a comprehensive questionnaire Pakistan's priority SDGs, developed by a nationallevel working group. It drew on inputs from organizations working with persons with disabilities, transgender people and women, as well as those working on guality education for all, social protection and gender equality, local government engagement, youth empowerment and social inclusion.

Over 1,200 diverse participants shared their insights on the SDGs, focusing on initiatives taken and challenges ahead. Of the participants, 102 were members of minority groups and 86 were persons with disabilities. On average, 35 per cent of participants believed that the Government had made significant efforts to improve education (SDG 4) in their districts, as did 24 per cent in relation to health (SDG 3). Few participants believed that interventions have been taken to foster responsible consumption and production (SDG 12), partnerships (SDG 17) and clean energy (SDG 7). Participants successfully identified factors that may impede the achievement of the SDGs, including a lack of awareness on the goals, a lack of resources, and limited access to health and education.

Such consultative sessions served two overarching purposes. First, they represent an independent review by civil society of Pakistan's preparedness to achieve the 2030 Agenda. Second, they allow the Government to receive feedback on priority SDG areas, as identified at the grassroots level. In Sindh, CSO-led initiatives on the SDGs were mapped to develop an effective forum that can continuously support the Government. CSOs and non-governmental organizations in Punjab have published policy briefs to sensitize policy-makers and citizens, raise awareness and generate crosssectoral discourse on sustainable development. Consultative sessions on SDG 16 ('Peace, Justice and Strong Institutions') were hosted by CSOs and youth organizations in Punjab, based on the MAPS approach.

In Islamabad Capital Territory, local and international NGOs often host clean-ups drives to raise awareness of the 2030 Agenda. The district government of the city has supported civil society organizations to highlight issues of urban forest, air and land pollution, watersheds and waste management, as well as their campaigns for improving health and water, sanitation and hygiene (WASH). Recognizing the important role that youth can play in disseminating the SDGs' core messages to the public at large, young people have been sensitized through seminars at academic campuses, hosted by a youth organization's SDG Volunteer Ambassadors Programme.

#### Academia

Academia in Pakistan increasingly participates in activities related to the SDGs' localization, research, advocacy and implementation. A series of awareness raising and knowledge sharing sessions have been held by various universities. Plans are underway to engage universities' human research resources on for, and the implementation of the SDGs, particularly in terms of monitoring and evaluation (M&E). Moreover, a number of academic institutions have been set up to engage university students in research on community-level related to any of the SDGs. Such institutions also reach out to schools and colleges to educate younger students on the SDGs, highlighting interlinkages, promoting behavioural change for the SDGs and encouraging volunteerism. For instance, they engage youths in activities to promote a sense of civic responsibilities on issues critical for achieving

specific SDGs – such as tree planting, controlling pollution and awareness raising. In line with the concept of 'sustainability and waste management', many campuses have restricted the use of plastic bags, while encouraging the use of paper or cloth bags instead. Some provincial Education Directorates are considering including lessons on the goals in school curricula to prepare young children for the 2030 Agenda.

#### Private sector

There is considerable room to catalyse the private sector to create mass awareness on the SDGs in Pakistan.

In Sindh, a consultative session with leading private sector entities took stock of the resources spent by the private sector on achieving the 2030 Agenda, using a Corporate Philanthropy Survey Tool.<sup>36</sup> The survey found that 82 per cent of companies are aware of the SDGs, almost all realize that they must contribute towards them, and 55 per cent have taken practical steps to align their activities with priority targets.

The research arm of Pakistan's large businesses organization, a major private sector advocacy forum, has taken steps to improve understandings of the 2030 Agenda among private sector experts. In collaboration with partners, the forum encouraged companies to identify action points and consolidate information on their work on the SDGs, including an effort to adopt the goals within their brand strategies.

A two-day 'SDG Hack-athon' was organized in 2017 by the National Incubation Centre, a public-private partnership, to address the innovation gap between the public and private sectors. It encouraged participants to create prototype solutions to address civic and social problems that contribute to achieving the SDGs. The centre is also conducting 'National SDG Boot-camps' – advocacy and training platforms for social entrepreneurs and change-makers to accelerate the impact of their activities, so as to fast-track progress on the goals.

#### **Development Partners**

Development partners, particularly UN agencies, have contributed to Pakistan's journey towards the SDGs' implementation.

#### Box 4: Current status of disability in Pakistan

The Pakistan Disability Perspective Report was an important contribution to discourse related to the SDGs. The prevalence of disability stands at 8 per cent and 'disabilities' in the plural (all categories – severe, and mild to moderate) at 12 per cent.

Several civil society organizations in Pakistan work to improve access to education for children with disabilities, including by enhancing funding for them in mainstream education, the capacity building of education professionals to promote inclusive education, and by increasing learning materials that support inclusive education programmes. Pakistan aims to refocus education policy to include disability as a cross-cutting theme, to revise budgets to include improving physical infrastructure for children with disabilities, and to establish a formal disability and educational needs assessment process at all sub-national levels.

Organizations are required to implement a 'disability quota', which stipulates that persons with disabilities should comprise at least 2 per cent of an organization's employees. Requirements also prescribe the elimination of discrimination against women with disabilities and seek to improve data on disability in labour force statistics. Government- and private sector-led programmes have increased training for persons with disabilities, in order to prepare them with the skills needed to participate in the labour market. The Government is also making it easier for differently-abled persons to join the civil service. The Federal Public Service Commission (FPSC) ensures that persons with disabilities can apply and be selected for all occupational groups. Recently, a visually impaired young man has joined the superior civil services as a civil judge posted in Lahore, Punjab.



<sup>&</sup>lt;sup>36</sup> Pakistan Centre for Philanthropy (2018) *Pakistan Philanthropy Survey 2018*. Islamabad: PCP.

They have provided significant technical support, particularly for localizing, baseline setting and integrating the SDGs in provincial plans. The Pakistan Bureau of Statistics (PBS) has also benefited from such support to upgrade the country's data collection tools.

#### **Communication Platforms**

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Pakistan believes that the use of ICT is key to gaining momentum on the 2030 Agenda. The MoPD&R and provincial P&DDs have launched dedicated websites exclusively on the SDGs. The Federal Government and the Government of Punjab are maintaining these websites. A dedicated module is included on the website of the P&DD of AJ&K. Social media platforms are also being used to disseminate information, updates on the 2030 Agenda, to seek the public's support on implementation, and gain feedback on policies and programmes. Pakistan has translated the global framework into the national language (Urdu), as well as into braille for the blind and into sign language for the deaf, to ensure that the message of the SDGs is accessible to all.

In addition AJ&K has appointed 'SDG Ambassadors' in each district. Balochistan has utilized radio and billboards to spread the message, while the national television has released district-level short documentaries in local languages. One radio programme featured Balochistan's provincial SDGs Unit to advance youth and community engagement through story-telling. The provinces of Punjab and Sindh both used radio and television, while simultaneously developing and disseminating infographics and thematic documentaries on priority goals. Pakistan's provinces are also developing a web-based 'SDG Speak' series to share insights.

#### 6.2.2 Mainstreaming and institutionalizing SDGs in public planning

Since adopting the 2030 Agenda in 2016, the Government of Pakistan has taken three important steps to mainstreaming the SDGs in public planning:

- i. **Institutionalization:** Provincial and administrative area growth strategies reflect each federating unit's respective development priorities. These are a useful guide, offering a prioritization tool to rank the SDGs. This tool has been used to review different policies, their theoretical underpinnings and empirical findings in three broad stages:
  - a. Mapping targets in five exclusive themes;
  - b. Identifying and quantifying relative criteria at the goal-level; and
  - c. Prioritizing targets through systematic numeric ranking.

A comprehensive and technical methodology was used to devise the **Pakistan's National SDG Framework**, which will guide future development strategies for the 2030 Agenda. As discussed above in the Introduction and Chapter 5, the SDG targets were prioritized using a seven-dimensional criterion – width, depth, multiplier, urgency, requirement of lower structural change, the need for lower finances, and relevance for all provinces. The framework is based on five critical pathways (CPW) that can converge to reduce regional inequalities by fostering inclusive, sustainable development:

- CPW1: Improve governance and security;
- CPW2: Increase access to quality social and municipal services;
- CPW3: Increase investment, employment and productivity in key sectors and improve economic growth;
- CPW4: Improve environmental stewardship and climate action; and
- CPW5: Reduce inequalities and improve social cohesion.

The targets in the framework were ranked as 'high', 'medium-high', 'medium-low' and 'low'. Rankings were then mapped back to each SDG. The goals were further classified into three categories, as



discussed in the introduction, each requiring continuous policy and budgetary support. Until provincial prioritization frameworks are finalized, consultation on the national framework will continue. The framework is a living document that sets the tone for the provinces to design their own frameworks, based on their unique development priorities

Provincial SDG prioritization frameworks also follow the five CPWs as their building blocks. Using the cluster approach, Punjab has formulated its prioritization framework, based on a review of provincial development policies and plans from the perspective of responsiveness, identifying provincial priorities, analysing statistical monitoring and reporting capacities, and setting baselines and targets. The Punjab Sustainable Development Strategy is also under review to align it with the 2030 Agenda. Balochistan, Sindh and Khyber Pakhtunkhwa are working on their respective SDG prioritization frameworks, which are expected to be completed in 2019.

- ii. Project preparation: PC-I is an important tool used for project planning in Pakistan. The Ministry of Planning, Development & Reform has agreed to align the PC-I template with the SDGs. To this end, a format has been suggested to a committee for their approval. Once approved, it will be possible to analyse project proposals from various ministries at the planning stage vis-à-vis their alignment with the SDGs. Moreover, the Federal SDG Section engages with various technical and economic sections in the Ministry, with a view to aligning development and economic planning with the 2030 Agenda. A similar exercise has been undertaken by the provinces when preparing their plans, for example the Balochistan Comprehensive Development Growth Strategy 2013-2020, the Punjab Sustainable Development Strategy, the Sindh Growth Strategy and the Khyber Pakhtunkhwa Sustainable Development Strategy 2018-23. Azad Jammu and Kashmir's 12<sup>th</sup> Five-Year Plan has also been linked with the SDGs.
- iii. Localization plans: The provinces of Punjab, Khyber Pakhtunkhwa and Balochistan have accelerated their localization efforts by each selecting two pilot districts with low MPI scores<sup>37</sup> and designing localized development plans for these districts. The aim is to bring these underdeveloped districts at par with more developed districts in the respective province. Goal-specific localization plans have also been rolled out for SDG 3 ('Good Health and Well-Being'), based on provincial and administrative area-level consultations.

# 6.3 MONITORING AND REPORTING MECHANISMS

#### 6.3.1 Data Ecosystem

In the summer of 2018, Pakistan launched its 'Data Reporting Gaps Analysis' study – a stepping stone for monitoring and reporting on progress towards the SDGs. The exercise outlined the country's data ecosystem vis-à-vis reporting needs and can assist in determining baselines and targets. It began with a desk review of national and provincial surveys, as well as of data collected by international agencies and government institutions. This review was followed by a series of consultations with the Pakistan Bureau of Statistics (PBS), the National Institute of Population Studies (NIPS), UN agencies, civil society, the private sector, federal ministries and line departments.

Each SDG indicator was analysed for the efforts required to report on its relevant target. Relative levels of effort were based on the global tier system, devised by the Inter-Agency Expert Group (IAEG). Overall, out of 244 indicators, discounting global indicators, Pakistan will be able to report progress on half of the SDG indicators. While discussions on some of these indicators are on-going in terms of their definition or calculation methodology, the 'remaining half' require major efforts.



<sup>&</sup>lt;sup>37</sup> The selected districts are Bhakkar and Rajanpur in Punjab, and Nushki and Killa Abdullah in Balochistan.

Ministry/Institution	Total Indictors	1 iliun 2 iliun Av##+#	3 1000-00.00 	4 mentes 5 m			8 NEUTRINAL AND IN THE SAME AND INTERNAL AND I	9 RECT: REVERSE REFERENCES			12 IIIMEE IIIIMEE IIIIMEE IIIIMEE IIIIMEE	13 255 13 255	14 HE REALER	15 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	16 Real James Automatic Relations	17 NINE AND AND AND AND AND AND AND AND AND AND
National Disaster Management Authority	4	4														
Ministry of Climate Change	50				2		2	1		7	8	6	9	11		
Ministry of Energy	5					5										
Ministry of Federal Education and Professional Training	12			10				1			1					
Ministry of Finance	31	4	1	1	1		6	2	4	0	2			2	2	5
Ministry of Housing and Works	1									1						
Ministry of Human Rights	8				3				1						3	
Ministry of Industries and Production	5							5								
Ministry of Information, Technology and Telecommunication	4				1			1								2
Ministry of Interior	11		1							3					10	
Ministry of Law and Justice	4				3											
Ministry of National Food Security and Research	14	1											1	1		
Ministry of National Health Services, Regulations & Coordination	36	2	25		4					0					3	
Ministry of Overseas Pakistanis and Human Resource Development	14				1		8		3						1	
Ministry of Parliamentary Services	1				1											
Ministry of Petroleum and Natural Resources	1					1										
Ministry of Planning, Development and Reform	20	6			1			1	2	1					2	8
Ministry of Communications	1							1								
Ministry of Science and Technology	1															1
Ministry of Water Resources	6				6											
Pakistan Tourism Development Corporation	2						1				0					
Poverty Alleviation & Social Safety Division	2	1	1													

#### SDGs Institutional Data Provision Responsibility by Indicator

These include additional financing, consultations with relevant agencies, institutional coordination and carrying out new surveys. The data ecosystem in Pakistan fares reasonably well in terms of capturing the inclusion and equity aspects of the SDGs. However, sustainability aspects require substantial improvement, specifically in terms of indicators on natural resources, biodiversity, urban life, climate change, peace and

justice. One outcome of the 'Data Reporting Gaps Analysis' study was the identification of responsible ministries and agencies for collecting data, computing indicators and reporting on progress. Multistakeholder consultations conducted for the analysis also assisted in pinpointing preferred sources of data. Pakistan's provinces and administrative areas have used this process to take stock of the data available to them, as well as reporting needs. Azad Jammu and Kashmir has identified 32 line departments that must align their activities with SDG targets and report progress at the state level. Punjab's data gap analysis reviewed existing data reporting mechanisms, including surveys and management information systems (MIS). Given the province's strong data collection and management system, Punjab will be able to monitor progress on most indicators at the provincial and district levels mainly through the Multiple Indicator Cluster Survey (MICS) that has been carried out regularly at the district level. Similarly, Sindh has identified where it will report progress on the SDGs at the provincial or district levels. Overall, the data gap study has been extremely helpful in revealing variations in data availability across the provinces – identifying variations, moreover, will help to address them.

#### 6.3.2 Data Gathering Tools

Survey instruments have been updated by federal and provincial statistical agencies to align them with new data requirements. Several specialized surveys have either been completed, or are on-going, to report progress on several indicators, such as maternal mortality, functional literacy, crime reporting and safety. Provincial statistical units, such as the Bureau of Statistics of Punjab, have revised the definitions of some of their indicators in line with the SDGs, while including indicators like the maternal mortality ratio, functional literacy, crime reporting and safety in its latest provincial MICS for the first time (past of the nationally coordinated MICS mentioned above). Punjab has also launched new surveys for reporting on SDG 3 indicators within the scope of the Punjab Health Survey, and on SDG 5 based on the Home-Based Workers Survey. The Government of Gilgit-Baltistan has made strides in transitioning from paper-based systems to electronic systems of monitoring progress. They have established a District Health Management Information System (HMIS) and a Monitoring & Surveillance System to assess the quality of drinking water from all water sources. They have also upgraded their education monitoring systems to an electronic Education Management Information System (EMIS).

Pakistan will use a range of data to report progress on the SDGs – encompassing primary data, published secondary data. Several national surveys are conducted for providing primary data, while utilizing robust research methodologies and scientific data analysis techniques. The data Is published and widely disseminated for utilization by different stakeholders. These include Agriculture Census, Business Register, Census of Agriculture Machinery, Census of Manufacturing Industries (CMI), Household Integrated Economic Survey (HIES), Labour Force Survey (LFS), Multiple Indicators Clusters Survey (MICS) (at the provincial level), National Education Census, National Nutritional Survey, Pakistan Demographic and Health Survey (PDHS), Pakistan Social and Living Standard Measurement (PSLM); and Population Census.

To collect primary data for reporting progress on the SDGs, robust coordination among national and provincial statistical organizations is in place. The PSLM will be the primary source for reporting progress. Based on lessons learned from the analysis of data reporting gaps, data collection instruments in existing surveys have been updated. As a result, Pakistan's surveys will be able to report on progress towards the maximum possible number of indicators, with minimum additional efforts or resources. Pakistan has also attempted to make primary data more representative of on-the-ground realities and broaden its scope to include under-represented segments of the society, in order to leave no one behind. For the next round of the PSLM survey, for instance 2018-19 at the provincial level and 2019-20 at the district level, a module has

been added in the questionnaire on disability status in Pakistan, in addition to calculating progress on SDG indicator 2.1.2, concerning the Food Insecurity Experience Scale (FIES).

A nationally coordinated MICS is being carried out in all of Pakistan's federated units. Led by the PBS, this is the first nationally coordinated MICS in the country, which will provide robust household-level data on 33 key indicators, including several related to the well-being of children and women.

National Nutrition Survey (NNS) have been completed, which provides important nutrition research underpinned by gender-differentiated nutritional approaches. Both this survey and the first-ever National Complementary Feeding Assessment (NCFA) have provided robust research in aid of evidence-based advocacy to end stunting. Moreover, the Government of Sindh has developed a Monitoring and Evaluation Framework for its Accelerated Action Plan (AAP) to reduce stunting and malnutrition, while developing an electronic dash board to monitor and report progress on all relevant indicators.

Pakistan's provinces are undertaking child labour surveys during 2018-19, to provide disaggregated data on child labour. The results will be crucial to take effective measures to eradicate prohibited forms of labour. The child labour survey was launched at the national level after the directive by the Prime Minister for a nationwide survey on the subject, reflecting the Government's eagerness to learn from the survey findings and use these to formulate a comprehensive strategy to end child labour in Pakistan.

#### 6.3.3 Role of the Pakistan Bureau of Statistics (PBS)

Pakistan Bureau of Statistics (PBS) is the country's focal institution for collecting data, coordinating with federal and provincial agencies on data collection, and reporting progress on the SDGs. The Bureau is responsible for the timely availability of disaggregated data. To this end, it has formed four Technical Sub-Committees to review and finalize data collection instruments and the calculation of indicators based on an internationally acceptable methodology. They are expected to deliberate on data issues related to education; health, nutrition and gender equality; water and sanitation, and poverty, labour and employment. Through a broad consultative process, these Sub-Committees have approved certain amendments in data collection tools for both institutional and survey-based instruments. Which is expected to improve the validity and reliability of data.

#### 6.3.4 Setting Baseline and Targets

The MoPD&R engaged with the provinces to establish baseline values for available SDG indicators, and set targets for each of these. These baselines and targets will feed into the SDG Monitoring and Evaluation Framework – a work in progress. Provincial governments are working with their district governments to map district-level baselines and targets for various indicators. Punjab has finalized its provincial baselines and set targets for 2030, as well as establishing key performance indicators for attaining the goals and for monitoring the progress of public sector departments. Sindh, Khyber Pakhtunkhwa, Balochistan and Azad Jammu and Kashmir have also finalized their baselines and are working towards setting targets with the support of broad, inclusive consultations.

A good example is the process adopted for the localization of SDG 6.1 and 6.2 targets. This process started in July 2016, when the Minister for Climate Change launched baselines for both targets, followed by provincial joint sector reviews. These facilitated the development of provincial WASH targets and master plans for SDG 6. Accordingly, national targets for this SDG were announced in December 2018 along with costed plan for achieving them. Designing and achieving SDG 6 targets for WASH were made part of the South Asian Conference on Sanitation (SACOSAN) declaration, hosted by Pakistan in April 2018.





#### 6.3.5 Developing the SDGs Dashboard

'SDG Pakistan Pulse', a web-based data reporting portal, is being developed for online reporting needs against the targets set at the national and province levels. This centralized dashboard will offer tools for researchers, while improving transparency and informed policy- and decision-making. The dashboard will be supported by a robust M&E framework for SDGs.

#### 6.3.6 Evaluating Progress

The Government of Pakistan recognizes that robust, high-quality evaluations are needed to effective measure progress on the SDGs. These must evaluate the efficiency, effectiveness, relevance, sustainability and impact of programmes and projects to assess whether public sector spending on development is on track for the SDGs. Therefore, federal and provincial governments, recognizing the need to build evaluation capacities, are planning to initiate training need assessment in this regard. Recent efforts have led to the development of provincial monitoring and evaluation policies, while strengthening public sector capacities for collecting and using evaluative evidence for the effective measurement of the SDGs. Instrumental impacts were recorded in Punjab and Balochistan, which drafted M&E policies as a strategic guideline on monitoring and evaluation work to facilitate the achievement of results and tracking progress on provincial SDG targets. Support on developing M&E policies also contributed to key government-led evaluations related to health (specifically, evaluations of the Mother and Child Week initiative and the Lady Health Workers Programme), water, sanitation and hygiene (the Clean Drinking Water for All initiative in Balochistan), nutrition (the Stunting Reduction Programme in Sindh) and education. The evaluation reports' key findings and recommendations contributed to improving government programmes and policies in sectors. These evaluations will be fundamental for determining the effectiveness and impact of public sector programmes on SDG targets.

Federal SDG Unit is leading the development of a comprehensive Monitoring and Evaluation framework for the SDGs to date to strengthen the collection and use of evidence and analytics for the SDGs. Work has commenced to provide a platform for effective, timely tracking and M&E, as well as developing a national M&E policy.

#### **6.4 CRITICAL CHALLENGES**

Several challenges can limit Pakistan's progress on the SDGs. A lack of efficient coordination would deter implementation, lead to the duplication of efforts and make it difficult to build synergies. Coordination challenges also limit stakeholder participation in different types of consultations. A lack of awareness of, and knowledge on, policy coherence and the interlinkages among the SDGs is a major hurdle to developing an appropriate policy mix to achieve the SDGs. Limited awareness at the grassroots level is another important challenge to implementing programmes and projects related to the SDGs.

To achieve the 2030 agenda through the implementation of Pakistan's national development priorities, the Government is committed to ensuring that institutional arrangements and policies catalyse growth and sustainable development while addressing current challenges. As outlined in the snapshot presented in the table below, resource gaps will be addressed through innovative financing modes; by building synergies and clearly defining roles and responsibilities at the federal, provincial and local levels; building robust partnerships among all stakeholders; and seeking technology transfer from developed economies. Pakistan's large population often dispersed across sizeable geographic areas, and a lack of financial resources pose important challenges to achieving nutrition-related targets.





# WAY FORWARD

# 7 WAY FORWARD

Notwithstanding economic and financial challenges, Pakistan will continue to work towards achieving the SDGs through innovative, targeted and focused implementation strategies in the social, economic and environmental spheres. The Government will maintain the current momentum through consistency in plans, policies and the institutional strengthening process. The Benazir Income Support Programme, operating during the terms of three successive governments, will continue to serve the poorest households.

Moving forward, the Government of Pakistan will stand firm in its commitment to the 2030 Agenda, and the momentum generated by putting institutional support mechanisms in place and aligning the SDGs with the country short- and long-term development priorities. In addition to a continued focus on alleviating poverty in all its forms and eliminating hunger, the Government will focus on fostering growth, achieving sustainable development and transforming Pakistan into an industrialized economy led by an innovative, healthy population, and making full use of modern knowledge and technology.

Pakistan will enhance the implementation capacity of its institutions through the transfer of technical knowledge from global experts in the fields of environmental sustainability, responsible consumption and production, and innovation. For effective reporting on the 2030 Agenda, all tiers of government are also working to reduce data variability across the country. Pakistan will partner with international experts to benefit from successful models and, through adaptation, develop local solutions.

As part of achieving this ambitious agenda, the national poverty alleviation program, *Ehsaas* (compassion) will be taken forward to expand social protection, safety nets and support human capital development. This will help to reduce inequality and lift those furthest behind first, in a coordinated and cost-effective manner. The centralized integrated disease surveillance system and newly launched universal health coverage programme, *Sehat Sahulat*, will be the cornerstones of the broad-based, inclusive health sector reform programme already underway in Pakistan. In 2019-20 alone, PKR 5.2 billion will be spent on these new initiatives in the health sector.

Pakistan, beset by the adverse impacts of global climate change, faces a huge unbidden and unearned ecological debt. While it is only 31<sup>st</sup> in terms of global carbon emitters<sup>38</sup>, it is the seventh most affected by the fallout of climate change. Pakistan should be compensated for its low carbon footprint out to meet the estimated USD 10.7 billion per year needed for climate adaption, and the USD 8-17 billion required for mitigation.<sup>39</sup>

Insufficient financing for sustainable development remains a challenge in difficult fiscal conditions and is likely to weigh heavily on the meaningful achievement of the 2030 Agenda's ambitious targets. To this end, there is a need to channelize resources through stronger partnerships with the global community. In this sense, the achievement of SDG targets in developing countries hinges upon progress on target 17.3.<sup>40</sup> A national approach anchored in partnerships, aided by technology and facilitated by finance, will catalyse and scale up implementation of the 2030 Agenda in Pakistan.

PKR 13 billion have been earmarked during the coming year to create a knowledge economy with a vibrant, innovative research base in all sectors – including information technology, agriculture, science and technology, automation, banking, industry, telecommunications, robotics, cloud computing and big data. Recognizing the urgent need for climate action, Pakistan will scale up the Billion Tree Tsunami programme at the national level, with the more ambitious – yet achievable – target of planting 10 billion trees by 2023. PKR 8 billion has been earmarked for this initiative for 2019-20.

<sup>&</sup>lt;sup>40</sup> SDG target 17.3 ('Mobilize additional financial resources for developing countries from multiple sources').



<sup>&</sup>lt;sup>38</sup> Global Carbon Atlas, for more information, see: http://www.globalcarbonatlas.org/en/CO2-emissions

<sup>&</sup>lt;sup>39</sup> United Nations Development Programme (2015) *Climate Public Expenditure and Institutional Review 2015.* Islamabad: UNDP.

Pakistan Road Map 2019-23						
Relevant SDGs	Strategy	Outcome				
	Expanding freelancing industry	Size of the industry raised from US\$ 1 billion to US\$ 5 billion by 2023				
3 Gold ALIE Advisite:Brack 	Discouraging the use of harmful substances like cigarette, fizzy sugary drinks etc.	Alternate mode of financing such as 'Sin Tax' introduced by 2023				
	Incentivizing family planning and institutionalized birth delivery	Population programs linked with conditional cash transfer under Benazir Income Support Program				
3 metric lane -// ·	Transforming data eco system in the entire health sector	One Health Survey conducted; CRVS for standardization and quality in the health system introduced				
1 Harr And And 9 secondaria 10 Secondaria 10 Secondaria 11 Se	Providing affordable and sustainable housing to the poor	5 Million houses for the poor and needy constructed by 2023				
	Achieving universal energy access and doubling the rate of in energy efficiency and share of renewable energy in the generation mix.	National Action Plan for Sustainable Energy for All (SE4All) launched by 2023				
4 CRAWY CONTRACTOR 8 CENTRACTOR 8 CENTRACTOR 10 CRAWT CONTRACTOR 10 CRAWT CONTRACTOR CONTRACTO	Ensuring access to inclusive, affordable and quality education for all	Government expenditures on education raised by 4.4% of GDP by 2023				
C 2 2000 WINKING C 2000 MARKING ADD Statistics C 2000 ADD Statistics C 20	Increasing water use efficiency	At least 30% water use efficiency improved by producing 'more crop per drop'				
	Improving resilience by mitigating disaster risks and constructing resilient and sustainable infrastructure	Flood protection plan costing Rs. 177.6 Billion launched				
	Promoting women entrepreneurship for improving labor productivity and gainful employment	200 Social ventures for women entrepreneurs established				
8 distance convertige to the state of the st	Encouraging partnership with private sector for more vibrant and independent media	By the year 2023 Rs. 57 Billion invested by private sector in the electronic media; estimated 100,000 jobs created				

# Integrating SDGs Into Planning Framework Pakistan Road Map 2019-23

Relevant SDGs	Strategy	Outcome
12 scores entrace 13 score 15 star 15  Upscaling of Green Pakistan Programme	Rs. 8 Billion spent on plantation as part of Ten Billion Tree Tsunami Programme during 2019-20	
	Ensuring Universal Health Coverage through health insurance	Rs. 3 Billion spent on Sehat Insaaf Card under the Prime Minister's National Health Programme during 2019-20
3 COMPARTING A CONTACT OF A CON	Creating Knowledge Economy	Rs. 12.60 Billion spent on multiple initiatives under the Information Technology & Telecom; Science and Technological Research and Federal Education and Professional Training Divisions
	Reducing inequality, investing in people, and lifting the lagging behind under "Ehsaas"	Additional Rs. 120 Billion added to social protection spending during (2019-21); social protection spending to be 1% of the GDP with federal and provincial contribution. During 2019-20, Rs. 200 Million spent under poverty alleviation & social safety division development initiatives, i.e. centers for social entrepreneurship and rural economy and Tahafuz pilot project.
	Ensuring Under 5 Immunization Coverage for all	Rs. 2.2 Billion spent under the Expanded Programme on Immunization (EPI) during 2019-20
4 BAUTT DI ATABANA 10 MENANIA C	Providing quality and inclusive education to the students of poor areas	Rs. 100 Million spent on education of students of Baluchistan and Merged Areas of Khyber Pakhtunkhwa in Cadet Colleges, Polytechnic, Vocational and other Institutions
9 Sevent and the sevent of the	Building research and innovation capacity in the emerging areas of the Fourth Industrial Revolution (4IR)	Rs. 600 Million spent on establishment of National Centers of Excellence in big data, cloud computing, cyber security, robotics and automation during 2019-20
9 state metric Sector 10 fitted in 10 fitted in 17 fitter data Sector 17 fitter data Sector 17 fitter data	Expanding broadband penetration for wholesome digitization of the economy.	Rs. 435 Million spent on expansion of broadband services through MSAN Technology and Up-gradation of IT Core & Access Network in AJ&K and GB during 2019-20

# Integrating SDGs Into Planning Framework Pakistan Annual Plan 2019-20

# CONCLUSION

# **8 CONCLUSION**

Reflecting political commitment and ownership of the 2030 Agenda, Pakistan integrated the SDGs into its national development agenda in February 2016. Pakistan was first such country to do so. This reorientation in its approach was guided, inter alia, by lessons learned from the MDGs. A National SDGs Framework was launched in 2018, envisaging a national vision, plan and strategy to optimize, prioritize and localize the full potential of the 2030 Agenda in Pakistan. Taskforces and Support units in the national and provincial parliaments will facilitate legislative support for the goals' implementation and improve coordination.

Commitment to poverty alleviation remains a key focus in Pakistan. Through key interventions and programmes, progress has been made despite persistent challenges. Over the last ten years, the poverty headcount has fallen in all dimensional significantly. The national poverty alleviation programme, *Ehsaas* (compassion) aims to expand social protection, safety nets and support human capital development throughout the country. This programme complements and expands the on-going social protection programmes. The size of assistance for the lowest strata has been enhanced.

Only moderate reductions in stunting and malnutrition entails a greater focus on these issues, underpinned by the increased allocation of resources. Improved prevalence of skilled birth attendance, leading to the reduced neonatal mortality rate points to need for scaling up interventions. The Lady Health Workers Programme, with its grassroots presence, has been instrumental in achieving these improvements. Universal health coverage under the *Sehat Sahulat* Programme to provide health insurance coverage for those in need. Health sector reforms are underway, entailing a centralized integrated disease surveillance system and a strong inter-provincial information sharing mechanism.

Although Pakistan's carbon footprint is low, the adverse impacts of climate change on the country are enormous and imminent. Climate adaptation has become a forced reality for Pakistan. The country has commenced actions to protect the environment and contribute to efforts to minimize the effects of climate change. Both adaptation and mitigation are reflected in the country's policy and implementation approach. Pakistan's Billion Tree planting drive across 350,000 hectares was the first Bonn Challenge pledge to hit and surpass its commitment, using national resources. This project has now been up-scaled to 10 Billion Tree Tsunami – a five-year, country-wide tree planting drive to restore depleted forests and mitigate climate change. Moreover, programmes such as Clean and Green Pakistan and Recharge Pakistan have been launched. These 'nature-based solutions for ecosystem restoration' are leading examples of climate action among developing countries, with the added benefits of safeguarding biodiversity and generating livelihood opportunities.

Periodic monitoring and evaluation of various strands of the SDG framework remains an important priority. Since 2018, baselines and targets for all SDG indicators have been determined in Pakistan. National data collection tools have been modified to improve data availability with a focus on the inclusivity, equity and sustainability aspects of the SDGs. Transparency will be a major hallmark of Pakistan's monitoring and evaluation architecture through the development of a National Monitoring and Evaluation framework and the SDGs Dashboard.

The 2030 Agenda has somewhat altered development discourse in Pakistan. Specifically, it has added a new dimension – the understanding that the Government alone cannot achieve development objectives, and that every stakeholder has to be encouraged to participate. To optimize the benefits of available resources, Pakistan has to, and is, exploring avenues for cross-sectoral cooperation and developing partnerships. This will be the hallmark of Pakistan's implementation plan for achieving the SDGs.

A country of 208 million people with rich cultural, ethnic and linguistic diversity, and facing complex development challenges, Pakistan has to learn and innovate, evolving and adapting successful models from across the globe. A key aspect of the country's implementation strategy is strengthening existing alliances



and forging new ones, while leveraging technology and mobilizing finance. Partnerships and close collaboration with a broad array of governmental, private sector, civil society, media stakeholders and international development partners, supplemented by regional and international support, will continue to be a major feature.

New and well-thought-out ways for financing need to be explored – including diaspora funds, impact investments, venture funds for innovative solutions, financial tagging and Green' *Sukuk*? In tandem, Pakistan is aligning its budgetary process, including its development funding, with the SDGs. Efficient, result-oriented investments can be maximized by picking out leverage points which connect with most SDG targets and have a higher multiplier impact.





SDG Section Ministry of Planning, Development and Reforms Government of Pakistan 1



# **HIGHER EDUCATION COMMISSION**

# RESEARCH PRIORITIZATION RECOMMENDATIONS BIOLOGICAL AND HEALTH SCIENCES

April, 2021

# Prioritizing Research relevant to Health and Health-related Sustainable Development Goals under the auspices of Higher Education Commission

### Background

Pakistan has had a chequered history in health research. The principal body entrusted with the charge of research oversight in relation to health and health related projects at national level and within the public sector was the Pakistan Medical Research Centre (PMRC) which was established in 1962. The PMRC functioned as the premier research oversight body with several provincial branches until its conversion to the Pakistan Health Research Council (PHRC) several years post-devolution in 2016. For an extended period of time between 2011 and 2013, the PMRC was housed in different federal departments including at one stage the Cabinet Division. In addition to PHRC, which has had very limited funding for research (mostly from extramural and international sources), other science funding bodies in Pakistan include the Pakistan Science Foundation (PSF), Pakistan Council for Scientific and Industrial Research (PCSIR) as well as the Ministry of Science & Technology, although the latter usually funds targeted projects as opposed to provision of competitive grants. Ever since the reforms in higher education between 1999 and 2001 and the creation of the Higher Education Commission (HEC) in 2002, it has played a significant role in funding research in Universities of Pakistan.

### **Recent HEC programs and focus areas**

These research funding opportunities have ranged from an initial phase with wide ranging topics and unspecified research and research capacity enhancement to a process in recent years which has taken the form of specific calls for competitive research proposals under streams such as:

- Grand Challenge Fund (GCF)
- Local Challenge Fund (LCF)
- Technology Transfer Support Fund (TTSF)
- Innovative & Collaborative Research Grant (ICRG)
- National Research Programme for Universities (NRPU)
- Technology Development Fund (TDF)
- Problem Based Applied Interdisciplinary Research Programme (PBAIRP)
- RAPID Research & Innovation Initiative (RRII)

Additionally, the HEC offers several travel and mobility grants and support for research infrastructure. While there has been no formal evaluation of the investments made to date in research support for the burgeoning public and private sector Universities in Pakistan, there is a strong perception that several aspects of the current research support strategies at the HEC can be improved. These range from the current peer review and selection processes as well as the targeting and prioritisation of research. Although there is guidance provided for research

prioritization, relatively few projects are directly related to specific and plausible national priorities. To illustrate, the recent Grand Challenge Fund projects sought wide-ranging proposals in the following areas with relatively few high-quality proposals after almost a year of deliberations.

- Food Security
- Water Management and Sustainability
- Sustainable Energy
- Development Economics
- Urban Planning
- Climate Change and Environment
- Information Technology & telecommunications
- Innovative Governance & Reform
- Sociology & Philosophy

The Chair of the Biological and Health Sciences panel has overseen the health sciences and allied panel in terms of its grants making and adjudication process from 2019 - 2020 and concurs with the quality issues highlighted above. More importantly, there is concern that our Universities and researchers lack the agility and capacity to respond to national priorities and emergencies, as was evident during the unprecedented COVID-19 crisis. Relatively few high-quality proposals were received and as a result ever fewer could tangibly contribute to the national emergency COVID-19 response. In looking at research groups with the requisite strengths in rapid diagnostics, biotechnology platforms, epidemiological and immunological research all elements that have been at the forefront of research enterprise in Western Universities, local research groups were often disorganized and unrealistic in their proposals.

The Biological & Health Sciences Panel at the HEC undertook a systematic research prioritisation process between December 2020 and February 2021 culminating in a virtual workshop on Feb 8, 2021 (Appendix 1 agenda and list of participants). The process was undertaken with the following sequence of activities

1. Given that multiple areas of research and scholarship were possible, a priority list was developed serve as a place holder for further discussion. We selected topics and areas that could easily lend themselves to a multi-sectoral and multi-disciplinary research agenda. While many of these areas clearly fitted under the broad umbrella of health and health related Sustainable Development Goals and its relevant implementation strategies (Table 1), some overlapped with other panels such as Agriculture and Food Security. These areas were prioritised for research support with the intent of launching competitive grants and promotion of collaboration with the global network of Pakistan origin scientists and researchers in academic centers, as feasible. It was however anticipated that the bulk of the work would need to be conducted in Pakistan with requisite technology transfer as needed.

- 2. We initially proposed that the following areas be prioritized for further development of granular research questions
  - a. Public Health Surveillance and Epidemiology
  - b. Immunology, Diagnostics & Vaccine Technology
  - c. Non-communicable diseases, Population Health & Genomics
  - d. Food security, nutrition and human capital
  - e. Climate change, environmental stress and health
  - f. Bio-informatics & Big-data Analytics
- 3. An initial set of questions were developed and shortlisted by the panel through a series of consultations between December 2020 and January 2021. This process was guided by many of considerations for prioritisation for national development using a standardized set of 20 criteria (Table 2), developed and time tested to yield national or global priorities. The panel used a Delphi process to arrive at a set of research questions for wider consideration by stakeholders and prioritisation using an additional set of consideration in the workshop on Feb 8, 2021. These included alignment with funding opportunities within the HEC and linkage to the national development agenda.
- 4. We reached out to all research active Health Sciences and other Universities in Pakistan seeking internal discussion and consideration of these preliminary questions and nominations for participation in the workshop. Based on nominations received and participants, we undertook the research prioritisation process in four out of six prespecified areas (a-d above) with the intent of finalizing items related to other areas (e and f) through a direct engagement with concerned faculties.
- 5. A list of priorities and ranking of specific questions was undertaken during the workshop within working groups and discussed in plenary. These are summarized in Tables 3-6 below with respective rankings

Domains	Initial Achievements	Gaps and Challenges	Opportunities
Political	- High level political	- Need for sustained	- Coherent
Commitment	commitment in all	political commitment	development
	countries	- Perception as	priorities for
	- National	outsider's agenda rather	accelerated
	development agendas	than national priority	implementation of
	being aligned with SDGs	- SDG actions not	SDGs
	- Priority goals	backed by governance and	- Revisit
	identified and publically	institutional reforms	national
	proclaimed	- Lack of supportive	development
	- Development of SDG	legal and regulatory	priorities and
	roadmap, frameworks	environment	choices to better
	and strategies		align with SDGs
Financial	- SDGs aligned with	- Limited government	- Develop
Commitment	pre-existing plans	funding and fiscal space with	shared SDG agenda
	ensuring funding	low allocation to health	and align resources
	- Development	- High donor	of all partners to
	partners and donors	dependence in some LMICs	ensure efficient
	providing support in	- Strictly sectoral budgets,	utilization
	several LMICs	limited budgeting capacities	- UHC is a
	- Strategies to	- Increasing healthcare costs	SDG3 target and
	increase domestic	due to rise in NCDs	useful platform for
	financing on health e.g.		collaboration across
	ear-marked taxes on		actors
	tobacco, alcohol, fast		
	food		
Institutional Set	- High level	- Unclear institutional	- Empower
up	oversight bodies and	roles, responsibility and	and capacitate local
•	institutional	accountability	governments for
	arrangements identified	- Limited	SDG implementation
	in most countries	understanding of working	- Scope for
	- Increasing focus	across sectors despite	inter-sectoral
	on multisectoral	commitment	convergence
	institutional	- Lack of institutional	through multi-
	arrangements	capacity at local levels for	stakeholder
	analgements	implementation	engagement
Stakeholder	- Most common	- Involvement of civil	- Increasingly
Engagement	stakeholders include –	society organizations and	involve non-state
	ministry of planning,	private sector offers huge	actors
	bureau of statistics,	potential, but is inadequate	- Governments
	ministry of health	at this stage	should listen to the
			voices of less

Table 1: Achievements, Challenges and Opportunities in implementing health & health-related SDGs <sup>2</sup>
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Domains	Initial Achievements	Gaps and Challenges	Opportunities		
	- Other related	- Academic institutions	privileged and		
	ministries and public	and universities are not	influential		
	departments are	adequately engaged in	stakeholders		
	increasingly being	research activities to support			
	involved in many	SDG implementation			
	countries				
Multisectoral	- Several countries	- Formal mechanisms	- Benefit from		
Collaboration	have set up multisectoral	for collaboration do not exist	experience of good		
	SDG Councils external to	between different ministries	practices		
	MOH, others have	or within MOH in some	accumulating in this		
	adopted cluster approach	countries	area		
	<ul> <li>Multilateral and</li> </ul>	- Collaborative	- Academic		
	bilateral agreements exist	mechanisms exist on paper	institutions should		
	between MOH and other	but implementation at all	provide local		
	ministries in some	levels is tardy	solutions thru		
	countries	- Lack of sustained	implementation		
		multisectoral collaboration	research		
		due to weak institutions			
Role of	- UN agencies led	- Development	- Governments		
Development	by UNDP, WHO and	partners may dominate the	should provide		
Partners	others technically and	SDG agenda in some	leadership to bring		
	, financially support SDG	countries	development		
	implementation	- Some LMICs may	partners on the		
	- World Bank and	become dependent on	table for a coherent		
	bilateral donors support	development partners for	and coordinated		
	SDGs thru advocacy,	financial assistance	response		
	technical and financial				
	assistance				
Monitoring and	- Planning	- Framework for	- Provide legal		
Evaluation	•	monitoring SDGs not	cover through		
[M&E]	statistics are the	approved in some countries	legislation to ensure		
	responsible bodies in	- Monitoring SDG	regular and reliable		
	most countries	progress is difficult due to	M&E		
	- List of targets and	weak databases &	Mac		
	indicators identified for	management challenges			
	M&E in most countries	- HHSDGs indicators			
	- Possible sources				
		not captured by health			
	of data collection	information systems			
	identified and being	- Quality of data			
	integrated	collected is questionable and			
		analysis and use suboptimal			
Capacity	- Most countries	- Organized efforts	- Academia		
Development	are engaged in needs	towards capacity	should proactively		

Domains	Initial Achievements	Gaps and Challenges	Opportunities		
	assessment but not	development for SDGs have	engage in needs		
	beyond that	not been reported by	assessment and		
		participating countries	capacity building		
Communication	- In a few countries,	- Communication is	- Use native		
Strategies	information is	limited to within government	languages, school		
	communicated by	departments in most	educational system,		
government or UN		countries	mass and social		
	agencies to public	- Defined mechanism	media		
	through online platforms,	for communicating	- Orient and		
	press, celebrities and	information to citizens on	involve health		
	social media on 2030	SDGs does not exist in most	workers to promote		
	Agenda	countries	SDGs		
Equity and	<ul> <li>Equity is high on</li> </ul>	- Need to focus better	- Strengthen		
Accountability	the agenda and most	on monitoring equity &	and integrate		
	countries have identified	accountability from SDG	information systems		
	vulnerable groups that	perspective	to provide		
	include women, children,	<ul> <li>Lack of disaggregated</li> </ul>	disaggregated data		
	poor, migrants	data is a major impediment	for monitoring		
	- Social protection,	in monitoring equity	equity		
	health insurance, and	- Growing private	- Use equity		
	public health programs	sector and dual practice	data for fair		
	are being implemented	poses a challenge to policies	allocation of		
	to reduce inequities often	on equity	resources		
	as part of UHC	- Accountability			
		channels are not well			
		developed or functional in			
		most LMICs			

### Table 2

### Criteria for prioritisation of Research Questions using the Child Health and Nutrition Research Initiative (CHNRI) Process

As per WHO and other science groups, the priority–setting criteria (and related questions) proposed by Child Health and Nutrition Research Initiative (CHNRI) can be used to discriminate between any two (or more) health research ideas to set research priorities; the outcomes of the application of different criteria will necessarily conflict each other. These were shared with invited University Research offices and faculty to stimulate discussion in the Biological & Health Sciences workshop

#	Criterion	Explanation
1	Answerability	Some health research ideas will be more likely to be answerable than the others
2	Attractiveness	some health research ideas will be more likely to lead to publications in high–impact journals
3	Novelty	some health research ideas will be more likely to generate truly novel and non-existing knowledge
4	Potential for Translation	some health research ideas will be more likely to generate knowledge that will be translated into health intervention
5	Effectiveness	some health research ideas will be more likely to generate/improve truly effective health interventions
6	Affordability	the translation or implementation of knowledge generated through some health research ideas will not be affordable within the context
7	Deliverability	some health research ideas will lead to / impact health interventions that will not be deliverable within the context
8	Sustainability	some health research ideas will lead to / impact health interventions that will not be sustainable within the context)
9	Public Opinion	some health research ideas will seem more justified and acceptable to general public than the others

#	Criterion	Explanation
10	Ethical Aspects	some health research ideas will be more likely to raise ethical concerns than the others
11	Maximum impact on burden	some health research ideas will have a theoretical potential to reduce much larger portions of the existing disease burden than the others
12	Equity promotion	some health research ideas will lead to health interventions that will only be accessible to the privileged in the society/context, thus increasing inequity
13	Community engagement	some health research ideas will have more additional positive side–effects through community involvement
14	Feasibility	some health research ideas will be unlikely to lead to translation at the current stage of knowledge
15	Relevance	some health research ideas will be more relevant to the context than the others)
16	Filling Key Gaps	some health research ideas will be more likely to fill the key gap in knowledge that is required for translation and/or implementation than the others
17	Costs	some research ideas will require more funding than the others
18	Fundability	some research ideas will be more likely to receive funding support within the defined context than the others
19	Alignment with political priorities	some research ideas will be more likely to be aligned with contemporary political priorities than the others
20	Likelihood of generating patents or lucrative products	some research ideas will have greater likelihood of generating patents or other potentially lucrative products, thus promising greater financial return on investments, regardless of their impact on disease burden)

# Table 3

# Public Health Surveillance and Epidemiology (Consolidated)

S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* rank
1.	Investigating cellular and molecular basis of immunity to common infections and outbreaks such as SARS-CoV-2 with a focus on possible interactions with infectious agents endemic to Pakistan	High (5) Med (2)	High (2) Med (3) Low (1)	High (2) Med (5)	High (2) Med (4) Low (1)	High (3) Med (3) Low (1)	High (4) Med (2) Low (1)	High (4) Med (1) Low (2)	High (5) Med (4)
2	Utilizing genomic epidemiology to investigate spread of SARS-CoV-2 infections in Pakistan.	High (6) Med (1)	High (3) Med (2) Low (1)	High (2) Med (5)	High (2) Med (4) Low (1)	High (3) Med (3) Low (1)	High (7)	High (3) Med (2) Low (2)	High (5) Med (4)
3	COVID-19 and Infectious diseases (biosafety, biosecurity, active surveillance)	High (6) Med (1)	High (4) Med (1) Low (1)	High (4) Med (3)	High (4) Med (3)	High (3) Med (3) Low (1)	High (5) Med (1) Low (1)	High (5) Med (1) Low (1)	High (6) Med (2) Low (1)
4	TB, AIDS, Dengue & Malaria (Community engagement & mobilization; resistance strengthening; environmental strategies for vector control)	High (7)	High (5) Med (1)	High (4) Med (3)	High (5) Med (2)	High (3) Med (3) Low (1)	High (4) Med (3)	High (5) Med (2)	High (6) Med (3)
5	Monitoring and management of drug resistance in infectious diseases	High (5) Med (2)	High (4) Med (2)	High (3) Med (4)	High (4) Med (3)	High (2) Med (3) Low (2)	High (4) Med (3)	High (3) Med (3) Low (1)	High (7) Med (2)
6	Promotion of probiotics for health and prevention	High (2) Mid (4) Low (1)	High (2) Mid (1) Low (3)	High (1) Mid (3) Low (3)	High (1) Mid (2) Low (4)	High (1) Mid (2) Low (4)	High (3) Mid (1) Low (3)	High (3) Low (4)	Mid (3) Low (6)
7	Profiling of microbiome in healthy and diseased population	High (3) Mid (2) Low (2)	High (3) Mid (3)	High (1) Mid (5) Low (1)	High (3) Mid (4)	High (1) Mid (4) Low (2)	High (4) Mid (3)	High (2) Mid (3) Low (2)	High (3) Mid (3) Low (3)
8	Studies on Microbiome and its relation to disease; both in humans and plants	High (3) Mid (2) Low (2)	High (3) Mid (3)	High (1) Mid (5) Low (1)	High (3) Mid (4)	High (1) Mid (4) Low (2)	High (4) Mid (3)	High (2) Mid (3) Low (2)	High (3) Mid (3) Low (3)

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S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* rank
9	Metagenomic approaches to elucidate plant microbial interactions.	High (2) Low (5)	High (1) Med (1) Low (4)	High (2) Med (1) Low (4)	High (1) Low (6)	High (2) Low (5)	High (2) Low (5)	High (2) Med (1) Low (3)	High (1) Med (1) Low (7)
10	What is the gut microbiota composition (16S rRNA gene sequencing) of the rural and urban population of Pakistan and association with metabolomics?	High (3) Med (2) Low (2)	High (1) Med (4) Low (1)	High (1) Med (5) Low (1)	High (1) Med (4) Low (2)	High (1) Med (3) Low (3)	High (2) Med (4) Low (1)	High (2) Med (4) Low (1)	High (1) Med (5) Low (3)
11	Relationship of gut microbiota composition health, immune system and disease	High (3) Med (3) Low (1)	High (2) Med (2) Low (2)	High (1) Med (4) Low (2)	High (1) Med (5) Low (1)	High (2) Med (2) Low (3)	High (2) Med (3) Low (2)	High (1) Med (5) Low (1)	High (1) Med (4) Low (4)

\*1 = High priority

2= Medium priority

3 = Low Priority

# Table 4

# Immunology, Diagnostics & Vaccine Technology (Consolidated)

S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* rank
1.	Development of Diagnostics for common infectious diseases and risk factors (research questions surrounding low cost and affordability)	High (5)	High (5)	Med (4) High (1)	Med (4) High (1)	High (5)	High (5)	High (5)	High (6) Med (2)
2	Vaccines (collaborative research aiming technology transfer and indigenization)	High (5)	High (5)	Med (5)	Med (5)	High (5)	High (5)	High (5)	High (6) Med (2)
3	Development of molecular diagnostic assays for screening of common genetic disorders in Pakistan as a risk reduction strategy (e.g. could include inherited neurological or metabolic disorders)	High (5)	High (5)	Med (5)	Med (5)	Med (5)	High (5)	Med (5)	High (3) Med (5)
4	Establishment and scale-up of recombinant vector for expression systems for different target antigens such as, adenovirus vectors, lipid delivery systems.	High (5)	Med (5)	Mid (5)	High (5)	High (5)	High (5)	High (5)	High (6) Med (2)
5	Establishment of immunological protocol for the testing of vaccine efficacy – development of assays to measure adaptive immunity.	Med (5)	Med (5)	Med (5)	High (5)	High (5)	High (5)	High (5)	High (4) Med (4)
6	Enzymes for the industry. All kinds of enzymes in textile, detergent and food industry are imported at huge cost. These are all genetically modified. Expertise in the country exists to do all this and be competitive.	Med	High	Med	High	Med	High	Med	High (3) Med (4)

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S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* rank
7	Molecular Biology biochemicals especially used in PCR, Taq-polymerase, Reverse Transcriptase, Restriction Enzymes can be prepared locally to save the imported costs.	High (1) Med (3)	High (1) Med (3)	High (1) Med (3)	High (4)	High (1) Med (3)	High (4)	High (4)	High (3) Med (3) Low (1)
8	Surveys and monitoring for emerging zoonotic diseases	Med	High	Med	Med	Med	High	Med	High (2) Med (5)
9	Intelligent and point of care diagnostics based on CRISPR-Cas and other emerging technologies	High (5)	High (5)	Med (4) High (1)	Med (4) High (1)	High (5)	High (5)	High (5)	High (6) Med (2)
10	Stem cells and regenerative medicine	Med	Med	Med	Med	Med	High	Med	High (1) Med (6)
11	Health Information Technology research to identify medical errors at healthcare units and improve the healthcare by looking at retrospective records of patients. It can also identify disparities in the healthcare system such as lack of access and its outcome	Med	High	Med	Med	Med	Med	Med	High (1) Med (6)

\*1 = High priority

2= Medium priority

3 = Low Priority

# Table 5

# Non-Communicable Diseases, Population Health and Genomics (Consolidated)

S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* Rank
1	Obesity (lifestyle and nutrition) and its consequences (NASH, DM, HTN, Dyslipidemia, OSA, mechanical problems)	High	High	High	High	Med	High	Low	High
2	Diabetes (developing operational pilots for holistic and integrated, primary care models)	High (9)	High (6) Med (1)	High (9)	High (8) Med (1)	High (7) Med (2)	High (9)	High (2) Med (4) Low (3)	High (9) Med (2)
3	Cardiovascular diseases (research questions surrounding low cost and affordability)	High (9)	High (6) Med (1)	High (9)	High (6) Med (3)	High (7) Med (1) Low (1)	High (9)	High (3) Med (3) Low (3)	High (9) Med (2)
4	Public mental health problems (research questions surrounding its demystification, and trickle down to lower tiers, i.e., primary care setting)	High (7) Med (2)	High (5) Med (2)	High (7) Med (1) Low (1)	High (6) Med (2) Low (1)	High (5) Med (2) Low (1)	High (6) Med (1) Low (2)	Med (5) Low (3)	High (7) Med (2) Low (2)
5	Use of population genomics to recommend drugs better suited for our population	High (5) Med (3) Low (1)	High (3) Med (2) Low (1)	High (3) Med (4) Low (2)	High (2) Med (4) Low (3)	High (2) Med (3) Low (2)	Med (4) Low (5)	High (3) Med (4) Low (2)	High (4) Med (6) Low (1)
6	Cancer genomics to avoid unnecessary treatment and better treatment options	High (5) Med (3) Low (1)	High (3) Med (4)	High (3) Med (4) Low (2)	High (2) Med (4) Low (3)	High (3) Med (4)	High (6) Med (3)	High (5) Med (1) Low (3)	High (6) Med (4) Low (1)
7	Prevention of genetic diseases by developing a SNP chip based on common mutations associated with genetic disorders in Pakistan	High (2) Med (6) Low (1)	High (3) Med (2) Low (2)	High (2) Med (5) Low (1)	High (1) Med (4) Low (4)	High (2) Med (3) Low (2)	High (5) Med (3)	High (2) Med (5) Low (1)	High (3) Med (8)
8	Studies on genetic disorders, developing early diagnostic approaches for diseases such as Autism and Alzheimer	High (2) Med (6) Low (1)	High (1) Med (5)	High (1) Med (7) Low (1)	High (2) Med (6)	Med (7) Low (1)	High (3) Med (6)	High (2) Med (5) Low (2)	High (1) Med (8) Low (2)

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S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* Rank
9	Studies on Leukemia and beta Thalassemia; mapping of mutations and development of pre-natal diagnosis	High (5) Med (4)	High (2) Med (4)	High (3) Med (5) Low (1)	High (3) Med (4) Low (1)	High (3) Med (4) Low (1)	High (5) Med (3) Low (1)	High (2) Med (4) Low (1)	High (3) Med (7) Low (1)
10	Understanding biochemical mechanism of tumor suppressor proteins and to use them for diagnosis and therapeutic purposes	High (4) Med (4) Low (1)	High (3) Med (2) Low (1)	High (3) Med (5) Low (1)	High (3) Med (4) Low (1)	High (4) Med (2) Low (1)	High (4) Med (4) Low (1)	High (3) Med (3) Low (2)	High (5) Med (5) Low (1)
11	Tobacco consumption (health consequences; decreasing uptake and increasing cessation with special focus on reducing inequalities in tobacco related harm)	High	High	High	High	Med	High	Low	High
12	Air Pollution (strategies for minimizing air pollution and its impact on health)	High	High	High	High	Low	High	Low	High
13	Impact of injury on health and productivity (RTA/accidents, industrial injury, violence, poisoning & chemical exposure, bite & stings and burns)	High	High	High	High	Low	High	Low	High

\*1 = High priority

2= Medium priority

3 = Low Priority

# Table 6

# Food security, nutrition and human capital (Consolidated)

S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* rank
1.	Food security research, its measurement and consequences on human health and capital	High (3)	High (2) Med (1)	High (3)	High (3)	High (1) Low (2)	High (3)	Med (2) Low (1)	High (3)
2	Undernutrition (stunting, wasting), risk factors, consequences and potential solutions for Pakistan	High (2) Med (1)	High (1) Med (2)	High (1) Med (2)	High (1) Med (2)	High (1) Low (2)	High (2) Med (1)	High (1) Med (1) Low (1)	High (2) Med (1)
3	Micronutrient deficiencies, risk factors, consequences & potential solutions for Pakistan	High (1) Med (2)	High (1) Low (2)	High (1) Med (1) Low (1)	High (1) Med (1) Low (1)	High (1) Low (2)	High (1) Med (2)	Med (1) Low (2)	High (1) Med (1) Low (1)
4	Cost effectiveness research to address the double burden of malnutrition and nutrition transition (overweight and obesity)	High (2) Med (1)	High (1) Med (2)	High (1) Med (1) Low (1)	High (1) Med (2)	High (1) Low (2)	High (1) Med (2)	High (1) Low (2)	High (2) Med (1)
5	Implementation research to address nutrition problems in Pakistan	High (3)	High (2) Med (1)	High (2) Med (1)	High (2) Med (1)	High (1) Med (1) Low (1)	High (3)	High (2) Low (1)	High (3)
6	Research to address gender dimensions of malnutrition	High (2) Med (1)	High (1) Med (2)	High (1) Med (2)	Med (3)	High (1) Low (2)	High (1) Med (2)	High (1) Med (1) Low (1)	High (2) Med (1)
7	Impact of undernutrition on early child development and potential undernutrition	High (3)	High (2) Med (1)	High (2) Low (1)	High (3)	High (2) Low (1)	High (3)	High (3)	High (3)
8	Addressing nutrition problems across the life course	High (1) Med (2)	High (1) Med (2)	High (2) Med (1)	High (2) Med (1)	High (1) Med (1) Low (1)	High (2) Med (1)	High (1) Med (1) Low (1)	High (2) Med (1)

S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* rank
9	Impact of climate change on health and nutrition and measurement	High (3)	High (3)	High (3)	High (3)	High (2) Low (1)	High (2) Med (1)	High (1) Med (1) Low (1)	High (3)
10	Employment of different technologies to provide clean drinking water.	High (3)	High (2) Med (1)	High (3)	High (3)	High (2) Low (1)	High (3)	High (2) Low (1)	High (3)
11	Use of genome editing and gene drive for control of insects pests of crop and disease vectors for human and animal diseases	High (3)	High (3)	High (3)	High (3)	High (1) Med (1) Low (1)	High (2) Med (1)	High (2) Low (1)	High (3)
12	Vaccines for livestock and poultry**	High	High	High	High	High	High	Med	High
13	Development of nutraceutical production from medicinal plants	High	High	High	High	High	High	Med	High
14	Studies on Plant-Microbiome and its relation to plant health and disease	High	High	High	High	High	High	Med	High
15	Biofortification for enhancing the nutritive value of edible crops**	High	High	High	High	High	High	Med	High
16	Use of genomics and sexed semen for enhancing the quality and quantity of milk and meat production	High	High	High	High	High	High	High	High
17	Use of genome editing, genomic selection and speed breeding for fast-track development of elite germplasm in major crops such as rice, wheat, cotton, sugarcane, potato, oilseed mustard, sorghum, millet	High	High	High	High	High	High	High	High
18	Promotion of biofertilizers and use of fertilizer use efficient crops to decrease the use chemical fertilizers by half	High	High	High	High	High	High	High	High
19	Decrease in use of chemical pesticides by promotion of biopesticides to save water	High	High	High	High	High	High	High	High

S#	Research Question	Relation to national priorities	Potential for reducing inequities	Feasibility	Cost effectiveness	Existing research streams & sustainability	Potential for impact & translation	Ethical challenges in conducting research	Final prioritization* rank
	bodies and ground water from contamination and promote export of healthy food crops								

\*1 = High priority, 2= Medium priority, 3 = Low Priority

\*\* Research question has also been covered in Agriculture Sciences

### Next steps

This exercise was the first systematic process to identify priority areas and granular research priorities for possible inclusion in the calls for research funding for HEC as part of its categories of research support exercises. It is also likely that these biological and health sciences-related priority areas will inform investments by others such as PHRC and MOST as well for the next 3-5 years.

Our objective should now extend to additional consultations and inputs: and to bring different stakeholders (researchers, policy makers, businesses and the general public) on board for wider acceptance and ownership of the research agenda. Efforts need to be made to advocate for enhancement of research financing in the country and within HEC and other research funding bodies. Hopefully this can happen in line with the broad time frame below

Activity	Suggested time line	Output
Development and ratification by the Biological & Health Sciences Panel of a concept note with a refined set of research priority areas and questions and processes	End December 2020	Finalized concept note and illustrative questions
Discussion of proposed research priority areas with other Scientific Review Panel Chairs	By January 15, 2021	Synchronization of priority areas with other disciplines
Circulation of the concept note to leading tier 1 Universities for inputs (as well as MOST and MOHSRC	By January 31, 2021	Inputs received from at least 70% Universities
National workshop for consideration of research priorities (either blended or virtual)	February 2021	Finalized research priorities
Launch of targeted and staggered RFPs (with external financing support)	March – April 2021	Receipt of first round applications
Adjudication and review	May 2021	
Announcement of grants (round 1)	June 2021	

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Agenda Research Prioritisation Exercise in Biological & Health Sciences

### A Virtual Workshop

Higher Education Commission Feb 8, 2021 1730-2000 (5:30-8:00 pm) Pakistan Standard Time

Time	Торіс	Speaker/Facilitator		
1730-1735	Welcome & Introductions	All		
	Background to research areas &	Dr Zain ul Abdin		
1735-1745	priorities at HEC and schemes	Director General, Research & Development		
	related to health & SDGs			
	Genesis & Objectives of the exercise:	Prof Zulfiqar A Bhutta		
1745-1800	background, process and shortlisting	The Aga Khan University		
	process of research priorities	Chair Biological & Health Sciences Panel		
1800-1825	General discussion & feedback	All		
1825-1830	Short break and moving to side rooms	s for group work		
	GROUP A	Facilitator (Maj Gen Aamer Ikram. Panel		
	Priority topic 1: Public Health	member & Vice Chair)		
	Surveillance and Epidemiology			
	GROUP B			
	Priority topic 2: Immunology,	Facilitator (Prof Zahra Hasan. Panel member)		
1830-1900	Diagnostics & Vaccine Technology			
1030-1300	GROUP C			
	Priority topic 3: Non-Communicable	Facilitator (Prof Tasnim Ahsan. Panel member)		
	Diseases, Population Health and			
	Genomics			
	GROUP D	Facilitator (Prof Kauser Abdullah Malik. Panel		
	Priority topic 4: Food security,	member)		
	nutrition and human capital	member)		
1900-1910	Short break and moving to main room for plenary work			
1910-1940	PLENARY SESSION & FEEDBACK	All		
1310-1340	FROM FACILITATORS (5-7 min each)			
1940-1955	Synthesis and ranking	Dr Zulfiqar A Bhutta		
1955-2000	Potential next steps & closure	Dr Zain ul Abdin		

### List of Participants Research Prioritisation Exercise in Biological & Health Sciences, Feb., 8, 2021

S#	Name of Participant	Designation	University/Institute
1.	Prof. Zulfiqar A Bhutta	Chair, HEC Biological & Health Sciences Panel	Aga Khan University, Karachi
2.	Maj Gen. Prof. Aamer Ikram	Member, HEC Biological & Health Sciences Panel	National Institute of Health, Islamabad
3.	Prof. Kauser Abdullah Malik	Member, HEC Biological & Health Sciences Panel	Forman Christian College University, Lahore
4.	Prof. Zahra Hasan	Member, HEC Biological & Health Sciences Panel	Aga Khan University, Karachi
5.	Prof. Tasnim Ahsan	Member, HEC Biological & Health Sciences Panel	Jinnah Postgraduate Medical Centre (JPMC), Karachi
6.	Dr. Shahid Mansoor	Member, HEC Biological & Health Sciences Panel	NIBGE, Faisalabad
7.	Dr. Zain-ul-Abdin	Director General R&D	HEC
8.	Prof. Dr. Talat Mirza	Executive Director Research Meritorious Professor	Ziauddin University, Karachi
9.	Dr. Mushtaq Hussain	Assistant Professor & Vice Principal Dow College of Biotechnology	Dow University of Health Sciences Karachi
10.	Dr. Binafsha Manzoor Syed	Director ORIC Medical Research Centre	Liaquat University of Medical & Health Sciences, Jamshoro
11.	Dr. Zohaib Khan	Director –ORIC	Khyber Medical University, Peshawar
12.	Dr. Nabiha Farasat	Associate Professor	Bolan University of Medical and Health Sciences, Quetta
13.	Prof. Dr. Waheed Akhtar	Professor, School of Biological Sciences	University of the Punjab, Lahore
14.	Dr. Bushra Rashid	Associate Professor	CEMB, University of the Punjab, Lahore
15.	Dr. Bushra Ijaz	Associate Professor	CEMB, University of the Punjab, Lahore
16.	Dr. Samia Afzal	Associate Professor	CEMB, University of the Punjab, Lahore
17.	Dr. Ejaz Ahmad Khan	Associate Professor and Coordinator ORIC	Health Services Academy, Islamabad
18.	Dr. M Jawad Hassan	Associate Professor, Biological Sciences	National University of Medical Sciences, Rawalpindi
19.	Dr. Muhammad Tahir	Associate Professor	National University of Science and Technology, Islamabad
20.	Dr. Aneela Javed	Associate Professor	National University of Science and Technology, Islamabad
21.	Prof. Dr. Shabana Usman Simjee	Professor	International Centre for Chemical & Biological Sciences, Karachi
22.	Prof. Saira Afzal	Dean Public Health & Preventive Medicine	King Edward Medical University, Lahore

23.	Dr. Khurram Bashir	Associate Professor, Biological Sciences	Lahore University of Management Sciences, Lahore
24.	Dr Rameeza Kaleem	HOD Preventive pediatrics	Fatima Jinnah Medical University, Lahore
25.	Dr. Syed Habib Bokhari	Vice Chancellor	Kohsar University, Murree
26.	Dr. Mahmood A. Kayani	Professor Department of Biosciences	COMSATS University, Islamabad
27.	Dr. Ijaz Ali	Associate Prof., Department of Biosciences	COMSATS University, Islamabad
28.	Prof. Shagufta Khaliq	Head, Dept. Human Genetics & Molecular Biology	University of Health Sciences, Lahore

# PAKISTAN HEALTH RESEARCH COUNCIL

NATIONAL CONSULTATIVE WORKSHOP ON

# RESEARCH PRIORITY SETTING & CAPACITY STRENGTHENING

Quetta

REPORT





27<sup>TH</sup> – 28<sup>TH</sup> FEBRURAY 2018, ISLAMABAD

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# Acknowledgments:

The National Consultative Workshop on Research Priority Setting & Capacity Strengthening 2018 was successfully completed due to the efforts and involvement of numerous organizations and individuals at different stages of the workshop. We would like to thank everyone who helped to make this workshop a success.

First of all, we are grateful to the Ministry of National Health Services, Regulation and Coordination (NHSR&C), Pakistan for its leadership, vision and support. We gratefully acknowledge the efforts and hard work of the workshop participants who had travelled from different areas of Pakistan and for giving their technical input and optimum utilization of their mental faculties for setting health research priorities and respond to the revamping PHRC funding policy with tremendous patience and collective wisdom.

We would like to express our thanks to Vice Chancellor, Principals, Deans, worthy professors of participating public and private Universities / Medical Colleges / Institutes and Ex-Executive Directors of PHRC for their valuable comments and suggestions. In addition, untiring efforts of our core team at PHRC Head office is highly acknowledged.

We are glad for the support we received from Sindh and KPK Health Care commission. We acknowledge the contributions of World Health Organization Country Office, Centre for Disease Control (CDC), Pakistan, USAID for sending their experts/nominees for this workshop. Many thanks are due to our Research Centers for coming and providing technical support to the best of their capabilities and knowledge.

This acknowledgement would not be complete without expressing appreciation for the hard work put in by the Research Development & Coordination Section, Administration and other supporting staff of PHRC team for their continuous and coherent cooperation to make this event successful.

Dr. Waquaruddin Ahmed

Deputy Director (HSR)

### **1.0 EXECUTIVE SUMMARY**

Pakistan Health Research Council (PHRC) constituted in 1962, serves as national research organization in various fields of Medicine and Public Health. PHRC has 12 research centres to ensure Country wide out reach for field research. The Council has robust national linkages with academia, Provincial Governments and health facilities. So far, researchers of PHRC produced more than 600 research publications in journals of national and international repute. Subsequent to the evidence based PHRC research, a number of policy guidelines and recommendations adopted by Federal / Provincial Governments from time to time. To further strengthen the role of PHRC in national and socio economic development plans along-with increased capacity for computationally sophisticated biological, biomedical and socio-ecological research is required to bring enhanced health outcomes for the society.

This Workshop Report elaborates the interactions of national consultation on health research priority setting and capacity enhancement, initiated by PHRC, bringing together health researchers, academicians, regulators, economists, policy makers and public health managers from all over the country. The representatives of international organizations including CDC, WHO, UNAIDS, USAIDS, UNODC and Global Fund also attended workshop.

Philosophically, theory of intention design is adopted for this workshop that also underpin obvious topographies of collaborative cum integrated health research and capacity enhancement that are best explained by an intelligent cause, based on practical evidence and self-realization, by the conscious choice to adhere systematic approach for applying modern scientific tools to prioritize and serve to the community with existing moral standards rather than by an undirected and isolated process of research conduct.

The overall aim is "to formulate the Research Priority for PHRC according to the National needs and for the improvement of Health care of the population" to better understand the contextual issues of our communities and their rationalized health needs in moving national health research priority setting forward as well as seeking advice from professionals / experts to collaborate and support in managing an improved health care process by setting and measuring progress in health research priorities.

Current workshop is a first step in a continuous learning process to formalize national health research priorities, where recommendations from thematic groups and findings of filled responses are compared and validated. It is expected that a number of useful multidisciplinary experiences and guidance that have positive impact on establishment of procedural fairnesswill emerge from this activity.

On the basis of outcome of the said workshop, recommendations made on Health Research including; i) high research priorities, ii) PHRC research grant mechanism and iii) uniform honorarium policy for PHRC employees through collective wisdom and best of their mental faculties.

In addition, continuing needs for health research prioritization identified as workshop key findings and recommendations in this report, further require endorsements through an even more intensive and synchronized consultative proceedings to maintain the momentum that has begun and addressing the underlying health research prioritization and its challenges for PHRC and other research organization that might not been highlighted before.

### 2.0 BACKGROUND

Identifying research priorities is the key to innovation and economic growth, since it informs decision makers on effectively targeting issues that have the greatest potential public benefit. As such, the process of setting research priorities is of pivotal importance for favoring the science, technology, and innovation (STI)-driven development of low- and middle-income countries. Clearly defined national research priorities are essential to guide research expenditure, to promote science, technology, and innovation (STI), to stimulate human resource development for research, and to inform negotiation processes with external partners for targeted funding and long-term efforts<sup>1</sup>.

Although priority setting helps to tackle broader issues in developing an effective national health research system, in most cases countries have not taken advantage of it. Priority setting has often been handled as an isolated, one-off event that has little impact on, or relation to, other essential components used to construct a health research system.<sup>2</sup> Further, it is often not clear if or how the outcome of a national priority-setting event will be fed back to the sub-national level, nor how this level will adapt national priorities to its specific priority needs. Also, there is scant evidence about the implementation of health research priorities and its impact<sup>2</sup>.

Health research prioritization is being done routinely in developed and developing countries. There are implementation issues in developing countries due to lack of funding, lack of focused commitments, political instability, drifting policies of governments and lack of coordination and collaboration between different stake holders. Developed countries are however, getting more benefit due to focused implementation of health research prioritization.

For many developing countries, like Pakistan, conducting research and addressing health needs is often dependent on or guided by external resources coming into a country rather than based on the needs identified by the countries themselves, which results in diverting attention and resources away from national or sub-national interests. It is through the creation of a national research agenda that countries can begin to align both external and internal resources to best meet national development and equity needs and improves people's livelihood<sup>3</sup>. National research priority setting aim to;

 a) facilitates the transformation of a donor-driven research agenda into an agenda driven by countries' own needs<sup>4</sup>

- b) highlights the investment in research in a fair and legitimate way, using a sound and transparent methodology<sup>5</sup>
- c) maximizes the impact of investments, which is especially critical to resource-poor environments, through the allocation of funding into research areas of strategic importance<sup>67</sup>
- d) through the use of clear criteria and principles, it guides investments based on a vision of what the endpoints of such investments should be?<sup>8</sup>
- e) provides the foundational elements for building a strong national research governance system based upon the synergistic needs defined by a country's stakeholders
- f) countries that have engaged in priority setting have provided their decision makers with solid foundations for negotiating with donor agencies to support national research<sup>9</sup>

Health research is difficult to prioritize, because the number of possible competing ideas for research is large, the outcome of research is inherently uncertain, and the impact of research is difficult to predict and measure. A systematic and transparent process to assist policy makers and research funding agencies in making investment decisions is a permanent need. Setting priorities for research is a complex process. Although there are several tools available to guide this process, there is general consensus that there can be no best practice or gold standard for research priority setting, due to contextual differences between individual priorities setting exercises<sup>10</sup>.

In the past, PMRC has organized multiple workshops on health research prioritization. At a national workshop in 1976, health priorities that needed research were listed. These included anemia and nutritional disorders, infectious and parasitic diseases, gastrointestinal and hepatic disorders, chronic diseases, cancers, urolithiasis, industrial health, community studies and medical education. In 1982 another national seminar was organized in Islamabad to review and revise national health priorities for the second phase of the activity. To the previous list were added tuberculosis and respiratory diseases, mental health, endocrine disorders, diseases of the urinary tract and evaluation of indigenous drugs. The activity was completed in 1988 and a report was published.

In March 1991, the PMRC, the Aga Khan University and the Pakistan College of Surgeons and Physicians, working in collaboration, organized a conference in Karachi to set health research priorities for the 1990s.

In February 2001, PMRC organized a seminar on "Health research priorities for Pakistan" in collaboration with COHERD, Global Forum for Health Research, Department of International Health of John Hopkins University and Health Services Academy. For communicable conditions, following priorities were listed; Epidemiology and resistance of Tuberculosis and malaria, Etiology and prognosis of respiratory infections, Risk definition of Hepatitis B, C and E, Social, economic, behavioral factors and surveillance and outbreak response. Similarly priorities were identified for non-communicable conditions, mental health, reproductive health, capacity building, health systems/policy and peri-natal & child health.

After a period of 17 years, PHRC succeeded to organize National Consultative Research Prioritization Workshop on 27-28<sup>th</sup>of February, 2018 at Islamabad. All major stakeholders including researchers, academicians, regulators, economists, public health managers, policy makers, health care providers and representatives from international research funding agencies and NGOs working in health sector of Pakistan attended the workshop.

### 3.0Aim and objectives

### 3.1 Aim:

"To formulate the Research Priority for PHRC according to the National needs and for the improvement of Health care of the population"

### 3.2 Strategic Aims:

- Setting health research priorities which are most likely to bring enhanced health outcomes for the society
- To contribute and accelerate in economic progress by identifying cost efficient measures through integrated health research
- Support and promote quality research

### **3.3 Objectives:**

- Identify and rationalize relevant area for future research
- Prepare recommendations for harmonization of research work at policy level in line with national / provincial / regional needs
- Prepare draft of integrated health research priorities of PHRC
- To revise and improve the existing PHRC research grants Mechanism

# 4.0 Need identification, assessment and analysis / Rationale:

There is dearth of health research in the country. The research which is conducted on health issues is in isolation and the coordination between different stakeholders on the sharing of research findings is little. Similarly the coordination mechanism between researchers and policy makers is very weak. The comprehensive information on identification of research areas on different health disciplines is deficient which lead to research in haphazard manner.

Pakistan ranked at 149 in United Nations Health goals. In these times, the Government of Pakistan, M/O NHSR&C finds itself under considerable strain brought about by unprecedented rate of technological change, rapidly increasing population and rising citizens' expectations to deliver efficient and effective public health services to our people. In other words, we must provide our citizens with a seamless health service experience, achieving efficiencies that help to reduce disease burden and government's cost-to-serve.

It is extremely important to enlist research areas which are considered as priority areas of research based on burden of diseases/problem, their known risk factors, interventions completed for prevention and control. As our country belong to low and middle income countries therefore research areas need to be prioritized according to our local needs and available resources.

There is dire need to have a consensus of all stakeholders' i.e. Provincial health departments, Regulators academia, research and development organizations and International agencies on prioritizing health related research areas for the country. The coordination mechanism need to be developed among major stakeholders for framing health care policies based on evidence generated.

In the absence of priority areas of health research, there is a risk that health research conducted will follow the areas which are determined by the funders for their own interests or fail to comply with the actual health needs. The priority settings aim at guiding decision-makers towards effective and efficient healthcare resource allocation strategies for improving people's health.

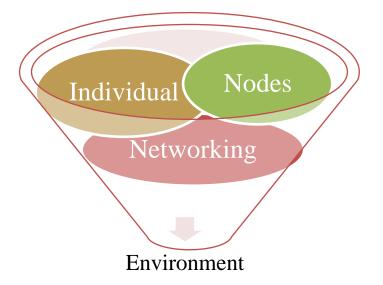
# **5.0 PRINCIPLE OF PRIORITY SETTING ACTIVITY:**

# 5.1 Identification of stakeholders:

For research priority setting, involvement of broad range of stakeholders is the key component of preparatory work to be focused as different stakeholders have different perspective on issues that need urgent attention. Meanwhile, priority setting exercises also strive for appropriate representation of different expertise, capabilities, provincial and regional participation.

Therefore all major stakeholders including researcher, academicians, regulators, economists, public health managers, policy makers, health care providers in different health related disciplines and representatives from national and international research funding agencies and NGOs working in health sector i.e. Higher Education Commission, Pakistan Science Foundation CDC, WHO, UNAIDS, USAIDS, UNODC and Global Fund of Pakistan invited to attend the workshop.

As explained by Ryan et al,<sup>11</sup> Individuals (including researcher /academician / regulator / Policy maker) and Nodes (Public / private health organizations/ universities / iNGOs, Industry / Civil Society / Media) were provided opportunity to map each other, establish linkages and bridge gaps to create conducive environment for health research priority setting workshop.



# 5.2 Review of different methods and approaches:

Prioritization of health research is always a challenging activity as there are many potential competing ideas for research and the impact of research cannot be predicted or measured <sup>12</sup>.

To obtain a better understanding of different approaches used for prioritizing health research, our team retrieved relevant material through systematic review of published literature using PubMed, Google scholar and Science direct databases. The approaches, methods and tools which were frequently used by middle and low income countries at National level for health research priority settings activity were studied. Different countries have employed variety of methods. Some used the method developed by the countries themselves and some used methods which were externally developed and tested.

In this regard, researchers of the council studied the approach of "Council on Health Research for Development" (COHRED) which was used at national level prioritization setting exercise in Philippine, Brazil, Peru and Cameroon<sup>13</sup>, Secondly the "Essential National Health Research" (ENHR) approach was understood in depth which was also applied in Cameroon and South Africa<sup>14</sup>. Meanwhile the structured approaches like "Combined Approach Matrix" (CAM), James Lind Alliance Method, the Advisory Committee Approach, the Ad Hoc Committee Approach, and the Child Health and Nutrition Research Initiative Approach(CHNRI) were also reviewed in brain storming exercise<sup>15</sup>. Although, all of these methods have some advantages and disadvantages, but nearly all proved useful for consolidating the existing information and successfully prioritized the research.

After the extensive exercise of understanding different approaches and tools, we devised a modified tool based on ENHR strategy and qualitative component was included using Cafe method to identify country specific health research issues and areas.

# 5.3 Identification of research area:

For the identification of research areas, scientific and systematic situation analysis involving assessment of health status and disease burden, health care system and health research system was done by our team through reviewing literature, policy papers and document developed by WHO on Health research prioritization in 2010<sup>16,17.</sup> Based on structured synthesis of available materials, twenty two broad research areas involving different diseases and health related issues were shortlisted.

These include non-communicable diseases, Infectious diseases, Infant/neonatal and child health, Neurological disorders/Mental health, Vector borne diseases, Blood borne diseases, skin disease, oral and dental diseases, Neglected Tropical diseases, Emerging and re-emerging diseases, Nutrition, Genetics, Reproductive health, family planning, environmental health, health system research, health surveillance, immunization, biosafety & security, preparedness and emergency response, diagnostics, and drug research.

#### **5.4 Development of the criteria for priority settings:**

After the synthesis of broad areas of research, next step was to reduce it to manageable and practicable list of priorities and development of certain criteria which could be used as a filter in narrowing process.

In a brainstorming activity, available documents, guidelines and articles<sup>18</sup> were reviewed and list of criteria was enlisted, followed by removal of duplicates and grouping of the enlisted criteria in one category, followed by formulation of clarifying statement that can be quantitatively scored. Based on this activity, following set of criteria was developed.

- 1. National area of concern regarding research
- 2. Disease burden
- 3. Risks factors
- 4. Prevention and control strategies
- 5. Interventions
- 6. Need for formulation or revision of existing policies

However, for each of the Nutrition, Environmental health, Health system research, Health Surveillance, Immunization, Biosafety and security, Preparedness and Emergency Response, Diagnostics, drug research, Genetics, Reproductive health and family planning some of the criteria for step 1 were different and some contextually specific criteria were used.

# 5.5 Development and standardization of tools for research prioritization:

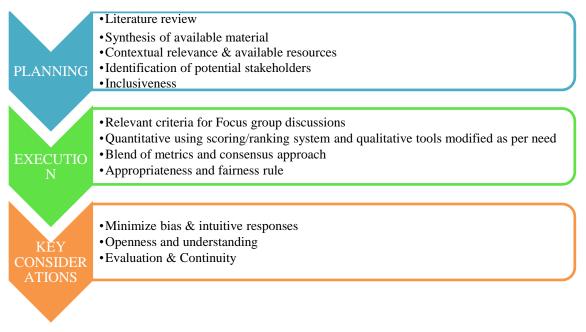
Two Step research prioritization tool was devised in line with national needs, used to narrow down the broad areas of research and also to identify that within each of the prioritized area, which component needs further evidence. For quantitative data, Step-1 was used for

comprehensive scorning system. For all issues and area of concern identified earlier, each of the following sub categories ranked for prioritization:

Categories	]	Rankings(Score)		
	1	2	3	
National area of concern regarding research	Low	Moderate	High	
Disease burden				
Risks factors	Known	Partially	Unknown	
Prevention and control		known		
Interventions				
Policy formulation	No	Partial	Yes	

Additional scoring system was used in which scores of each criterion from all participants were added up and total was used for ranking that criterion in a particular research area.

For Step-2, short module of ENHR prepared by the COHRED working group on priority setting was adopted and modified according to local context by PHRC, Research Development & Coordination (RDC) team.



Scheme 1: Framework of Research Priority Setting activity

# 6.0 Research funding MECHANISM of PHRC

#### 6.1 Development and standardization of tool for Research funding

A semi-structured questionnaire was developed regarding funding policy, proposal submission/review process and research dissemination strategies. Further, current format of PHRC grant application form and proposal submission formats of Pakistan Science Foundation, Higher Education Commission Pakistan, World Health Organization EMRO grants, National Institute of Health USA, Medical Research Council UK and Global Funds were distributed among respondents for consultation. Discussions were generated and responses were recorded on the pre-designed semi-structured questionnaire.

# 6.2 Development and standardization of tool for Monitoring and Evaluation (M &E):

The tool for monitoring and evaluation was developed and standardized. Following documents were consulted for preparation;

i) "Monitoring and Evaluation Planning." of American Red Cross, United States,

ii) A Guide for Monitoring and Evaluating Community-Based Projects developed by United Nations Educational, Scientific and Cultural Organization (UNESCO),

iii) Monitoring and evaluating an implementation research project developed by WHO Geneva,iv) Planning, Monitoring and Evaluation Framework for Research Capacity Strengthening,ESSENCE on Health Research, Netherlands.

The developed tool was discussed in group meetings and adapted to local settings. Further questions related to midterm report for research projects and final report for the research projects was incorporated. The tool was developed in semi structured manner to accommodate the suggestions given by the participants during group discussion.

## 6.3 Data analysis

Data analysis of quantitative variables was done by using IBM-SPPSS Statistics 20 software and frequencies and percentages were calculated. For analysis of qualitative variables, written response of open ended questions was read many times by the researchers in order to acquire a sufficient understanding. The response was then coded to delineate different categories. Data

were converted from description to interpretation through data analysis methodthat involved the following steps:<sup>19</sup>

- 1. Preparation
- 2. Synthesis
- 3. Organization
- 4. Generation of themes.

During the stage of preparation and data synthesis, written response was transcribed in order to gain an overall sense of the text. In the organization phase, categories and subcategories were formed; and finally in the generation phase formed themes were delineated.

# 7.0 WORKSHOP KEY FINDINGS& SITUATION ANALYSIS:

## 7.1 Research Priorities of PHRC:

A semi-structured tool was designed to explore perceptions and views through group discussions about how an ideal integrated health research prioritization process would be structured.

There was significant variation in workshop participants involved in the processes. Since the majority of process entrusted heavily on invited "experts" to determine the integrated research priorities, variations in qualification, experience and exposure may likely have a major influence on outcomes of this activity. To minimize, specific questions on key issues in the process were prepared to minimize generalized and rudimentary discussion and workshop participants representing distinct public private organizations were purposively divided into three sub-groups. Cumulative list of broad research categories based on participant's scorings is given below;

<b>S</b> #	<b>Research Priorities</b>	Scores
1	NCDs including mental health	811
2	Bio safety and Bio security	774
3	Communicable & Infectious diseases	758
4	Infant/neonatal and child health	740
5	Health Surveillance	727
6	Nutrition	722
7	Genetics	710
8	Oral/Dental diseases	688
9	Immunization	686
10	Vector borne diseases	685
11	Health Systems Research	678
12	Drug Research	674

#### (Table 1)

# **List of Health Research Priorities**

High priority health research list was prepared, recommended after thorough consultative focus group discussions of workshop participants and in-depth analysis of both quantitative and qualitative data. Five broad categories for integrated research are identified to address the prevailing and future challenges of the population at health care delivery and policy level.

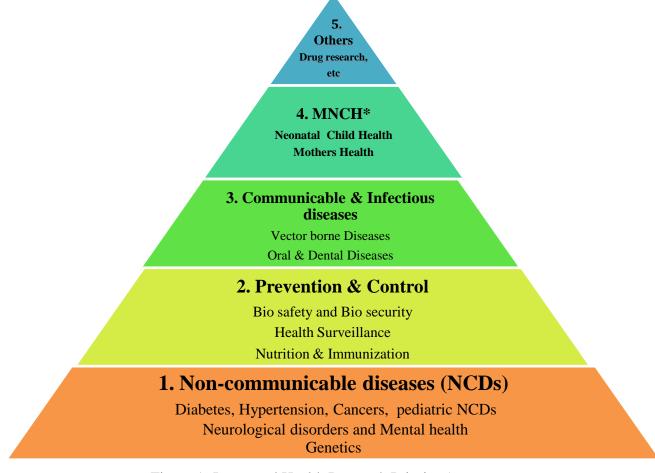


Figure 1: Integrated Health Research Priority Areas

\* Maternal Neonatal Child Health

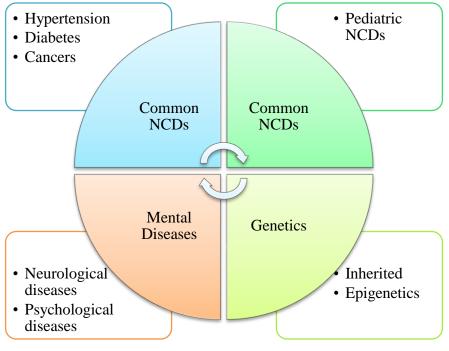
# 7.1.1 Non-communicable diseases:

Findings of current workshop ranked Non-communicable diseases (NCDs) as the foremost area of integrated research to reduce the burden through sustainable, integrated and cost effective research modules, applicable to our environment. (Figure 2A &2B)

NCD is abroader term usually related to chronic diseases; it includes those diseases which are not transferred from one person to another. They usually last longer in duration and progress slowly. NCDs kill more than 38 million people annually, with 82% of NCD deaths in low- and middle- income countries<sup>20</sup>. The prevalence of adult NCDs is highest in South Asia; mainly allied with cardiovascular disease (CVD), type 2 diabetes, and chronic pulmonary disease<sup>21</sup>.

The inadvertent urbanization and highly prevalent unhealthy lifestyle are serious challenge for our region to address NCDs. Alarmingly; more than 100% increase in prevalence of heart diseases reported from Pakistan and Bangladesh<sup>22</sup>. The increasing global burden of NCDs is a major barrier to achieve sustainable development Goals. The incremental burden of NCDs is expected to raise markedly faster in low middle income countries than rest of the world<sup>23</sup>,<sup>24</sup>.United Nations suggested five priority interventions including healthy diets, tobacco control, low intake of salt, physical activity, lower alcohol consumption, essential drugs and technologies<sup>25</sup>.

Pakistan is the 6th populous country in the world and is 36th largest nation by total area. Pakistan is one of those developing countries who are facing "triple burden of disease" including Communicable diseases, Non-communicable diseases, and emerging risks from new diseases and changes to the social and physical environment. In Pakistan, we need to build capacity within our health systems to ensure prevention, early diagnosis, prompt and adequate treatment to achieve targets set through SGDs.



(Figure2A)

NCDs: Broad area of research concern



# (Figure 2B)

# NCDs: High health research priorities

# 7.1.2 Prevention & Control

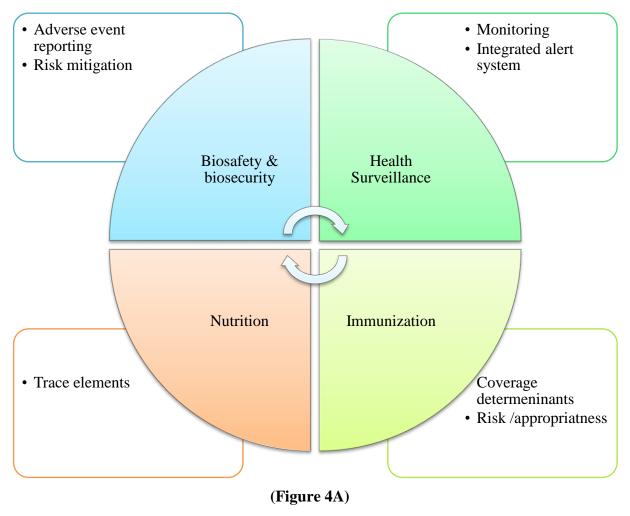
There has been observed a prompt increase in life sciences research, over the past two decades which demands awareness and orientation regarding biosafety and biosecurity concerns among scientific community as well as healthcare professionals in order to take appropriate measures/actions to combat biological threats within the country and to improve biosecurity, biosafety, infectious disease surveillance, pathogen surveillance and disaster response. Difficulties are currently being faced by countries in devising policies and rules/regulations to promote biosafety and biosecurity, and, often, the pace at which life sciences research is progressing is faster than international and governmental efforts to streamline legal and regulatory policy<sup>26</sup>. Biosafety and biosecurity practices are mandatory for global health and security because gaps can harm humans, environment and can also be a source of economic damage.

Timely and validated health surveillance marks the foundation of health systems strengthening and timely public health measures. Currently there are few disease surveillance and health information systems in Pakistan i.e. MNCH, LHWs, EPI, AFP/Polio, malaria, HIV/AIDS, TB and District health information system (DHIS)<sup>27</sup>. All of these are vertical except for District health information system (DHIS) which is decentralized. Most of these are monthly reporting systems with no immediate reporting mechanism; except for AFP/Polio which has immediate reporting system and EPI which has weekly reporting.

Malnutrition has become a major issue in Pakistan over the past few decades. National nutrition survey of Pakistan 2011<sup>28</sup> has revealed that 31.2% of the children were underweight and stunting and wasting was present in 23.5% and 16.8% of the children, respectively. Iron deficiency anemia was present in 25.6% of pregnant and 19.9% of non-pregnant women, similarly vitamin A deficiency was present in 43.1% pregnant and 48.8% non-pregnant women. National Parliament of Pakistan has nested the first ever global forum on "sustainable development goals and nutrition" in February 2016 whereby situation of malnutrition in the country was declared as an emergency<sup>29</sup>. Considering the national importance of the issue there is a dire need for integrated research in this field.

After NCDs, research on preventive aspectsranked as second foremost issue for future research. This category includes;

- I. Biosafety & biosecurity
- II. Health surveillance
- III. Nutrition and
- IV. Immunization



**Prevention & Control: High health research priorities** 

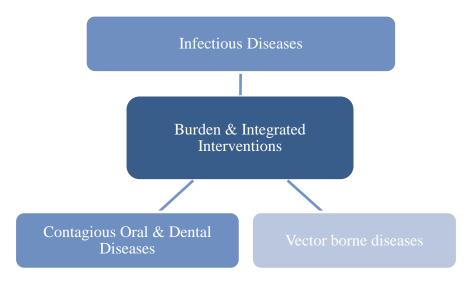
In the field of health surveillance, majority of the respondents recommended that there is a need for monitoring and evaluation of surveillance system and capacity enhancement for integrated surveillance. For nutrition, most of the respondents suggested nature and burden of issue and techniques/methods for trace elements, respectively. In the field of Bio-safety and Bio-security, adverse event reporting system and risk evaluation matrix were suggested respectively by respondents. For preparedness and emergency response, communication mechanism & strategies and preparedness of response plan for health related issues in emergency situations were suggested, respectively. For the area of immunization risk/opportunities and determinants of immunization coverage were identified. For health system research evaluation tools of surveillance and impact of current surveillance system were prioritized<sup>30,31,32,33,34</sup>

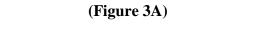
## 7.1.3 Communicable & Infectious Diseases

Communicable &Infectious diseases contributing more than one third of disease burden, ranked at third most required field for integrated research recommended from current activity. Communicable &Infectious diseases are broader group of diseases mainly caused by pathogenic microorganisms such as bacteria, viruses, parasites, fungi and spread either directly or indirectly from one person to another<sup>35</sup>. In Pakistan, around one third of the disease burden constitute this category including, viral hepatitis, measles, pneumonia, TB, acute respiratory infections, diarrhea, malaria, gastrointestinal infections, and acquired immune deficiency syndrome (HIV-AIDS). Infectious diseases are further categorized in to many different groups like vector borne diseases, blood borne diseases, neglected tropical diseases, etc.

Vector-borne diseases are infections transmitted by the bite of infected arthropod species, such as mosquitoes, ticks, Sandflies, and blackflies. Pakistan shares the burden of major vector-borne diseases like malaria, leishmaniasis, dengue, Chikungunya and Crimean-Congo hemorrhagic fever <sup>36,37.</sup> In current workshop, three main disease categories of this group were focused in details by participants for prioritization that include, infectious diseases, vector borne diseasesand contagious oral and dental diseases

Among all categories of communicable & infectious diseases actual burden and integrated interventions were ranked as top two priority areas for future research by the participants.





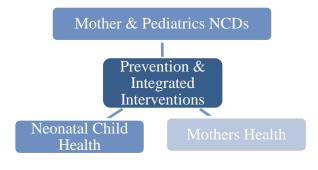
Communicable & Infectious diseases: High health research priorities

# 7.1.4 Maternal Neonatal & Child Health

Currently the highest number of maternal, neonatal, maternal and child deaths are in the regions of South Asia and sub-Saharan Africa<sup>38</sup>,<sup>39</sup>,<sup>40</sup>. Around two third of the worldwide burden of still births, newborn and maternal mortality is present in ten countries<sup>41</sup>. The target of the fourth Millennium Development Goal (MDG4) was to decrease the global number of children dying under the age of five years by two-thirds in the period 1990–2015<sup>42</sup>. However, the MDG 2015 Report showed that under-five deaths could only be reduced to half i.e. 43 deaths/1000 live births. Almost around 80% of the deaths occurred in the South Asian and sub-Saharan African region<sup>43</sup>. According to the Global Health Observatory of the WHO, children within the neonatal period (birth to the first 28 days) remain at the highest risk of dying, as this period comprised about 45% of all under-five deaths in 2013<sup>44</sup>. Progress on reducing neonatal mortality is slower than that of under-five and infant mortality; the global neonatal mortality rate decreased from 33 per 1000 live births in 1990 to 21 in 2012. It is estimated that 99% of newborn deaths take place in low- and middle-income countries<sup>45</sup>.

Pakistan is not yet successful in achieving the MDG4 target and is lagging behind. Pakistan is progressing slowly and gradually for achieving the target as evident by Pakistan Demographic and Health Survey (PDHS) of 2012–2013 and the Millennium Development Goals (MDG)

report<sup>46</sup>,<sup>47</sup>.Relevant research is essential for evidence-based sustainable interventions and Crossnational research can provide useful findings based on certain performance indicators and can generate evidence based data for which can help in reduction of maternal and neonatal mortality<sup>48</sup>. In the current workshop, following research areas were categorized under Maternal and Child health;



(Figure 5A) MNCH: Research Priorities

Sustainable interventions for above mentioned research priorities identified as the most important area followed by prevention and control.

# 7.1.5 Others

The other areas include diagnostics, drug research, oral/dental diseases and skin diseases. Oral diseases/dental disorders affected 3.9 billion people in the world. The Global burden of disease reported 35% prevalence of untreated caries among all ages and 15 million DALYs<sup>49</sup>. A study from Karachi reported dental caries (44%) as the most common dental problem among the patients<sup>50</sup>. There is a need to identify the areas in the field of dentistry.

Globally, skin diseases are the 4<sup>th</sup> leading of disease burden (non-fatal)<sup>51</sup>. In our country, skin diseases are prevalent due to environmental sanitation, nutrition and education <sup>52</sup>. The diagnostics is an essential component of good quality healthcare service. As most of decisions related to diagnosis and treatment are based on lab results, therefore accurate and timely diagnosis is of utmost importance. The development of drug research and initiation of clinical trials is the need of the hour for the country. In the current workshop, following areas were identified in other areas of research.

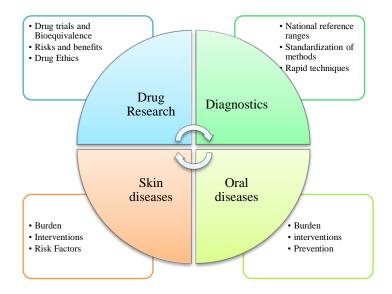


Figure: 6A-

# 7.2 Research grant application of PHRC

Majority (90.0%) of the participants said that proposal submission process shall be online and 10% said that it shall be both online and paper based.

For current review process, four main themes were delineated i.e. Inclusion of more than one reviewer in the review process, defined time limit for review process, double blind review of research proposals and use of online process/Software for review, automatic reply & reminders to authors, reviewers and others.

Majority of the respondents recommend review of proposals by an International reviewer and suggested that criteria for International review shall be based on funding limit of the research proposal and lack of National level expertise on the subject.

Most (85.0%) of the participants suggested revision of funding policy and suggested learners grants of up to One million, small/multicentre grants up to 10 million and National level grants of above 10 million up to 20 million or may be beyond if essentially needed.

Regarding consequences of revising funding policy, four themes were identified by data analysis:

- a. There can be operational and technical consequences but quality of research will be improved
- b. Timely management of the research project can be further improved through defined fund release mechanism.
- c. To enhance the inclusiveness in terms of quality research, collaboration with academia, universities, hospitals and other research institutions will be cost effective.
- Increase in funding limit will promote to identify and conduct multicentre/national level studies, may have increased role at strategic and planning level.

Following suggestions were made by respondents for approval of final reports of PHRC funded research projects:

- a. Review of final report shall be taken from the Expert Panel or initial reviewer
- b. Final report shall be approved timely
- c. Final report shall be available online, preferably before published article

30

Following suggestions and recommendations were made by respondents for research dissemination strategies:

- a. Research shall be published in good impact factor journals and PHRC should help researchers to get their paper published.
- b. One pager summary should be send to Ministry for policy making and implementation.
- c. Health research of public importance should be published in lay man language in print & electronic media as well as on PHRC website for public awareness.
- d. More grants should be provided to researchers to present their research is various forums (scientific conferences Nationally and Internationally).
- e. National health research repository shall be made
- f. There should be a budget head for international publications (Gold free access).
- g. Publication charges should be added in indirect cost.
- h. Budget for dissemination seminars for grants exceeding 15 million PKR shall be given.
- i. Universities should be notified for the area of health research concern and research done by PHRC should also be shared with universities.

# 7.3 Monitoring & Evaluation (M&E)

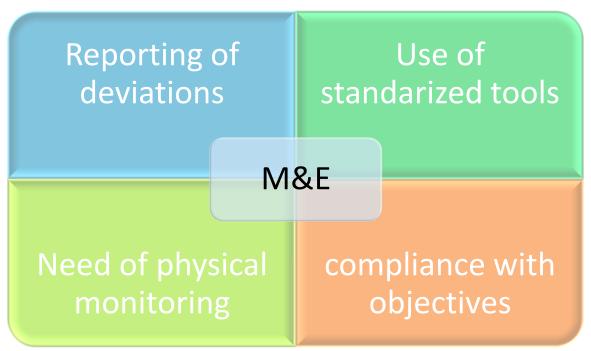
M&E are vital components forhealth research priority setting and capacity strengthening, and should develop as standard practice. For that purpose, proper financial allocation is prerequisite to ensure M&E process and provide basis forcomprehensivehealth research prioritization and capacity strengthening process. The cyclical M&E approach ensures the systematic input of lessons learned, including the progress of both process and outcome indicators.

All the participants of the session unanimously agreed to incorporate comprehensive M&E mechanism for the projects funded by PHRC. About 91% agreed that there should be both internal and external monitoring and evaluation systems. Only 34% suggest separate budget for the M & E activities in the project. However, all were in opinion that cost of M&E activities should be included in PHRC Grant application form.

About 73% emphasized on the need of physical monitoring, among them 95% recommended use of standardized tools. Almost half of the participants suggested periodic evaluation of the project. Of the total, 95% stressed to check compliance with goals and objectives of the research project and 78% highlight the need for reporting deviation from the method already approved.

About 40% suggested that frequency of submission of reports should be at the interval of six months. Some suggested that it may be subject to the duration of the research project. If the project is of one year duration then report may be submitted on quarterly basis. About 48% put emphasis on mentioning the budget details in quarterly report. More than 50% suggested description of results in the midterm report.

Almost 65% participants stressed on reviewing of final report by the reviewers before finalization. Only 39% give opinion about sending the final report to the two reviewers while 56% were of the view that the report should be viewed by the technical persons of the funding agency.



#### Figure 7A: M&E Components

# **8.0 RECOMMENDATION:**

# **8.1 Health Research Priorities**

A detailed discussion was carried out on the broad areas of research priorities, a list of more than 20 broad categories were proposed after synthesis of available material as discussed above. All participants used a scoring system developed and the results were analyzed later in the day.

According to the scores given by workshop participants following were the top ten categories recommended for future research initiatives;

# **High Research Priorities**

- 1. Non communicable diseases (NCDs) including mental health
- 2. Biosafety and biosecurity
- 3. Infectious diseases
- 4. Infant/Neonatal and child health
- 5. Health surveillance
- 6. Nutrition
- 7. Genetic disease
- 8. Oral and dental health
- 9. Immunization
- 10. Health Systems Research

Upon further discussion following general recommendations were agreed and proposed;

- I. Primary focus should be on the categories identified as national health research high priority
- II. Consider other areas not featuring high on the list depending on their local significance such as Tropical diseases and Drug research
- III. Despite doing research on burden and risks associated with diseases, it's time to work on relevant, cost-effective and sustainable intervention models not only for diseases but also for problems / issues pertaining to health
- IV. Coordinate and cooperate with other research bodies such as Universities, HEC, CPSP, PCSIR and other reputable public / private research oriented institutes for reliable scientific data base generation and networking all over the country

- V. Research should be preferably conducted after in depth analysis on the key research priority specific areas from within the broad categories that underpin public health importance and applied in nature
- VI. Identify the 'Best Buy' strategies to maximize the output and generate impact oriented research
- VII. Research budget of PHRC should be significantly increased for qualitative and policy oriented research
- VIII. The Council should be given role on various functionary committees involved in the business of health related policies

# **Key Recommendations**

- 1. Research should be focused on both diseases and preventive measures to overall reduce the burden
- 2. Collaborative and integrated research with Universities should be encouraged
- 3. National research priorities should focus on sustainable and cost effective interventions
- 4. Consultation process should continue to refine broad categories in to specific research themes / questions of national interest
- 5. Research Budget of PHRC should be increased

# Challenges

- 1. Effective translation of proposed recommendations in to policy guidelines
- 2. Phasic implementation of proposed recommendations
- 3. To enhance Political Sensitization / will for health research priorities
- 4. Allocation of funds for sustainable health research activities
- 5. Continuation of consultative process
- 6. Capacity building of PHRC
- 7. Maintain intelligent balance between recommendations and ground realities

# 8.1.1 Capacity Building of PHRC

- I. Merit based recruitment and promotions protocol should be established to avoid any gap of leadership and trained human resources in future
- II. Performance based service structure should be introduced to promote and produce quality based outcomes of research
- III. Adopt policies to retain of trained technical cadre employees in the Council
- IV. Continuous learning process should continue through award of fellowships and advance trainings with merit based equal opportunity.

V. The Council should also establish and enhance opportunity and need based national / international linkages with relevant organizations, communities and agencies.

# **8.2 Recommendations for PHRC Grants**

# 8.2.1 PROPOSAL SUMBISSION

a. It has been agreed by the group that the proposal submission should be online. As a start we can have both online and paper submissions. Once the online system is found effective then a complete switch to the online system can be made.

# 8.2.2 PROPOSAL REVIEW

a. To minimize the bias and improve the quality of research proposals, it is suggested to adopt double blinded review process.

b. Time lines for review process should be strictly followed.

c. An international reviewer should be considered for any study with a grant of more than 10 million. If the subject is of local nature than a local reviewer would be acceptable.

d. Without plagiarism check no grant application shall be processed further.

# 8.2.3 FUNDING

a. The group agreed on the need of reviewing the existing funding policy.

- b. Three categories of funding have been suggested
- i. Seed money: for students which should have a maximum limit of 1 million rupees

ii. Projects of Regional or provincial nature: should have a maximum grant limit of up to 10 million rupees.

iii. Projects of National level and scope may have a funding limit of more than 10 million depending on the scope of work and its significance.

# 8.2.4 FINAL REPORT

a. Reviewer of the final report should be the same as the initial reviewer for that particular project

b. Publication of all funded projects should be ensured. A support mechanism for writing manuscripts should be established.

# 8.2.5 BUDGET

#### 8.2.5.1 HONORARIA

a. It was agreed that staff is categorized adequately in the existing proforma

b. It was unanimously agreed that honoraria should not be a fixed amount. A percentage of total budgets may be fixed as honoraria and then it should be distributed with a formula between the Principal Investigator (PI), Co- Investigator (CI) and other staff. Proposed formula is as follows; Seed money grants (up to one million)

- a. A maximum of 15% of total approved cost should be allocated to PI for conceptualization and team for project execution.
- b. PI should not receive more than one third (up to 50,000 Pak rupees) of total amount, allocated for honorarium in each project if participating actively. Otherwise, same amount shall be given to designated project Incharge / Director and PI should not be entitled for honorarium in that case.
- c. CI should not receive more than one fifth (up to 30,000 Pak rupees) of total amount, allocated for honorarium in each project if participating actively. Otherwise, same amount shall be given to other project team members and CI should not be entitled for honorarium in that case.
- d. Remaining amount not more than 45% (up to 70,000 Pak rupees) of the honorarium head should be distributed among project execution team accordingly.

Regional / provincial / multicentre grants (up to ten million)

- a) A maximum of 6 % of total approved cost should be allocated to PI for conceptualization and team for project execution.
- b) PI should not receive more than one third (up to 0.2 million Pak rupees) of total amount, allocated for honorarium in each project if participating actively. Otherwise, same amount shall be given to designated project Incharge / Director and PI should not be entitled for honorarium in that case.
- c) CI should not receive more than one sixth (up to 0.1 million Pak rupees) of total amount, allocated for honorarium in each project if participating actively. Otherwise, same

amount shall be given to other project team members and CI should not be entitled for honorarium in that case.

 Remaining amount not more than 50 % (up to 0.3 million Pak rupees) of the honorarium head should be distributed among project execution team accordingly.

#### National grants (more than ten million)

- a. A maximum of 5 % of total approved cost should be allocated to PI for conceptualization andteamfor.
- b. PI should not receive more than one third of total amount, allocated for honorarium in each project if participating actively. Otherwise, same amount shall be given to designated project Incharge / Director and PI should not be entitled for honorarium in that case.
- c. CI should not receive more than one sixth of total amount, allocated for honorarium in each project if participating actively. Otherwise, same amount shall be given to other project team members and CI should not be entitled for honorarium in that case.
- d. Remaining amount not more than 50% of the honorarium head should be distributed among project execution team accordingly.

c. Honoraria should also be allocated to the PHRC staff depending upon their involvement in a particular research project

d. Special allowance may be considered for PHRC employees for additional expenses like traveling outreach area, health insurance during study period etc. subject to approval.

e. No PI shall be entitled to receive more than two research grants (any of above mentioned grant categories) at a time in a calendar year.

f. No PI will be eligible to apply for new grant till completion of (any of above mentioned grant categories) ongoing projects.

#### 8.2.5.2 OTHERS

a. A percentage of total budgets(approximately 10-15%) received from donors should be allocated for the institutional overhead.

b. An amount should be allocated for patient compensation, ethical approval and publication support.

c. PHRC may also be allowed to charge its operational fee (overheads) for the foreign funded studies. This idea was also endorsed by the UNAID representative.

Key Recommendations		
PHRC Grants	Participants Response (%)	
Grant application submission	Online (90)	
	Paper based & online both (10)	
Review Process of grant	Review should be done double blinded.	
application	Anti-plagiarism check is mandatory before proceed further	
Devision of funding range	An international reviewer can also be included. Three categories unanimously recommended;	
Revision of funding range	Seed grant: up to one million	
	Provincial / Regional grants: more than 1 to 10 million	
	National Grants: > 10 million	
Final Report	Ensure objectives of the study achieved or not?	
	External review is recommended.	
	Ensure dissemination of work done	
Budget heads		
Honorarium / Incentive	Honorarium / incentive to PIs and support staff of PHRC and	
	other researchers should be included in budget.	
	Amount of honorarium should be based on certain percentage $(5, 100)$ of total functions and	
Health Insurance	(5-10%) of total funding cost. In case of possible risks, health insurance coverage should be	
	allocated for both participants and researchers.	
Institutional overheads	At least 10-15% should be allocated for institutional overheads	
	for other than PHRC funded projects / activities.	
Processing charges	PHRC may also be allowed to charge its operational fee	
	(overheads) for the foreign funded studies.	

# 8.3 Monitoring & Evaluation

- 1. There should be comprehensive internal and external monitoring and evaluation system for the funded research projects.
- 2. The M & E budget should be borne by the funding agency and allocated separately according to the amount of the project.
- The midterm technical report should be according to key deliverables as committed in Gant chart. The submission of reports should be using electronic media.
- 4. The release of budget should be activity based and according to deliverables.

- 5. The final report should be checked for plagiarism and also include policy message, scientific limitations and future recommendations.
- 6. PHRC should develop a separate monitoring and evaluation unit for all M & E activities of research projects/activities/programs.

# **Key Recommendations**

- 1. Establish M&E unit to assess and standardize the outcome of ongoing and completed research activities
- 2. New specific head for M&E activities ranging from (10-15%) should be included in budget.
- 3. No research proposal should be entertained without scientific validity checks, ethical clearance and most importantly anti-plagiarism checks

# 9.0 Way Forward:

Health, development and research are integral components of social human values. Considering the fact that developed societies are based on social values with integrated appliance of equity and development. It is also well known fact that research cannot be done in isolation and cohesion between available resources, health care delivery and need is imperative to produce sustainable synergy within the system for betterment of population through impact oriented research. Therefore, based on tested models of health research priorities and recommendations of workshop participants discussed earlier, we have devised and proposing **COINS approach** for the continuation of national health research prioritization process;

Health Research Prioritization & Capacity Strengthening

Continue Consultative process Online and ongoing inventory of public health research and dissemination Improving information synthesis Need for improved tools for scientific funding, tracking, outcome and impact assessment Sustained health research process

The national health research prioritization process is multidisciplinary which requires multi-year research plan according to prevailing health needs of the public and for future forecast; is not only challenging but also demands deliberate planning, leadership, promise of a wide range of expertise, and resources. Such process is often more difficult in multicultural and socio geographically, ethnic wise, educationally and with rich diverse cultural representation among general public where inconsistent and changing priorities, geo-political uncertainty and organizational restrictions limit operative part of the process. Yet, sustained, integrative, creative, inclusive and ongoing health research priorities are essentially required for the betterment of health indicators of general public at large.

Ongoing consultative process in periodic manner is an essential tool to inculcate openness, patience and understanding within the process which is helpful to address health research problems. Therefore, quarterly consultative should be included in annual work plan to further improve the process of harmonization and identifying rationalized needs at each stage of research organization, collaboration, conduct, integration, promotion, dissemination and linking health policy to research.

Restructuring of PHRC should be given primary focus to recruit merit based new blood with fair selection process and to retain trained and able officers and staff of the Council for capacity strengthening and enhancement.

Using information communication technologies, online inventory of public health research and dissemination with improved information synthesis should be established as Country wide online data bank on health research priorities. There is a dire need to improve research funding mechanism by incorporation of quality based standards like M&E tools for scientific funding, tracking, outcome and impact assessment.

The progress on health research prioritization and capacity strengthening agenda is the result of long lasting efforts by PHRC, many other Nodes, and the scientific community. The continuing needs for health research identified in key findings and recommendations, will require an even more intensive and synchronized consultative activity of senior experts and other stakeholders;to maintain the momentum that has begun and addressing the underlying health research prioritization challenges for PHRC and other research agencies that have not been concentrated before.

# **10.0 Acknowledgments**

The National Consultative Workshop on Research Priority Setting & Capacity Strengthening 2018 was successfully completed due to the efforts and involvement of numerous organizations and individuals at different stages of the workshop. We would like to thank everyone who helped to make this workshop a success.

First of all, we are grateful to the Ministry of National Health Services, Regulation and Coordination (NHSR&C), Pakistan for its leadership, vision and support. We gratefully acknowledge the efforts and hard work of the workshop participants who had travelled from different areas of Pakistan and for giving their technical input and optimum utilization of their mental faculties for setting health research priorities and respond to the revamping PHRC funding policy with tremendous patience and collective wisdom.

We would like to express our thanks to Vice Chancellor, Principals, Deans, worthy professors of participating public and private Universities / Medical Colleges / Institutes and Ex-Executive Directors of PHRC for their valuable comments and suggestions. In addition, untiring efforts of our core team at PHRC Head office is highly acknowledged.

We are glad for the support we received from Sindh and KPK Health Care commission. We acknowledge the contributions of World Health Organization Country Office, Centre for Disease Control (CDC), Pakistan, USAID for sending their experts/nominees for this workshop. Many thanks are due to our Research Centers for coming and providing technical support to the best of their capabilities and knowledge.

This acknowledgement would not be complete without expressing appreciation for the hard work put in by the Research Development & Coordination Section, Administrationand other supporting staffof PHRC teamfor their continuous and coherent cooperation to make this event successful.

> Muhammad Ali Shahzada Executive Director, Pakistan Health Research Council, Islamabad

# **11.0 List of Participants**

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2.	Dr. Waqaruddin Ahmed, DD (HSR)/	Pakistan Health Research Council,
	Incharge RDC	Islamabad
3.	Dr. Syed Ashraf Wasti, Member PFC,	Member Provincial Finance Committee
	Sindh	(PFC), Sindh
4.	Prof.Dr. AazamYousfani, Vice	People Medical University, Benazir Abad
	Chancellor	
5.	Dr. Mukhtar Ahmed, Ex-ED	Pakistan Health Research Council
6.	Dr. Huma Qureshi, EX-ED, PHRC	Pakistan Health Research Council
7.	SQN LDR (R) Aazar Sardar, CEO	KP Health Care Commission
8.	Prof. Maj Gen. Salman Ali. Principal /	Air University, Islamabad
	Senior Vice President CPSP	
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10.	Prof. Dr. Umer Farooq, Dean	Ayub Medical College, Abbottabad
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12.	Prof. Dr. Khalid Usman, Dean	Nishtar Medical University, Multan
13.	Prof. Dr. Syed Jamal Raza, Director	National Institute of Child Health
14.	Prof. Dr. Zulfiqar Shaikh, HOD	Community Medicine, DUHS, Karachi
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19.	Shahzad Alam, NPO (Tobacco)	WHO, Pakistan
20.	Dr. Hassan Mahmood, , Consultant,	CDC, PHRC, Islamabad
21.	Dr. Rajwal Khan	UNAIDS, Islamabad
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23.	Dr. Younis Baloch, Chief Medical	Health Department, Govt. of Baluchistan
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24.	Dr. Zohaib Khan, Director ORIC	Khyber Medical University, Peshawar
25.	Dr. M. Suleman Otho, Director (M&E)	Sindh Health Care Commission
26.	Dr. Farkhanda Ghafoor, Director	Dept. of Research, PKLI, Lahore
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35.	Dr. Ejaz Ahmed Khan, Associate	Health Services Academy, Islamabad
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57.	Sana Rehman, RO	Pakistan Health Research Council, Lahore
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65.	Faiz Ahmad Raza, SRO	Pakistan Health Research Council, Lahore

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67.	Dr. Saira Maroof	AFPGMI, Rawalpindi
68.	Dr. Sana Tamim	PHLD, NIH, Islamabad
69.	Dr. Faiza Bashir, MO	Pakistan Health Research Council,
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70.	Ibrar Rafique, RO	Pakistan Health Research Council,
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72.	Malik Masood	Sindh TV News
73.	Rabia Irshad, RO	Pakistan Health Research Council, Karachi
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75.	Safia Bibi, RO	Pakistan Health Research Council, Karachi
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78.	Dr. MahwishTyaba	PH Dept.
79.	Dr. NosheenZaidi	
80.	Dr. SobiaTabbasam	
81.	Obaid Ullah, SRO	Pakistan Health Research Council, KP
82.	Ahsanullah Mirbahar, RO	Pakistan Health Research Council, Multan

# **12.0** Presentations



# Two Days Workshop for Research Priority Setting and Capacity Strengthening: 10 Years Plan

Pakistan Health Research Council Islamabad, Pakistan.

# Aims & Objectives of the workshop

Deputy Director (HSR) / Incharge RDC Section, PHRC, Islamabad

#### **Brief of PMRC**

- Constituted in 1953.
- Reconstituted in 1962 as a results of recommendation of "Medical Reforms Commission and Scientific Commission"
   More independent character was given in 1985.
- Board of Governors, Chairman, Executive Committee, Executive Director and Technical Advisory Committee to:
  - Research in various disciplines of Medical Sciences
  - Medical research activities linked with national socio economic development plans
  - Evaluation of different health programs

# **Enactment of PHRC Act**

- Autonomous status is given through act of Parliament in March, 2016 and council is renamed as Pakistan Health Research Council (PHRC) with broader mandate;
  - Research in fields of health including allopathy, homoeopathy, herbal, unani, ayuvedic and traditional medicine within framework of national, legal socio economic development
  - Sensitize public through information dissemination
  - Provide financial support for health research through grants and fellowships
  - Develop financial and other resources for research



# **Research Proposals**

- Any researcher can apply for R.grant:
- With in PHRC or out side
- After initial recruitment send to two reviewers
- If proposal is accepted; it is presented in the TAC committee
- If approved; Project is funded and 50% of the budget is released

## **Research Proposals**

- Quarterly reports are asked and monitored
- At the consumption of 1<sup>st</sup> instalment 2<sup>nd</sup> instalment (30%) is released
- After the completion of project and receipt of final report 3<sup>rd</sup> instalment (20%) is released
- Final report is reviewed and published

#### **Key Research Activities**

- 1. National Health Survey of Pakistan 1991 1994
- National Survey on Prevalence of Hepatitis B&C in General Population of Pakistan (49,000 pop)-2008
- Hospital Based Rotavirus Gastroenteritis Surveillance (5000 children)-2008
- Global Youth Tobacco Survey of Pakistan (9000 youth)-2013
- 5. Global Adult Tobacco Survey (GATS)-2014
- 6. Malaria Indicator Survey (81,000)-2014.
- 7. Non Communicable Disease (8000) Survey-2014

#### **Guidelines Prepared**

- Guidelines for Snakebite Management & Web based, free download World Snakebite Management Guidelines-2008
- 2. Guidelines for Prevention of Rabies-Pakistan-2013
- Guidelines for the treatment of chronic hepatitis C infection Pakistan 2016
- 4. Guidelines and teacher handbook for introducing bioethics to medical and dental students
- 5. Physician-Pharma guidelines
- 6. Stem Cell guidelines
- 7. NBC-ERC guidelines
- 8. Human Biological Material guidelines

#### National Bioethics Committee (NBC)

- Secretariat of NBC
- Gazette notified in 2004 and serves as advisory body.
- Reviewing and accrediting regarding bioethical aspects of health research and service delivery in Pakistan.
- NBC has two functionary Committees;
  - Research Ethics Committee (REC)
  - Health Care Ethics Committee (HCEC)

#### National Bioethics Committee (NBC)

- Research Ethics Committee (REC): Reviewed and granted the bioethical clearance to more than 300 international/national research studies.
- Health Care Ethics Committee (HCEC): was established in 2004 with the aim to ensure good ethical practices in health care and medical education which is achieved through nationwide training and facilitation for provincial/ regional/ institutional capacity building. Since 2013, 29 training workshops have been conducted all over the country.

## **Research Dissemination**

The Council disseminates the information generated through its research activities by the following means;

- Pakistan Journal of Medical Research (PJMR) (Quarterly, since 1962)
- Published more than 500 original research papers in National and International Journals
- Participated and facilitated in awareness activities using print and electronic means
- Annual report
- Monographs/ Technical Reports/ Survey Reports / Seminar Reports

#### **Gaps and Deficiencies**

- Very few National or International Projects done
- Only small project entertained
- Mostly self driven projects done
- Donor driven projects done
- National priority for research is missing
- Local problems of health is not reflected existing researches

#### Aim of workshop:

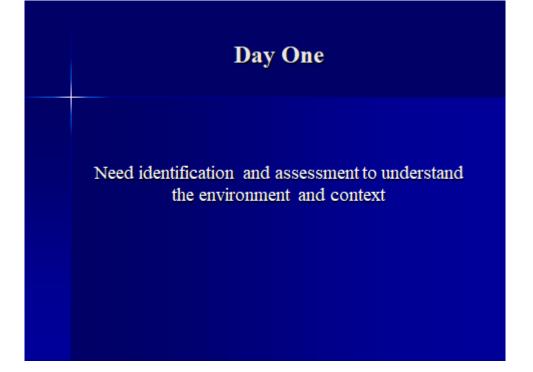
"To formulate the Research Priority for PHRC according to the National needs and for the improvement of Health care of the population"

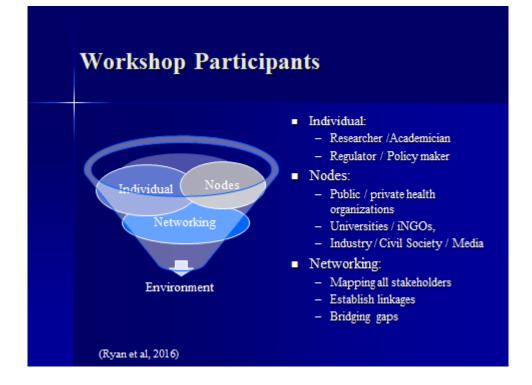
#### Strategic Aims

- Setting health research priorities which are most likely to bring enhanced health outcomes for the society
- To contribute and accelerate in economic progress by identifying cost efficient measures through integrated health research
- Support and promote quality research

# Objectives

- Identify and rationalize contextually relevant areas for future research
- Prepare recommendations for harmonization of research work at policy level in line with national / provincial / regional needs
- Prepare draft of integrated health research priorities of PHRC.





#### **Setting Research Priorities: Tools**

- Two Step research prioritization tool is devised in line with national needs;
  - ENHR document
  - WHO research prioritization tool
  - Review articles on setting priorities, disease burden
  - Prevalent diseases
  - Associated common issues

#### **Tool: Step One**

- Identify and categorize area of concern regarding health research
- Burden
- Risks / associated factors
- Prevention and control
- Interventions
- Sustainability
- Policy issues

#### **Tool: Step Two**

- Following aspects of research priority will be discussed;
  - Appropriateness
  - Relevance
  - Impact

#### Day TWO

- Experts / participants will be assembled in three technical groups to frame recommendations on following themes;
  - Establishment of M&E plan
  - Revision of proposal submission forms/ review process / QPRs/ dissemination strategies
  - Set up strategies to support the integration of defined priorities
  - Recommend standards with which the priority setting process should comply

# Thank you

#### RESEARCH MONITORING AND EVALUATION

GROUP RECOMMENDATION



### COMPREHENSIVE MONITORING AND EVALUATION

- I. Internal and external M&E
  - Universities involvement for external M&E and Internal monitoring committee
- II. Separate budget for M&E in project cost.
  - IT based tracking system, should be embedded in project cost. External evaluation budget for PI

#### INTERNAL MONITORING

- I. Need of physical monitoring
  - Depends on the nature of research( primary versus secondary data analysis)
- II. Standardization of the methods for the research project
  - Internal mechanism of evaluation and standardized protocols
  - Separate internal evaluation committee with defined mandate and review mechanisms
- III. Event wise evaluation
  - Resource intensive and bureaucratic

#### **EXTERNAL EVALUATION**

- I. Need of external monitoring
  - Third party involvement to eliminate the biases
- II. Scope and mandate of the external Evaluation
  - External evaluation
- III. Check compliance with the goals and objectives
  - To determine the impact
- IV. Reporting deviation from the approved method
  - Essential and deviation should be mutually agreed

#### MONITORING PLANS

- I. Are outputs leading to achievement of the outcomes need to be mentioned?
- II. What is causing delays or unexpected results?
- III. Is there anything happening that should lead management to modify the operation's implementation plan?
- IV. Are finance, personnel and materials available on time and in the right quantities and quality?
- V. Measuring changes at goal-level requires a longer time frame, and is therefore dealt with by evaluation and not monitoring. How do beneficiaries feel about the work?
- VI. Are activities leading to the expected outputs?
- VII. Are activities being implemented on schedule and within budget?

#### **EVALUATION PLAN**

- I. What changes did the project bring about?
- II. Were there any unplanned or unintended changes?
- III. Were activities implemented on schedule and within budget?
- IV. Were outputs delivered economically?
- V. Are the benefits likely to be maintained for an extended period after assistance ends?
- VI. Were the operation's objectives achieved?
- VII. Did the outputs lead to the intended outcomes?

#### **PROGRESS REPORT**

- I. Frequency of reports
  - Depends on duration of project e.g.six months project
  - IT based online reporting system
- II. Budget utilization details in quarterly report
  - Ensure the budget is released on deliverables
  - Learning from currently financial monitoring tools
- III. What should be mentioned in the current project report?
  - · "ongoing" should be replaced with phasing of project activities e.g. GANTT charts etc.
- IV. Description of results in the report
  - Limited application during the project period

#### FINAL REPORT

- I. Send the final report to reviewers?
  - Already reviewed internally, but need of external review
- II. Is it appropriate to send it to two reviewers?
  - Reviewer involved in the approval should review the final report (Y/N)
- III. Final report is reviewed only by the technical persons of funding agency?
  - Already in place and should be supplemented with external review
  - Recommendation and limitation should be included
  - Plagiarism report (e.g. Turnitin)

#### **13.0 PHOTO Gallery**



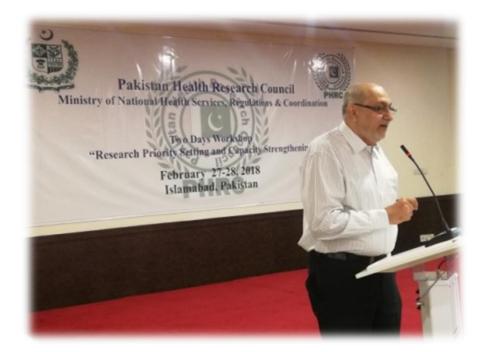






















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# Health research priorities and gaps in South Asia

**Soumya Swaminathan and colleagues** call for increased funding and regional collaboration to boost research relevant to disease and health priorities in South Asia

ealth research in South Asia is widely acknowledged to be inadequate to inform policy and action to improve health outcomes in the populations. We examine current investment into health research and outputs in South Asian countries and suggest how they can be improved.

#### Changing disease profile in South Asia

To maximise its benefits, health research must take into account trends in disease burden among the population. Although the relative contribution of non-communicable diseases to the disease burden has increased in South Asia, the burden of communicable diseases continues to be high in all countries except Sri Lanka (fig 1).<sup>1</sup> Injuries continue to be an important population health problem in all countries. Previous analyses suggest that research output is often not consistent with population health priorities or disease burden.<sup>2-6</sup> For example, an analysis from India reported that some of the leading contributors to disease burden within all three groupings- communicable disease, non-communicable disease, and injurieshad a disproportionately low representation in published papers and research reports.<sup>2</sup>

#### Low health research output

Estimates from a multicountry assessment show that the number of health publications per capita from South Asian countries during

#### **KEY MESSAGES**

Although the number of health publications from South Asian countries is increasing, health research output is still much lower than in high income countries Investment in health research is poor and there is little political and public awareness of its long term merits Health research priorities include applied public health research, under-researched diseases that cause substantial local burden, mechanisms for large scale data generation and utilisation to understand population health trends, and addressing the broader determinants of health Boosting health research will require more effective articulation of the public benefit of higher investment in health research, development of human resources and infrastructure to enhance research capacity, and strengthened governance

2002-11 was substantially lower than in Brazil and China, and two orders of magnitude lower than in high income countries (table 1).<sup>7</sup> Of the total publications globally, 30% were on health during this period. Among South Asian countries the proportion of health publications was highest for Nepal (50%) and lowest for India (16%). Although the number of PubMed listed papers per capita increased more quickly in South Asian countries than the global average from 2005 to 2015 (3.6-6.9 times v 1.6 times), the absolute numbers were still 5-23 times lower than the global per capita average in 2015.

The value of health research is determined as much by its quality as by its scope and quantity. Although it is generally believed that the quality of health research in South Asian countries needs improvement, large scale systematic data are not available.

## Health research is undervalued and poorly funded

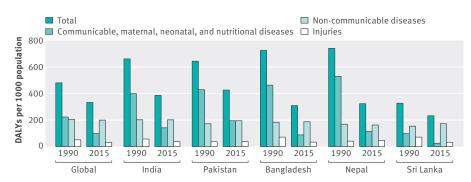
Funding for health research in South Asian countries continues to be deficient. These countries have a higher disease burden but spend a relatively smaller proportion of their gross domestic product (GDP) on health research, which limits production of the knowledge needed to improve population health. The per capita expenditure on health research was highest in India, followed by Pakistan and Sri Lanka, and lowest in Bangladesh and Nepal (table 2).7-9 Compared with the United Kindgom, the per capita expenditure on research was 36-714 times lower in South Asian countries. Expenditure on health research in India was estimated to be 0.12% of GDP; this figure was 3.7 times higher for United Kingdom. Health research expenditure as a proportion of all research expenditure is generally less in South Asian countries than in high income countries.

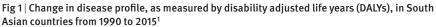
Globally, the spending on health research and development by industry is higher than from public sources. It is estimated that 76% of the health research expenditure in India was by the industry.8 Recent data on the funds allocated to the Indian Council of Medical Research show that after adjusting for inflation the amount has remained the same from 2008-2009 to the 2015-2016, but increased for 2016-2017. These estimates are only indicative due to data limitations, and more recent estimates are not available for cross-country comparisons. Systematic tracking of health research expenditure as a whole and what it is spent on is crucial to maximize population level health gains.<sup>10</sup>

#### Priorities for health research in South Asia

Broadly, health research can be divided into three types. Basic science research helps understand pathophysiological mechanisms of disease and effects of treatments at a molecular level; clinical research helps understand causal factors and outcomes of disease in patients and assess effectiveness of treatment; and public health research identifies contributing factors and approaches to improving population health as a whole. Evidence from all three categories is vital to improving health of individuals and populations.

Public health research is scarce in South Asian countries because the medical aspects of health have been overemphasised at the expense of mechanisms for population health promotion and prevention. An analysis from India reported that only 5% of the health publications were in public health.<sup>2</sup> Only recently has public health research started receiving more attention. Within public health, research on health systems and policy, including implementation research and evaluation research to assess





#### Table 1 | No of publications per million population in South Asian and selected other countries, 2002 to 2011<sup>7</sup>

	All fields	No (%) on health
India	258	42 (16)
Pakistan	144	31 (21)
Bangladesh	49	14 (28)
Nepal	78	39 (51)
Sri Lanka	170	54 (32)
Brazil	1195	362 (30)
China	701	86 (12)
Australia	14 498	4671 (32)
United Kingdom	13 668	4343 (32)
United States	10 226	3341 (33)

Table 2 | Estimated annual expenditure on health research and development based on the last available data\*<sup>78</sup>

	Per capita (PPP\$)†	% of GDP		
India	4.17	0.12		
Pakistan	1.31	0.03		
Bangladesh	0.25	0.01		
Nepal	0.21	0.01		
Sri Lanka	0.87	0.01		
Brazil	9.96	0.09		
China	6.60	0.09		
Australia	160	0.38		
United Kingdom	150	0.44		
United States	340	0.65		
*Data around the year 2010 for South Asian countries and				

2012 for high income countries. †Adjusted for purchasing power parity.

the effect of large scale interventions, needs more attention.

The focus of health research should be generally commensurate with trends in disease burden. Although research on non-communicable disease deserves growing attention, communicable diseases also need research because they continue to be major contributors to disease burden in all South Asian countries except Sri Lanka. More good quality clinical trials that are relevant to the disease burden in South Asia are needed. Basic research on neglected diseases or diseases of high burden must also be supported and prioritised, particularly infectious diseases that are prevalent in the region and not studied adequately in the developed world. Systematic research on the traditional systems of medicine is also needed.

The role of international partners and funders in setting health research priorities varies across the South Asian countries, with smaller countries more influenced by them. Although the contributions of international partners are crucial, a determined effort is needed to inform health research priorities objectively in order to maximise improvements in population health in these countries.

A cross-cutting priority for health research in South Asia is to systematically collect large scale data that allow timely understanding of disease distribution trends at the population level. Such research has been used to great advantage in more developed countries to inform improvements in population health and measure effectiveness of public health programmes. The components of this include data from large scale surveys, population cohorts, and high quality surveillance, and collating data from various sources in repositories that can be used easily by researchers.

Another priority is to develop systems for tracking health research output and assessing how closely it is responding to the disease burden and other health priorities in each country. These systems must also track industry sponsored research. National health research agencies should take the lead on developing tracking systems in partnership with other organisations that have complementary skills in identifying and managing such data.

Realisation is increasing that substantial and lasting improvement in population health is less likely without action to tackle the broader determinants of health-those not handled by the health sector directly.<sup>1112</sup> Housing, working conditions, urban design, environment, education, social protection, and equity affect health and must be studied to suggest approaches that are feasible in the local context. By its nature, this research has to be multidisciplinary and large scale. The South Asian countries must invest in building capacity for such research and foster collaborations between different sectors to realise the full potential of research in helping improve population health.

#### Boosting health research in the region

Boosting health research in South Asian countries requires adequate funding, enhanced research capacity, and strengthened research governance.

National research agencies have made several attempts to strengthen health research in recent years, including laying out health research policies or strategies.<sup>13-16</sup> However, funding and implementation have not matched the requirements. The demand for health research by political leaders and the public is weak. A more effective case for how appropriate investment in health research could serve as a major public good for the long term has to be made by governmental and academic research leaders in order to enhance its demand.

Human resources and infrastructure for high quality health research are widely acknowledged to be weak in South Asia.<sup>8</sup> There is a lack of systematic large scale initiatives to recruit and train adequate numbers of high quality health researchers. The Wellcome Trust-DBT India Alliance is one such example, funded equally by the Wellcome Trust and Department of Biotechnology, Government of India to build capacity for high quality biomedical research by supporting promising scientists in India.<sup>17</sup> Many more such initiatives are needed to meet existing gaps. Research capacity building is a slow and tedious process, and initiatives must have a long term plan and engage with the full range of stakeholder institutions. Although there has been some action to enhance opportunities and research skills for medical students and postgraduate doctors, supporting diverse researchers in basic sciences and public health is equally important.

Governance of health research must be strengthened to enhance the research environment and quality of research. An effective senior cadre of research managers with skills in financial management, ethics oversight, fund raising, project management, and external communications must be developed. Ethics oversight requires particular attention. A review of published studies from Sri Lanka revealed that only a third had documented ethics approval,<sup>18</sup> and a similar pattern is likely in other South Asian countries. Although ethics guidelines have been issued,<sup>19-23</sup> implementation and monitoring of compliance are inadequate and have led to instances of violation of rights of research participants, in particular disadvantaged groups of society. The context of disadvantaged groups must be considered when setting health research priorities to avoid harm, enable trust and participation, and maximise benefits for the entire society.24

#### **Regional collaborations**

Most intercountry collaborations in health research in South Asia are with developed countries rather than regional initiatives. A report in The Economist in 2015 estimated that, of all international research collaborations in any field in South Asia, only 2.2% were between countries in the region.<sup>25</sup> Attempts have been made to enhance health research collaboration, such as the South Asia Forum for Health Research.<sup>26</sup> Systematic investment and effort are needed to support such initiatives and build on them. Regional collaborations must be harnessed because South Asian countries generally have similar disease priorities and social, cultural, and political dynamics. Such collaborations would also boost the ability to advocate for larger resources for health research in this region, where a quarter of the world's population lives.

We thank Sanjay Mehendale and Ravi Mehrotra of the Indian Council of Medical Research, and Zulfiqar A Bhutta of the University of Toronto and Aga Khan University in Pakistan for their input, and G Anil Kumar of the Public Health Foundation of India and M Arif Nadeem Saqib of the Pakistan Health Research Council for compilation of data and materials.

**Contributors and sources**: SS and LD drafted the paper. All authors provided inputs on the paper and perspectives from their respective countries, and agreed with the final content of the paper.

**Competing interests**: We have read and understood BMJ policy on declaration of interests and declare that SS, HK, MUJ, DKB and SDA are or have been affiliated with national health/medical research agencies.

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#### Cite this as: BMJ 2017;357:j1510

http://dx.doi.org/10.1136/bmj.j1510

# 2017

# **National Research Agenda**



# Pathway to Shaping the Future



Pakistan Council for Science and Technology Ministry of Science and Technology Islamabad December, 2017

# **National Research Agenda**

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## Introduction

**Pakistan Vision 2025** envisions to make Pakistan among the top 25 economies by 2025. To realize this vision, five enablers and seven pillars have been identified which are based on the imperatives of embracing change, transformation, and to create new opportunities based on innate strength. The key five enablers include (i) shared vision, (ii) political stability & continuity of policies, (iii) peace & security, (iv) rule of law and, (v) social justice. While the seven pillars of the Vision 2025 included; (i) *People First*: Developing human and social capital, (ii) *Growth*: Sustained, indigenous, and inclusive growth, (iii) *Governance*: Democratic governance: institutional reform and modernization of the public sector, (iv) *Security*: Water, Energy and Food security, (v) *Entrepreneurship*: Private sector and entrepreneur-led growth, (vi) *Knowledge Economy*: Developing a competitive knowledge economy through value addition, and (vii) *Connectivity*: Modernizing transport infrastructure and regional connectivity. Under the seven pillars, 25 goals have been set which would be accomplished by the year 2025.

The Vision 2025 assumes that the country's untapped potential provides room for optimism that Pakistan could emerge as great nation and economic power if resources are generated, managed and used efficiently. It puts emphasis on knowledge, innovation and entrepreneurship as key drivers of growth and future progress. State-of-the-art technologies like biotechnology and nanotechnology are recognized as instrumental in the creation of core competencies that can provide needed skills and enhance productivity to transform Agriculture, Industry and the services sector over the coming years. The Vision also relies upon indigenous resources and self-reliance to steer the economy to a higher growth trajectory and recognize the primacy of the private sector as the key player for accelerating growth. The aim is to establish a sound socio-politico-economic structure, which fosters and preserves good society, good politics and good economy with responsibility towards the future generations.

**Innovation,** through focused research and development (R&D), is one of the major thrust areas of the Vision 2025. For this, the Vision envisages establishing the missing link between our knowledge and production platforms through government, private sector and academia/ research partnerships. Science & Technology and R&D can play an important role to realize almost all the goals and targets of the Vision 2025; however, some of the goals, as given below, require direct interventions of science and technology:

- *<u>Higher Education</u>*: Increase in higher education coverage from 7% to 12%.
- <u>Sanitation</u>: Increase in proportion of population with access to improved sanitation from 48% to 90%.
- <u>Efficient and Effective Delivery of Services to Citizens</u>: Modern performance driven public sector through adoption of technology for efficient and effective delivery of services to citizens.
- Increased Exports: Increase in annual exports from US\$ 25 billion to US\$ 150 billion.
- <u>Energy</u>: Double power generation to 45,000 MW and provide uninterrupted, affordable and clean 'energy for all' electricity access from 67% to 100%.
- <u>Water</u>: Increase storage capacity and improve efficiency of usage in agriculture by 20%.
- *Food Security*: Reduce food insecure population from 60% to 30 %.

• <u>*Knowledge Economy*</u>: Improve Pakistan's score on the knowledge Economy index from 2.2 to 4.0.

**Technology Foresight** is a systematic approach which focuses on the future of science and technology- both as a driver of change and as a response to the needs of society. It involves methodical attempts to look into the longer-term future of science and technology, and their potential impact on society, with a view to identifying the emerging change factors, and the source areas of scientific research and technological development likely to influence change and ensure sustainable development, and thus yielding the greatest economic, environmental and social benefits. It can be described as the use of collective thinking and wisdom to identify priorities and address key future challenges of society and economy. For this it relies upon consulting a wide range of experts, with the expectation that through our collective experience, imaginative abilities and interactive knowledge of technological development pathways, we can begin to construct a coherent view of some of the major developments that can be anticipated within a time period of 10-25 years. Hence, Foresight can be called as the national capacity to think ahead.

**Pakistan Council for Science and Technology (PCST)**, with the aim to provide valuable inputs to policy, planning and strategy undertook technology foresight exercise in various priority areas of national importance such as Agriculture, Biotechnology, Education, Electronics, Energy, Environment, Health & Pharmaceuticals, Information & Communication Technologies (ICTs), Industry, Marine Resources, Nanotechnology and Water. Reports in each of the Priority Area were prepared by the Expert Panels comprising experts from Universities, R&D organizations and the Private sector.

**The National Research Agenda** has been prepared with the aim to align the national R&D and innovation activities with the Vision 2025 and to provide a direction to the national R&D efforts so that they adequately support achievement of the goals set in the Vision. Indirectly, the document of the National Research Agenda is based on the input of a large number of scientists as it is grounded on the Technology Foresight Reports; which involved about 200 experts in different areas, and the documents of National STI Policy 2012 & National STI Strategy 2014-18; which were prepared by different teams of experts and were circulated to a large number of stakeholders for their views and input, and a team of professionals from PCST.

In the Research Agenda, **fifteen Priority Areas** have been identified which are presumed to be important for national growth and development over the next decade or so. There is a strong connectedness among many Areas and developments in one Area may affect the other Areas as well. For example, developments in the Water sector will impact the Areas of Agriculture, Environment, Industry etc., while developments in the Energy and ICTs sectors will be reflected in almost all other Areas. Priority Areas have been arranged in the order of priority based on the opinion of the members of Executive Committee of the National Commission for Science and Technology (ECNCST). The membership of ECNCST, *inter alia*, includes Minister for S&T and Deputy Chairman, Planning Commission / Minister for PD&R. For each Priority Area, a precise **Problem Statement**, brief **Present State of Development**, **Relevance with the Vision 2025** and its **Potential Socio-economic Impact** has been given. Further, **Focus Areas of Research** under each Priority Area have been identified for more focused efforts within the Priority Area, while **Recommendations** have been made for the overall development of the Area.

It is hoped that document of the National Research Agenda will provide basis of initiation of well-directed and sustained R&D efforts to successfully achieve the Pakistan Vision 2025. However, to make this a reality a strong **political will** of the government; supported by long-term financial commitments, and a true sense of **nationalism** among all stakeholders; evident through solid actions, will be required.

# **National Research Agenda: Priority Areas**

## 1. Agriculture & Food Security



## **Problem Statement**

The major problems in Agriculture in Pakistan are low per acre yield, increasing water scarcity, degradation of land resources (water logging and salinity), inefficient use of agricultural inputs (specially unbalanced application of fertilizers and inefficient water application), ineffective transfer of technology to the farmers, post-harvest losses and poor marketing infrastructure. Both biotic and abiotic stresses and climatic change are important physical factors increasingly threatening the crops. Heat is a potent threat, with unusually hot crop cycles being experienced more frequently which may cause significant healed losses in wheat, cotton and rice oilseeds and pulses. Crops in arid areas can also be damaged due to prolonged dry spells. It is feared that the climate change associated with global warming will further threaten the crops in future. Pakistan will need to increase its production of major agricultural products (food, feed, fiber, sugar, edible oil, meat, milk, poultry and fish) to feed its growing population and also generate some surplus for export. Lack of value addition in agricultural products is also a big issue in Pakistan e.g. despite being one of the largest milk producing countries in the world, huge foreign exchange is spent on the import of dry milk. Advances in the Agriculture sector are also required in the contexts of the concepts of 'functional foods' and 'one health'.

## **Present State of Development**

Pakistan has diverse agro-climatic conditions, good natural resource base (land and water) and large network of irrigation system suitable for diversified and intensive agriculture production system. Agriculture sector, which comprises 45% crops and 55% livestock, provides livelihood

for 60% of the country's population living in rural areas. It also contributes 21% to GDP, 60% to exports and 45% to employment of the labor force.

In the last few decades, Pakistan has witnessed an unprecedented technological and economic transformation. It was able to achieve food self-sufficiency, triple its agricultural exports, reduced poverty, increase income levels, and improve quality of life of people up to some extent. The transformation started in the late 1960s with the advent of green revolution. The key elements in improving food production since green revolution were the combination of technology package; high yielding varieties, input intensiveness (irrigation and fertilizer); improved policy measures; incentive in the form of input subsidies and investment in agriculture infrastructure (irrigation, research and extension). Consequently, by the end of 20<sup>th</sup> century, almost all of the irrigated area was cultivated under high yielding varieties, irrespective of farm size, which resulted in sustained increase in the yield of various crops.

In spite of an impressive increase in agriculture production, it did not improve the living standards of the rural population to the desired level. Pakistan's average national crop productivity (yields) is almost at par with the world's averages with major contribution from progressive farmers. However, a major part of the arable land is cultivated by small farmers who hold less than 12.5 acres of land; small farmers are 86% of the total number of farmers. The small farms are continuously increasing because of land division due to inheritance affecting agricultural productivity, as small farmers are generally resource poor.

Pakistan is blessed with tremendous livestock wealth comprising about 34.28 million cattle, 29.41 million buffaloes, 27.76 million sheep and 59.86 million goats. They provide milk and meat to masses and make a substantial contribution to export. Apart from this, livestock play an important role in the subsistence farming of the country as they are used as cash at the time of emergency. However, there is sufficient room for increasing meat production, thus making access to masses.

## **Relevance with the Pakistan Vision 2025**

The Pakistan Vision 2025 seeks a Pakistan where all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. It envisages food security in the context of the entire supply-chain- from production, processing, storage and distribution to consumption. In this regard, it has set the target to reduce food insecure population from 60% to 30%.

## **Focus Areas of Research**

- Genetic modification for higher yields and pest resistance in major crops as well as for improvement of livestock traits (disease / heat resistance, high meat / milk yield).
- Value addition in agricultural products (especially fruits, milk, meat etc.) through novel and innovative food processing and preservation techniques.
- Efficient cropping & irrigation practices
- Better storage and transportation practices
- Development of good quality and disease-free seeds, and Food safety
- Use of remote sensing technology for pest surveillance and monitoring of the irrigation system

## Recommendations

- Climate smart agriculture to maintain soil health and resilience for sustainable future food security.
- Data base for livestock and crops, at breed and variety level, on actual basis and readily available for evaluation and decision making.
- Reductions in the wastage (~40% of total) of agriculture produce through infrastructure improvement and installation of facilities for high throughput post-harvest treatment plants at strategic places close to production areas.
- Availability of seeds of recommended varieties be ensured.
- Steps be taken to ensure effective technology transfer from R&D institutions and universities to the farmers'.
- Diversification into high value agriculture and value added products.
- Improving the nutritional quality of staple food to provide essential nutrients such as iron, vitamins, amino acids and proteins.
- Promotion of kitchen gardening and tunnel farming etc.
- Adoption of best production and management practices in livestock, poultry and fish farming.
- A number of scholarships for undergraduate degree training are recommended in Thailand, a country who is excellent in food security.
- Rural development programmes, including infrastructure and education as well as connectivity measures, are also essential to de-urbanization.
- Develop irrigation system to conserve water without compromising yield such as drip and sprinkle irrigation systems.
- Utilization of marginal lands for fodder and wood production
- Introduction of Community based agriculture system backed by export facilitation at community level.
- Strict variety approval and seed production regulations at provincial level by mandatory inclusion of DNA based characterization and purity testing.
- Strengthen existing institutions and/or establish new one (agricultural Advisory institution) which can predict the viability and quantity of any crop required in coming season to protect against deficiency or over production of Agriculture products.

## **Potential Socio-Economic Impact**

Agriculture has been the backbone of Pakistan's economy and has over the years played a pivotal role in Pakistan's economic growth and development. Due to its significant contributions in the GDP, labour employment and providing livelihoods to the rural populations, even a slight improvement in the agriculture sector would mean addition of billions rupees to national economy and up-gradation of living standard of a large population. In nutshell, progress in agriculture sector would impact employment generation, poverty reduction, generation of economic activities, self-sufficiency in food, revenue generation, support to industrial sector and growth and economic wellbeing of rural population.

## 2. Water



#### **Problem Statement**

Pakistan is fast becoming from 'water-rich' to 'water-scarce' country. In Pakistan, agriculture is the largest sub-sector of water use as it consumes around 93% of total water resources available (surface & groundwater). Due to shortage of water, the agriculture sector is an increasing pressure to balance improvements in productivity with stress on natural resources. The sewage, industrial and agricultural effluents are affecting the quality of groundwater as well as freshwater bodies. Drinking water resources are also shrinking and its quality is a big challenge all over the country. Provision of safe water supply to the growing population of the expanding cities and rural areas in a sustainable manner has become one of the most challenging issues. Due to increase in population and country's economic growth the demand of domestic and industrial water in future will further grow. The realization for minimum e-flows (environmental flows) in the river system would also be required additional water.

#### **Present State of Development**

In Pakistan, as opposed to over 50 % of urban population having access to pipe water supply, only about 26 % rural population have access to pipe water supply at their premises. Adequate water treatment is being provided in few cities and the quality of water does not fully meet the drinking water quality standards laid down by PSQCA and WHO guidelines, in general. Due to the poor quality of tap water in the country has witnessed a mushroom growth in the bottled water industry over the past few years with an annual growth rates nearing 40%. While coverage of sanitation services is hardly 42%. Effluents from agriculture, industry and sewage are being disposed into freshwater bodies, affecting flora and fauna of the IBIS (Indus basin irrigation system) and delta. It has also directly influenced the quality of ground water.

Irrigated agriculture is the major user of both, surface and groundwater resources of Pakistan. The average annual river diversions for irrigation in the Indus Basin are of the order of 104.7 MAF, to irrigate over 14.6 million ha of the command area. An estimated 50 MAF of groundwater is pumped annually in Pakistan. According to a study, more than 90% of the extracted groundwater is used for irrigation purposes. Groundwater reservoirs are recharged from the rivers as well as the seepage losses from the canals, watercourses, farm channels and the fields.

WAPDA, PARC and IWMI have conducted research for enhancing productivity, efficient use of water, and salinity control and management largely during 80s and 90s, when funding was available from donors. But their work was largely focused either at field level or at the level of distributary canal covering narrowly focused specialized research. A comprehensive approach for integrated agriculture production and resource management for sustainable livelihood and ecosystem health was not adopted.

## **Relevance with the Pakistan Vision 2025**

Water security is one of main goals of the Vision 2025 as it aims to increase water storage capacity to 90 days, improve efficiency of usage in agriculture by 20% and, ensure access to safe drinking water for all Pakistanis. Developments in the water sector are also fundamental to achieving goal of 'reducing food insecure population from 60% to 30%'.

## **Focus Areas of Research**

- Application of GIS and hydrological modeling for water resources planning and management
- Recycling of waste water
- Rainwater harvesting
- Techniques for recharging depleted aquifers
- Water conservation technologies
- Monitoring of surface and ground water quality
- Technical assessment survey of water supply schemes
- Development of innovative low cost monitoring kits
- Development of treatment technology for water and waste water
- Membrane Technology

- Enhancing national water storage capacity and safe drinking water coverage on warfooting basis.
- Strengthening relevant R&D organizations thus to focus on conducting demand-driven R&D so that technologies and products can be developed which are readily adopted by the agricultural, industrial and domestic clients.
- The industry needs to be motivated for being active partners in modernizing and managing their industrial processes for water efficiency.

- The local municipalities, in active partnership with the S&T institutions and the private sector, devise mechanisms how technological processes and cost-effective technologies can be introduced to improve the performance of water supply and sanitation systems.
- NGOs, R&D institutions and the private sector should be linked together for creating awareness about the technologies, processes and best practices at a large scale.
- The agricultural policies should focus on increasing productivity as well as water efficiency by reducing on-farm water losses, adopting high efficiency irrigation techniques and best practices for the design of cropping patterns.
- Recycling of household grey water for its usage for lawn irrigation / gardening.

## **Potential Socio-Economic Impact**

Water, perhaps, is one of the most important natural resources on earth, without which life is impossible. The potential impact of improvements in water sector will be evident through enhanced agricultural productivity & food security, improved human health and decreased costs of health care as well as improved environment and increased productivity in the industrial sector.

## 3. Energy & Fuel Cell Technology



#### **Problem Statement**

Pakistan has been facing an unprecedented energy crisis for the past few years as the demand and supply gap widens. Energy is the key determinant of economic development and social prosperity of any society. It also provides an impetus for keeping sustainability in economic growth, hence, it is the key area which need to be addressed if the Vision 2025 has to be realized.

#### **Present State of Development**

#### **Conventional Energy Resources**

Pakistan is amongst those countries which are blessed with huge reserves of various sources of energy including fossil fuels such as oil, gas and coal. The details about the potential of conventional energy resources are given as below:

Hydroelectricity	46,000 MW identified potential
Coal	185 billion tons
Crude Oil	326 million barrels proved reserves
Natural Gas	26 trillion cubic feet proved reserves
Uranium	236 tons used for nuclear power generation since 1980

Despite possessing these huge energy resource, Pakistan has been unable to exploit these to derive economic growth and development. Pakistan produces just 0.1% of its total electricity from coal. This is in sharp contrast to other countries such as USA (52%), UK (58%), China (78%), Australia (77%), India (77%) and South Africa (88%), where coal is still one of the major source of power generation. Pakistan's current energy demand far exceeds its indigenous

supplies of fossil fuels fostering dependency on the imported oil that put substantial burdens on the economy. Energy crisis, which has worsened since 2007, is adversely affecting the economic growth and, in case of its persistence, the accomplishment of the Vision 2025 would be nothing more than a dream. Our immediate national agenda should be to acquire energy from whatever sources to meet current requirements but at the long term basis we need to focus on alternate energy.

#### **Alternate Energy Resources**

Pakistan can supplement its fossil fuel supplies with renewable energy alternatives. This would also reduce the environmental and health related issues which arise from the use of fossil fuels. At present, the contribution of alternative energy in the overall energy mix of Pakistan is negligible. Therefore, rapid increase in the share of renewable energy in the overall energy mix is a must to meet the present and projected energy demands of the country as well as addressing environmental issues related with the use of fossil fuels. According to the estimates, Pakistan has huge potential of renewable energy resources as detailed below:

Wind Energy	0.35 million MW
Solar Energy	2.90 million MW
Bio Gas	2.00million MW
Small Hydel	2.00million MW

### **Relevance with the Pakistan Vision 2025**

Addressing the issue of energy is absolutely crucial for achieving the Vision 2025, without which the Vision cannot be materialized without ensuring adequate energy supplies. The role of research and technology will be important for achieving many targets of the Vision such as doubling power generation to over 45,000 MW, increasing electricity access from 67% to over 90% of the population, reducing average cost per unit by over 25%, reducing distribution losses (10%), increasing percentage of indigenous sources of power generation to over 50% and developing energy efficient appliances/products.

#### **Focus Areas of Research**

- Development and adoption of indigenous technologies.
- Development and commercialization of cost-effective and high quality products such as PV panels / devices, water heaters, solar thermal power generation etc.
- Ultra low head micro-hydel plants
- Urban waste gasification and use of biomass to produce power
- Renewable energy technologies such as utilization of wind energy with emphasis on wind farming covering the turbine technology, generators and blade development
- Energy-efficient appliances and technologies
- Utilization of microbes and plants for the production of Biofuels and Biogas
- Alternative transportation systems which are low-cost, based on alternative energies, mechanically efficient and that can be built inside the country.

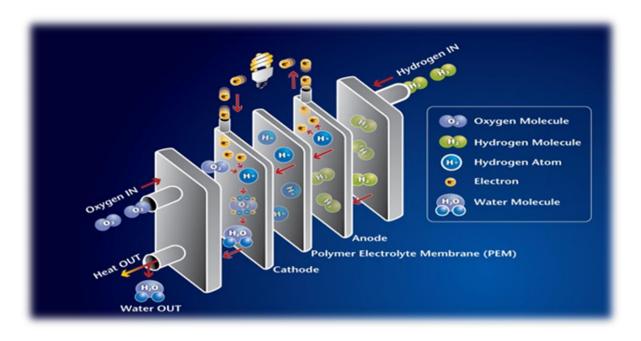
## Recommendations

- Industry be encouraged to switch over gradually to energy efficient and renewable energy technologies.
- Attention be paid to Municipal solid waste utilization as RDF (Refuse Derived Fuel) in cement industry and other energy purposes.
- Awareness raising campaign amongst masses regarding usage of renewable energy and energy efficient technologies be ensured.
- Education and training of architects on energy efficient design of buildings and capacity building of Building Control Authorities for evaluation of buildings, in the context of energy efficiency, for granting NOCs.
- Standardization of various industrial processes for energy efficiency be done.
- Involve big construction and housing schemes in establishing and promoting energy efficient houses / buildings. The concept of zero-energy buildings be promoted, especially in government departments housing schemes.
- Use of solar thermal geysers be encouraged.
- Support and incentives for R&D in energy efficient and renewable energy technologies and, support for commercialization of these technologies.
- Educating the public and strictly implementing the energy saving measures.

## **Potential Socio-Economic Impact**

Undoubtedly, energy sector holds the key to economic progress and sustainability of any country and Pakistan is no exception. Improvements in the energy supply and controlling demand will virtually lead to improvements in all the sectors of economy. It will particularly affect industry, agriculture and transport sectors as well as job creation and economic development.

## **Fuel Cell Technology**



### **Problem Statement**

Although, the Fuel Cell Technology is a part of the alternative energy resources, but due to the importance of this technology, for meeting future energy requirements, it is being treated separately. The world is moving towards hydrogen economy, made possible by state-of-the art hydrogen fuel cell technology; which convert hydrogen and oxygen from air to electricity, water & heat. Fuel Cell Technologies are widely regarded as the key means for converting hydrogen to energy and, as such, have a clear enabling role in realizing aspirations for a hydrogen economy. Development of hydrogen fuel cell technology for commercialization and application as energy sources is need of the hour. However, the country is lacking sufficient qualified professionals in this area.

#### **Present State of Development**

Many countries of the world including developed and developing are using renewable energy technologies to meet their energy requirements. Unfortunately, the picture is dismal in Pakistan; total renewable contribution in energy mix scenario in Pakistan is less than 1%.

In Pakistan, Fuel Cell Technologies have a vast potential to contribute significantly in providing clean and sustainable energy source for automobiles and power generation. In the shape of Thar coal deposits, we have an enormous coal resource. Similarly, being an Agrarian economy, there is huge potential in Pakistan for conversion of biomass to bio-methane and bio-ethanol. Additionally, there exists an extensive infrastructure for storage and transport of methane. Pakistan can use these strengths to capitalize on the fuel cell potential on two fronts. Firstly, this technology can be used to replace fossil fuel burning power plants and secondly, smaller units could be used to replace the combustion engines used in our cars.

For shifting towards the hydrogen economy in Pakistan, in first stage, hydrogen can be mixed along with natural gas to fuel the internal combustion engines. Development of initial prototypes and subsequent real systems for power generation, thereby, overcoming the power shortage in the country by using zero emission, environment friendly technologies. Development of the hydrogen storage and distribution networks may be taken in the mid-term planning.

### **Relevance with the Pakistan Vision 2025**

The Vision 2025 recognizes the importance of alternative fuels, in addition to fossil fuels. Fuel Cell Technology has the promise to significantly supplement or even replace the fossil fuels in future, therefore, it is important to build capacity in this technology. This is also relevant to achieving the goal of 'becoming one of the largest 25 economies in the world'; as this would mean significant increase in the demand of energy and Fuel Cell Technology can contribute in meeting that demand.

### **Focus Areas of Research**

- Alkaline Fuel Cells Technologies
- Phosphoric Acid Fuel Cells
- Proton Exchange Membrane Fuel Cells/ Polymer Electrolyte Fuel Cells
- Solid Oxide Fuel Cells
- Molten Carbonate Fuel Cells
- Hydrogen Storage Technologies/ Hydrogen Network
- Direct Methanol Fuel Cells
- Fuel cells for transportation (Motorcycle/Rickshaw and Cars)
- High temperature fuel cells for stationary applications (to cover the requirement of single home/office)

- Establishment of National Centre for Fuel Cell Technologies" and "Hydrogen Production".
- Development of infrastructure and laboratories with strengthen the professionals.
- Hybrid system for poly-generation and development of fuel flexible
- Harmonizing the efforts made in the energy sector by different Ministries, departments and research centres by creating an 'Energy Council' with heads of relevant organizations for better coordination as well as advice on priority areas for R&D.
- Research and development in the catalysts like platinum, cobalt oxide, ruthenium Oxide, iridium Oxide, Nafion Membrane and polymer added light weight economical materials, etc.

### **Potential Socio-Economic Impact**

Acquiring capabilities in the development of Fuel Cell Technologies would result in reduced oil consumption, highly efficient energy conversion, reduction of average cost of per unit production, enhanced fuel flexibility (use of diverse, domestic fuels, including clean and renewable fuels) and reduced air pollution. It would also contribute to achieving the dream of making Pakistan one of the largest 25 economies in the world by 2025 as well as having positive social impact.

## 4. Health & Pharmaceuticals



### **Problem Statement**

Pakistan is ranked 6<sup>th</sup> out of 22 high disease-burden countries in the world. This is because the health care system of Pakistan features several problems due to poor performance of immunization and mother & child health care programs, communicable and non-communicable diseases and resource scarcity. Due to rapid growth of non-communicable diseases, for which there is no satisfactory care with pharmaceuticals, the significance of preventive measures including pure and appropriate diet has been realized. Consequently, a need to adopt one health concept which is now a worldwide strategy for expanding interdisciplinary collaboration and communication in all aspect of health is universally realized. Even though, we have a network of Pharmaceutical companies but the system is heavily dependent on import of raw material.

#### **Present State of Development**

Pakistan has registered a significant decline in its child and maternal mortality rates since 1990. Health and nutrition expenditure has significantly arisen during the past 15 years or so. Government is running different programs to combat health issues such as programme for Family Planning and Primary Health Care, Expanded Program for Immunization, Malaria Control Program, TB Control Program, HIV/AIDS Control Program, Maternal & Child Health Program and Prime Minister's Program for Prevention and Control of Hepatitis in Pakistan. At the same time emergence of new diseases, like Dengue fever, is on the rise with alarmingly increasing incidence of non-communicable diseases such as diabetes, high cholesterol & blood pressure, other heart diseases and cancer. However, the progress indifferent health indicators is slower than many other countries and we have not achieved the targets set under the Millennium Development Goals. Pakistan's current spending of around 2% of its GDP on

healthcare system is much below than what is being spent by the developed and even many developing countries. Moreover, the basic manufacturing of Pharmaceuticals has remained ignored completely.

## **Relevance with the Pakistan Vision 2025**

'Pillar I: Putting people first - developing human and social capital' of the Vision 2025, emphasizes on improving health care system and sets targets to reduce infant mortality rate from 74 to less than 40 (per 1000 births) and reduce maternal mortality rate from 276 to less than 140 (per 1000 births). Similarly, the target of reducing the incidence/prevalence of Hepatitis, Diarrhea, Diabetes and Heart Diseases by 50% is also part of the Vision.

## **Focus Area of Research**

- Indigenous development and manufacturing of vaccines against various diseases (human/livestock/poultry)
- Manufacturing of basic pharmaceutical ingredients
- Pharmacovigilance
- Value-addition in indigenous herbal wealth
- Clinical Pharmacology
- Development of essential diagnostic kits
- Nanomedicines
- Biomedical and Diagnostic system
- Telemedicine
- Nutrition and functional food

- Promotion of one health approach to monitor and control public health issues.
- Development of preventive care strategies.
- Establishment of raw material production plants in Pakistan.
- Promotion of E-health and tele-medicine.
- Establishment of health R&D fund in the health and pharmaceutical sector to promote the R&D activities including basic medical instrumentation
- Genetic testing for pre-marital, fetus, newborn screenings
- Promotion of ethical and moral values in healthcare system.
- Banning export of herbal raw material without value addition.
- Programs awareness, knowledge and practices of parents and families as well as health education in schools regarding preventive measures including vaccination and healthy life style & dietary habits.
- Capacity building in all the four major aspects of healthcare i.e., medical, nursing, pharmacist and allied health services as well as in Biomedical Engineering (repair & maintain equipment).

### **Potential Socio-Economic Impact**

Focusing on R&D in health and pharmaceuticals would bring enormous socio-economic benefits to the country as good health care system, along with good education system, is fundamental for achieving any economic and social development goals. E-health will play a key role in providing clinical health care, especially to those living in distant rural areas. It will also reduce the burden from the hospitals; thus improving the overall efficiency of health services. Genetic testing would play an important role in the diagnosis of vulnerabilities to inherited diseases at initial stages of life. Successful implementation of immunization programme, along with education on nutrition and life style modification, would result in a healthy young generation. Indigenously manufactured pharmaceutical and herbal medicines can give a boost to the economy through reduction in imports and increase in exports.

## 5. Climate Change & Environment



#### **Problem Statement**

Pakistan is included in the list of environmentally vulnerable countries. The environmental issues and challenges being faced by Pakistan include natural resource degradation, depletion & pollution of fresh water resources, heavy use of pesticides, noise & air pollution, solid waste pollution, soil degradation, desertification, biodiversity loss and improper discharge of industrial waste in addition to consequences of climate change / global warming. Pakistan also faces other severe environmental issues and challenges caused by natural hazards such as, floods, earthquakes, droughts and cyclones. The situation is further complicated and worsened by the prevalence of a sense of apathy in the people, at all levels, regarding the environmental issues.

#### **Present State of Development**

The ecosystems in Pakistan have been bestowed with diverse resources which have contributed to the economic development of the country. However, ever increasing population and improper utilization of these resources has led Pakistan to an alarming situation. Pakistan suffer heavy losses due to flooding, erosion of fertile soil, siltation of reservoirs and irrigation system almost every year. Marine environment has been severely polluted by discharge of industrial and domestic sewage. The 'Smog' seriously affects almost entire Punjab in December & January every year. Efforts to rectify the situation have not brought significant improvements due to the lack of institutional capacities, lower emphasis on environment in Government fiscal policies and insufficient allocation of funds for protection and mitigation of environment.

## **Relevance with the Pakistan Vision 2025**

Although, the Vision 2025 does not set any explicit targets for rectifying the environmental degradation and mitigating the adverse effects of climate change, however, it recognizes that the major threat is posed by climate change, associated with increased frequency and intensity of floods and hurricanes, prolonged droughts and growing water stress, shift of disease vectors, and the frightening possibility of the melting of the Himalayan ice-cap. It also acknowledges the decline in biodiversity and key natural resources as well as possibility of energy scarcity in future (necessitating the need of exploring renewable energy resources). Therefore, the issue of environmental sustainability is in-line with the Vision 2025. Further, in the context of sustainable development, balancing economic and social development with the environmental development is absolutely essential.

## **Focus Areas of Research**

- Prediction of future climatic variation
- Green manufacturing
- Forests, Biodiversity and Glacial studies
- Reduction of adverse impact of industrial waste and emissions on environment
- Use of biotechnology for environmental protection
- Alternative sources of energy
- Recycling of solid waste and waste water treatment systems
- Cost effective technologies for the control of particulate matter emissions from stationary sources
- Urban climatology, impacts of climate change on built environment and designs
- Integrated Water Management
- Productive uses of waste materials
- Identifying health hazards of air pollution, such as LEAD and remedification.

- Promotion of environment-oriented awareness, education and R&D
- Development and use of environment friendly technologies.
- Popularization of recycling technologies developed within the country.
- Minimizing use of chemical pesticides and increasing / promoting organic farming.
- Developing photo-degradable material as replacement of plastic bags.
- Introduction of Green Labeling.
- Establishment of seed-banks for preserving biodiversity resources.
- Popularization of the concept of 'reverse forestation'.
- Legislation for making rain water harvesting essential at household level.
- Encouragement and motivation of Industry for recycling their wastes.

• Promoting the use of ozone friendly substances in-line with the provision of the Montreal Protocol.

### **Potential Socio-Economic Impact**

Addressing the issue of environment would not only result in a great success of resource conservation but would also have positive impact on economy through ensuring savings in the area of health care and other economic costs of the environmental degradation.

## 6. Biotechnology



## **Problem Statement**

Biotechnology has enormous potential to provide solutions to most of the societal problems relating to food security, health, environment, energy and forensics. It is being argued that biotechnology will shape the future research and its economic impact will surpass the information technology. The impact of modern biotechnology on society is now obvious but real benefits to the society are yet to come as more and more technologies are being developed and their novel applications are being continuously discovered. Therefore, having an organized and efficient biotechnology R&D system is important for Pakistan to meet the demands of sustainable development through food, feed, livestock, environment and health security with increased employment.

#### **Present State of Development**

The development of any nation is dependent on technological exploitation of its natural and human resources. Biotechnology provides a promising way to skillfully exploit the natural resources. It also enables to preserve the national resources through their characterization and conservation. Globally, huge investments are being made in the biotechnology research and consequently, biotechnology industry is emerging at a rapid pace.

In Pakistan, the work on biotechnology was initiated with the establishment of Nuclear Institute for Agriculture and Biology (NIAB) in 1972; later on National Institute for Biotechnology and Genetic Engineering (NIBGE) was also established. At present, the number of organizations

(R&D organizations and University Departments) engaged in biotechnology research has increased to more than 30. However, the biotechnology industry, in Pakistan, is still in its elementary stage.

## **Relevance with the Pakistan Vision 2025**

The Vision 2025 has identified Biotechnology as one of the six emerging technologies which are likely to drive the future of development. Improvements in biotechnology will also be important to achieve targets related to food security, human health and environment.

## **Focus Areas of Research**

- Development of indigenous vaccines against diseases such as hepatitis, malaria, cholera, influenza etc.
- Development of procedure for the PCR based diagnosis of different infectious diseases including Dengue virus & *Helicobacter pylori* to enhance diagnostic capability and develop indigenous diagnostic kits
- Development of transgenic plants for enhanced yield, stress tolerance, herbicide resistance, balanced nutrition, better water and nutrient utilization capacity
- Brain–Machine Interfaces for rehabilitation and augmentation in both animals and humans
- Gene therapy for treatment of genetic diseases, and viral therapy for cancers
- DNA fingerprinting and modern DNA recombinant technologies
- Utilization of biodiversity for commercializing the health related natural products and bio-generic drugs
- Bio-protection of material and products; bio-herbicides and weed control
- Whole genome sequencing of indigenous microbes coupled with Bioinformatics applications
- Reverse engineering of biopharmaceuticals and their commercialization keeping social impacts in mind.
- Prenatal and neonatal diagnosis.

- "Revival" of National Commission of Biotechnology (NCB).
- The sector-wise flagship status in different areas of biotechnology must be given to the institutions with clear mandate.
- Support be focused to the target oriented research to fulfill the increasing demand of food, feed, fiber, livestock, environment and health security.
- The scientists be encouraged to develop cost-effective and product oriented patentable and deliverable outputs.
- The private sector be encouraged to invest in biotechnology based businesses and support biotechnology R&D in public/private institutions.
- The national bio-safety agency be strengthened and a national bio-safety policy be developed.

- Promotion of bio-fertilizer to reduce use of chemical fertilizer and thus decrease cost of production of major crops.
- Policy for the import and introduction of GM crop from foreign companies and regulation of seed quality.
- Promotion of entrepreneurship and technology parks for application of biotechnology for industrial applications.

## **Potential Socio-Economic Impact**

The systematic R&D in Biotechnology and resultantly developed industry would significantly contribute in the socio-economic development of the country. It will particularly impact the areas of Agriculture & food security, human health, environment, industry and forensics.

## 7. Information & Communication Technologies (ICTs)



### **Problem Statement**

ICTs are important sector of economic activity, achieving high growth rates in developed as well as in developing countries. ICTs offer developing countries, like Pakistan, the opportunity to leapfrog several stages of development by using frontier technologies that are more practical, environmentally sound and less expensive than undergoing the traditional stages and cycles of progress to the Information Society. Pakistan has made a significant progress in the development of ICTs during the past decade or so. However, it still finds itself far behind to a large majority of the countries as it has not sufficiently leveraged the potential of ICTs to boost national competitiveness and well-being of masses. Improved performance in ICT sector is also crucial for the development of knowledge-based economy in Pakistan and increasing efficiency in different walks of life.

#### **Present State of Development**

ICT industry in Pakistan is at crossroads. Some progress has been made by liberalizing the sector and its growth has increased substantially in recent years, but the available internet and broadband-based social services are still far from meeting the country's needs. Pakistan has the resources and positioning to become the central hub for telecommunications in the Gulf and Asia-Pacific region. However, focused and sustained efforts are required to make Pakistan a communications hub for the region. Presently, Pakistan's rank in the Networked Readiness Index is 112<sup>th</sup>out of 143 countries. Therefore, the country needs to develop its infrastructure and internal capacity to improve its overall performance in the ICT sector. R&D and innovation for development of ICTs has to be emphasized if Pakistan aims to catch up with the leaders in the sector.

## **Relevance with the Pakistan Vision 2025**

ICTs are central to achieve some of the goals set under the Vision 2025 such as improve Pakistan's score on the World Bank Institute's Knowledge Economy Index from 2.2 to 4.0 and increase internet penetration to over 50%. This sector can also play a significant role in achieving other targets such as increase annual exports from US\$ 25 billion to US\$ 150 billion, become one of the largest 25 economies in the world and reduce poverty level by half; in addition to improving efficiency of individuals and governance systems.

## **Focus Areas of Research**

- Development of e-governance applications including electronic national voting
- ICT based solutions to the preservation of national and local languages, including the design of new easily translatable fonts for usage on the internet and smart phones.
- Women empowerment through ICT training to Women Professionals
- Research in the areas of e-Education, e-Health, e-Agriculture, e-Governance etc.
- Development of ICTs for businesses
- R&D in the area of Internet Protocol version
- Artificial intelligence and machine learning
- Internet of Things (IoT) Technology
- Big data and predictive maintenance technology
- Next Generation Networks (NGNs)
- Cyber security and Information security
- Social media research and application

- Appropriate policies may be adopted to ensure that the benefits of the ICTs, in real sense, reach to those who deserve them the most.
- Establishment of public ICT parks.
- The concept of 'e-village' be introduced in Pakistan to extend benefits of ICTs to the door steps of rural population for uplifting their social, educational, health care and economic infrastructure as well as to minimize digital divide in Pakistan.
- Advancements in the ICTs be harnessed to provide e- learning opportunities to both urban and rural populations.
- Cyber Entrepreneurship be encouraged and supported by providing advice, guidance, training and financial assistance, especially to youth and fresh graduates.
- Promote Smart phone Application development as a core competency among computer science graduates
- Establish Venture-Capital Fund using public-private partnership model.

## **Potential Socio-Economic Impact**

Improved ICT sector would help to provide better educational, health and other social services to a vast majority of population which otherwise may not be possible. Opportunities of employment and self-employment would be increased to a significant level which would also help in reducing poverty. Development of ICTs, through R&D and innovation, would increase exports, contribute in enhancing GDP, lead towards building knowledge-based economy and information society as well as raising Pakistan's level to upper middle income country.

## 8. Mineral Resources



### **Problem Statement**

Generally speaking, the mineral sector in Pakistan to a greater extent remained neglected by all concerned and could not witness progress and prosperity that we normally see on other areas on which the economy of the country is much dependent. Very little, rather insignificant R &D efforts were made to develop this sector on scientific lines in our country and that is the main reason this sector so far failed to contribute to the national economy. There is a wide spread lack of awareness about the potentials of this sector that has resulted in poor performance in the national economy. It has been a general agreement among all concerned about vast potential of the Minerals sector in Pakistan but looking at the technical progress it proves otherwise. Except a couple of projects having national level significance like Saindak Copper-Gold, and recent improvements in dimension stone sector, rest of mining industry is not fully developed and need serious attention.

However, unlike other developing countries with good mineral endowment, it has not yet been able to promote growth and alleviate poverty by exploiting its natural resources to maximum extent possible. The development of its mineral resources has been limited to numerous quarries producing industrial minerals of limestone, rock salt, marble, gypsum and a modest amount of coal for internal power generation. The estimated share of Pakistan in the world gem and jewelry market is 0.05%, but it is estimated that Pakistan could grow substantially its market share if it adopts policies conducive to enhance value added conditions and activities. The gemstone industry in Pakistan is not receiving institutional support to develop value added activities e.g. cutting, polishing and exporting incentives as in neighboring India. The difference between the price of an uncut and cut and polished gemstone varies from 1:30 to 1:100 for cut and polished colored gemstones. Moreover, the Public Mining Institutions lack the technical capacity, managerial skills, and material support for the implementation of the National Minerals Policy in order to improve the development of the mining sector.

Some of the issues /problems related to the development of mineral sector include;

- i. Mismanagement
- ii. Inadequate technical and skilled workforce
- iii. Lack of development funding
- iv. Inadequate allocation of funds for mineral exploration and research
- v. Lack of technology
- vi. Political instability/lawlessness in areas important for mining e.g. Khyber Pakhtunkhwa and Balochistan
- vii. Non availability of soft loans for undertaking development activities in the mineral sector
- viii. Formal education and training in mineral sector is not in line with needs and requirements of our mineral industry, resulting in technical manpower not appropriately trained to solve the problem of mineral industry.
  - ix. There are no or weak linkages between the mining companies, entrepreneurs and the researchers.
  - x. The nature of impediments in making a road map with fixed milestones and time frame is of diversified nature, i.e. also related to legal, political, social and interprovincial misapprehensions.
- xi. The use of primitive methods for mining deposits of dimension stones including granite, marble is resulting in great loss and wastage

## **Present State of Development**

Pakistan is rich in mineral resources, offering a great potential for economic development and prosperity. Based on available information, the country's more than 600,000 square kilometers of outcrops area sustain varied geological potential for deposits of several minerals notably coal, copper, zinc, gold, chromite, mineral salt, and bauxite. There are also varieties of precious and semi-precious mineral, including peridot, aquamarine, topaz, ruby, emerald rare-earth minerals bastnaesite and xeniotime, sphene, tourmaline, in addition to various types of quartz.

The Mineral sector is recognized as a high-potential sector in Pakistan in terms of its scope for future growth, value added products, export diversification, job-creation and private sector development in both rural and urban areas of Pakistan. At present, out of 92 known minerals in the country, 58 are being mined on small scale. The major production is of coal, rock salt and other industrial and construction minerals. The current contribution of minerals sector to the GDP is only less than one percent (about 0.5%), compared to 8.5% for Chile, 5.6% for Australia, 3.6% for Canada, and 1.6% for USA. The contribution of the mining sector in Pakistan, however, is likely to increase considerably upon the development and commercial exploitation of Saindak and Reko Diq gold and copper deposits, Duddar zinc and lead, and coal and Gemstone deposits in Thar. Pakistan Mineral Development Corporation is an autonomous corporation under the administrative control of Ministry of Petroleum and Natural Resources, Government of Pakistan.

The known minerals are wide spread in all the provinces including Azad Jammu & Kashmir, Gilgit Baltistan and FATA. Baluchistan is by far the richest province in Pakistan in terms of mineral resources (metallic, non-metallic and dimension stones). Punjab has the second largest reserves of rock salt in the world, and Khyber Pakhtunkhwa (KPK) is the richest 8 province in terms of gem stones. Sindh has the 5th largest coal deposit in the world. The major production of Pakistan is of coal (Punjab, Baluchistan, Sindh and KP), rock salt (Punjab and KP) and a number of industrial / construction minerals /rocks from different parts of Pakistan.

Pakistan is also enriched in the gemstone and precious, semi-precious, mineral specimens, ornamental stones deposits. In the present arena there is constant shift in the global trade of gemstones due to rapid change in the demand for shapes, cuts, colors and type of gemstones. At present the world trade for colored gemstones is dominated by Thailand, Switzerland and India. About 19 varieties of precious and semi- precious gemstones including Emerald, Ruby, Topaz, Aquamarine, Tourmaline, Quartz, Moonstone, Zircon, and Onyx etc. are mined and traded in Pakistan. The availability of raw material, relatively low cost and experienced labor force, and growing international markets, are key advantages giving Pakistan a potential edge in global trade in this sector.

As a result of implementation of National Mineral Policy 1995, a number of international mining companies undertook various activities which produced good results such as discovery of a sizeable copper-gold deposit of Reko Diq, Baluchistan. But due to certain reasons (poor governance and lack of interest), the pace of development of these deposits is quite slow rather disappointing. The national mineral policy was revised in 2013.

Pakistan's mining industry covers the exploration and extraction of minerals and the associated mineral processing industry. Pakistan has more than 5,000 operational mines employing nearly 300,000 workers. The production of minerals is important for the growth of mineral based industries such as energy (coal); agriculture (phosphate, gypsum); construction (limestone, natural stones); and manufacturing (copper, gold, silver), cement (limestone, clay and gypsum), chemical factories (rock salt), Glass and ceramic industry (silica sand and china clay).

### **Relevance with the Pakistan Vision 2025**

The strategy for realizing the vision incorporates a number of elements including specialized training, incentives for extraction and value addition; development of adequate infrastructure facilities near mining sites; learning from best practice in other countries regarding development of the mineral sector and will apply those to the country's own sector.

#### **Focus Areas of Research**

Research in the areas of solution mining, materials handling, equipment, human factors, fragmentation, systems integration, and automation and robotics will improve productivity and energy efficiency for exploration of minerals:-

- Identifying minerals, chemical composition and physical properties directly in the field.
- Modeling mineral deposits and their potential economic assets.
- Optimization of exploration, development and exploitation of minerals
- Value-addition of minerals into chemical/product
- Development of chemicals form industrial minerals such as phosphoric acid; decalcium phosphate and sodium acid pyrophosphate, form rock phosphate
- Utilization of mine waste
- Development of Industrial process to improve the quality of minerals i.e., purification, polishing etc.
- Development of the mining equipment and machinery locally
- Development of real-time mineral content sensors for all minerals
- Design & Development of mining methods to reduce waste

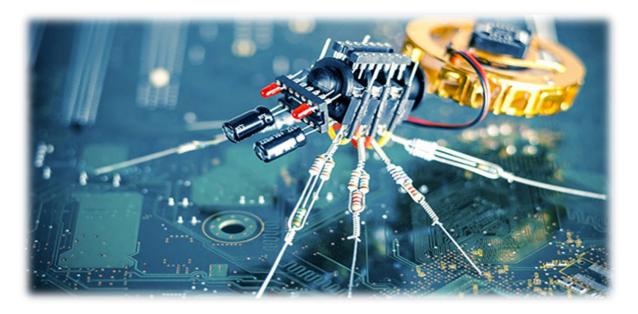
- On the basis of studies carried out by internationally recognized agencies the government may like to enhance the share of mineral sector upto 3% by 2025.
- Explore potential areas for finding new mineral and gemstones deposits and exploit the known mineral deposits such as coal of Sindh, copper-gold bearing Reko Diq deposit of Baluchistan etc.
- Industrial minerals, especially having sedimentary origin such as clays, salt, gypsum need to be studied / investigated for their possible use in the industry after necessary beneficiation/ treatment as import substitute.
- Need to focus on large-scale mining development through provision of an enabling regulatory framework, improved geological information and fiscal, revenue incentives.
- Exploitation of Thar coal on priority basis and available geothermal resources for use as alternative source of energy
- The value chain analysis for gems shows that 60% of the stones are damaged due to indiscriminate and uncontrolled blasting in the mines and only 25% of the gems are cut and polished in Pakistan. The majority of gemstones being exported from Pakistan is in rough form and is being cut and polished in countries like India, China, Sri Lanka and Thailand. The technology for gemstone mining needs to be upgraded and modern gemstone processing equipment for cutting and polishing of gemstones should also be introduced so that maximum quantity of value added products could be produced.
- Promotion of mineral based industry such as dimension stone, mineral based local jewelry industry, gemstone, aluminum industry etc. and development of rare earth elements, to enhance exports
- Feasibility studies may be carried out for establishment of Aluminium industry and development of rare earth elements.
- The Geological Survey of Pakistan should be given task to prepare commercial dossiers, on the mineral deposits of Pakistan. Furthermore the geological, geophysical and geochemical maps of Pakistan need to be updated and geoscientific information needs to be improved to attract foreign investment.
- To enhance local and foreign investment in mining/mineral industry sectors, detailed evaluation (of the reserves, grade, value added industrial applications, mining and processing methods etc.), revamping laws (based on internationally accepted legal system) and an enabling environment (security of investment etc.) is required.
- Linkages between Universities, R&D organizations, and the industry need to be strengthened to pass on the benefits of the R&D and innovation to the industry.
- PCST may constitute an Expert Panel in the Mineral sector and carry out Technology foresight exercise to give recommendations for making plans and strategies for the short to long term development of the sector.
- Higher studies in important fields of mineral sector at university level (e.g. Masters and PhD level degree programs in gemology) need to be introduced in universities.
- Setting up institutions/ labs with qualified human resource in the mining areas
- Institutional strengthening and capacity building for the departments of mines and minerals, both at the federal and provincial levels
- Industries may be set up in areas/localities having large deposits of mineral resources; however before planning such development, studies may also be carried to learn from the past and best international practices in this regard.

- Recently, dimension stone sector has witnessed encouraging technological interventions and projects introduced by Pakistan Stone Development in Balochistan and Manshera Granite owned by a private company are good examples of improved mining techniques. The same need to be replicated in other localities as well.
- The National Mineral Policy of 2013 need to be implemented in its entirety. Furthermore, if needed, the current minerals policy may be reviewed to make it more investment friendly and in line with the best international practices in consultation with the federating units, stakeholders and concerned organizations.
- The legislation, like Mines Act, and Regulations and made under this Act are quite old and need to be made compatible with present trends worldwide in terms of health and safety of people working in this sector and to keep minimum quality standards of products produced through mining.
- Need for provision of soft loans, sustainable fiscal incentives for undertaking development activities in the mineral sector through initiatives such as establishment of mineral development bank.
- Improvements to the mining tenement management system, GIS and implementation of social & environmental factors to ensure mitigation of mining related impacts.

## **Potential Socio-Economic Impact**

The effective utilization of minerals resources would result in socio-economic growth, including opportunity of employment in remote areas. Promoting gem industry, dimension stone etc. could earn foreign exchange. There is also potential of value addition of salt products including health resort.

## 9. Nanotechnology



#### **Problem Statement**

Nanotechnology is said to be the technology of the 21<sup>st</sup> century. Scope of its potential applications expands across all sectors; ranging from medicine to industry, from environment to cosmetics and from agriculture to new materials. Realizing the importance of Nanotechnology, the Government of Pakistan has made investments for the development of nanoscience and technology network in the country. However, despite an impressive increase in the number and quality of research articles in the field of nanoscience and technology in Pakistan, there is no real evidence of translation of such research into marketable products as yet.

#### **Present State of Development**

Acknowledging the importance of nanotechnology, a National Commission on Nano-Science and Technology was constituted in 2003 which is now defunct. On the recommendation of this Commission, Ministry of Science & Technology approved 05 mega projects worth ~ PKR 900 million in the field of Nanoscience& Nanotechnology to establish nano-materials research facilities and manpower development programs at various universities and R&D institutions. In addition, HEC also approved a few larger projects at QAU and PIEAS (worth over PKR 60 million each) and many smaller projects (worth up to PKR 20 million) in this field in several universities and R&D organizations in Pakistan. These initiatives led to the development of reasonable research facilities for nano-science and technology in the universities/R&D institutions especially CIIT, QAU, PINSTECH, PIEAS, NIBGE, PCSIR, Punjab University, and many other organizations (notably ICCBS, GIKI, Peshawar University and NCEAC, Jamshoro, LUMS, Lahore, PINSAT, Islamabad). This has resulted into a significant increase in the number of research articles in this field, however, impact on economy is still not visible.

## **Relevance with the Pakistan Vision 2025**

In the statement of the Prime Minister included in the Vision 2025, it has been acknowledged that investment in emerging technologies including nano-technology is instrumental in the creation of core competencies that can provide needed skills and enhance productivity to transform agriculture, industry and the service sector over the coming years.

## **Focus Areas of Research**

- R&D for utilization of nanotechnology for:
  - Improved industrial processes
  - Nano-biomaterials for health applications
  - Defence industry
  - Remediation of the environmental problems
  - New and better solutions of energy problems
  - Food and Agriculture
- Development of Biosensors and Molecular Probes
- Synthesis of nanoparticles from medicinal plants, insects and microbes to be utilized as antimicrobial agents
- Development of nanoparticles as Drug Delivery Platforms for cancers, immune disorders, infectious diseases, etc.
- Catalysis and nanofabrication

## Recommendations

- Revival of the National Commission on Nanoscience & Nanotechnology and its legislation.
- Setting up of National Institute of Nanoscience and Nanotechnology with State-of-Art equipment
- Revision of the curriculum at college and university level to introduce the courses of nanoscience and nanotechnology.
- Consortia of research groups and industry working in similar fields and their regular meetings to share/evaluate the progress of the working groups.
- Focus on the specific problems of local industries, particularly the export oriented industries, to help improve the quality of their products.

## **Potential Socio-Economic Impact**

Nanotechnology is an emerging field, however, it is already helping to considerably improve, even revolutionize, many technologies and industries such as information technology, energy, environmental science, medicine, homeland security, food safety, and transportation. R &D in this sector can play a vital role to uplift socio-economic conditions.

## **10. Housing**



## **Problem Statement**

The estimated annual population growth rate of Pakistan is 2.10%. The current estimated population of Pakistan is 194 million, of the total population; the urban population constitutes about 36.2%, and is increasing at a rate of 2.6% per year. The level of urbanization in Pakistan is the highest among the East and South East Asian countries which is 38.8% in 2015. Pakistan current urban population growth rate is 2.81%.

Housing and construction sector is among the identified sectors by the government as the driver of economic growth. It is assumed that about 60 industries are directly or indirectly linked to construction & housing sector. Pakistan has faced the challenges of urbanization and inadequate housing due to migration of population from rural to urban areas since last two decades. Rapid population growth, over-crowding, shortage of supply, aging housing stock, development of slums and Katchi Abadis, scarcity of land and lack of financial resources has further aggravated the situation. The availability of affordable housing in affordable prices in proximity of mass transit and linked to job distribution, has become severely imbalanced in this period of rapid urbanization and growing density convergence. The cumulative shortfall in supply of houses equals 8.0 million units and is expected to reach the 10 million figures by the year 2020. The ratio of housing cost to incomes is much higher in Pakistan than in most other countries. Lack of adaptation of innovative technology (energy conservation, natural disaster resistant, smart materials, etc) and materials and lack of support to the research carried out in this field resulting in extravagant and skewed investment patterns in constructions and unreasonably high construction costs. Housing problem has further worsened because of weak regulation.

#### **State of Development**

Housing and construction is an important and growing sector of the economy of Pakistan. It is one of the fortunate sectors in Pakistan that has gained major relief in the Federal Budget 2015-2016. Pakistan spends about \$5.2 billion on construction annually. Cities contribute 78% to the country's GDP (World Bank, 2016).

There is an annual shortfall of 270,000 housing units at present in addition to the backlog of around 9.0 million units. The current housing deficit stands at 5.11 million housing units. Given the rate of population growth and demographic changes in the age and marital status profile, incremental demand is estimated at 570,000 units each year. Out of this, only 300,000 units are provided, while 270,000 units are added each year to the accumulated backlog.

Mere access to housing is not necessarily a guarantor of adequate or quality housing, as even those with access to housing may suffer from congestion and lack of basic facilities. This is indicated by the fact that 37.6 percent of the population is still living in a housing unit with one room and only 28.3 percent of the housing units have independent toilet facilities. The level of congestion in terms of persons per room per housing unit goes a long way to reflect not only housing conditions, but also a general standard of living. There have, however, been improvements in other respects: 37.6 percent as opposed to 51.5 percent of the total number of houses have only one room, and 57.7 percent as opposed to 44.8 percent comprise units with two or more rooms. It is to mention here that even available housing facilities are not fulfilling recommended international standards of housing.

## **Relevance with the Pakistan Vision 2025**

Pakistan Vision 2025 aims at transforming our urban areas into creative, eco-friendly sustainable cities through improved city governance, effective urban planning, efficient local mobility infrastructure (mass transit systems) and better security to make urbanization an important driver of growth. Vision 2025 seeks to ensure that Pakistan's cities are digitally connected, equipped with wireless network sensors and there is e-connectivity in all parts where the free flow of information is possible, thereby laying the foundations for the cities of Pakistan to be smart and creative.

## **Focus Areas of Research**

- Energy conservation / management
- Environment friendly (eco-friendly)
- Information Technology (digitalization)
- Natural disaster resistant
- Building new materials / smart materials
- Cost effective construction and housing
- Water and waste management

- There is a need to rationalize and simplify planning & building standards and procedures.
- Urban areas should be transformed into creative, eco-friendly sustainable cities (smart cities).
- A 'Housing information system' to provide data on housing demand and supply should be established.
- National housing policies need to be revised keeping in view the global trends & opportunities

- Digital system of security needs to be established at national level.
- City cluster development
- The construction and housing regulations should be implemented strictly.
- International standards of construction should be modified in local scenario.
- Land disposal and regulation mechanisms need to be developed.
- To cut down usage of private transport in urban centers, public transport including mass transit systems should be devised and implemented.
- Initiation of Housing Price Index (HPI) and Housing Access Index (HAI) through the assistance of Federal Bureau of Statistics.
- Development of a Housing Resource Centre at district level.
- Institutes for R&D on construction & housing should be established at national level.
- The centers of excellence in urban planning should be established in major cities of Pakistan.
- House Building Finance Company (HBFC) needs to be overhauled to make it a potent and creative organization.
- The CWHR needs to be strengthened in terms of research facilities and manpower.
- Initiation of Transferable Development Rights (TDR).
- Revision of urban housing density standards.
- Initiation of urban re-development on the pattern of mixed land use.
- Digitization of the land registration system at national level
- A regulator body should be established to register all property dealers.
- Adequate protection and maintenance of heritage sites and buildings in urban centers should be ensured.
- Smart cities council should be established at national level.
- Smart cities authorities should be established at provincial levels.
- Community based participation should be promoted to transform our cities into 'creative and innovative' cities.
- The accelerating rate of urbanization in the country requires urban planning and hence an effective management of the real estate market.
- Measures should be taken to develop rural areas for de-urbanization.
- Data management system should be established at divisional level.

## **Potential Socio-Economic Impact**

Pakistan's cities contribute 78% to the country's GDP. In developing countries, including Pakistan, a 1% increase in urbanization leads to 1.1% increase in the economic growth rate. Housing not only provides physical shelter but also has significant impact on the lives of the dwellers in terms of skills enhancement, income generation, increased security, health, self-confidence and human dignity, and also result in boosting equitable economic growth and reducing poverty.

## **11. Electronics**



#### **Problem Statement**

Electronics plays an important role in every aspect of modern human life. Almost all the developed countries have their economies depending heavily on electronics sector which is the world's largest industrial sector with an annual turnover of US\$ 1.5 trillion. In Pakistan, electronics industry has a very minor share in the overall industrial output which is only about 3 percent. While the Large Scale Manufacturing (LSM) sector itself accounts for only about 13% of GDP. It is evident that there is a huge room for improvement in the electronics sector in Pakistan and without a strong growth in the electronics sector, goal of becoming one of the top 25 economies of the world cannot be materialized. A strong electronics industry will also lead to development of other industries and increase in productivity.

## **Present State of Development**

The electronics industry in Pakistan is very small and it mainly depends on import of electronics equipment. Pakistan's annual imports of electronics equipment are worth \$1.8 billion from China, \$189.4 million from US, \$77 million from UK and \$54 million from Japan. Which shows that there is maximum room for saving foreign exchange in this sector. The existing electronics industry in Pakistan can be broadly grouped into five categories i.e. defense, industrial & automation, communication, technical services and consumer electronics. Growth in the sector is being hampered due to non-availability of raw materials and properly trained technical manpower as well as smuggling and import duty structure. Subsidization of the raw materials, creating demand for trained manpower and, locally manufactured electronics equipment will help to rectify the situation.

## **Relevance with the Pakistan Vision 2025**

Electronics sector will have to contribute in a big way if we wish to achieve the goal of becoming one of the largest 25 economies in the world by 2025. It can make significant contributions in meeting targets of the Vision such as increasing annual exports from US\$ 25 billion to US\$ 150 billion, increasing annual Foreign Direct Investment from US\$ 600 million to over US\$ 15 billion, increase tax to GDP ratio from 9.8% to 18% and reducing poverty level by half.

## **Focus Areas of Research**

- Designing and manufacturing of Chips, semi-conductor, integrated circuits and of high frequency Printed Circuit Boards (PCBs)
- Automation, Embedded and Industrial Control System
- LED Based Systems, Opto-electronic and Laser Technology
- Development of Solar Power Systems and Energy-efficient Products
- Telecommunication Security & Access Control Systems
- Space Electronics
- Standardization and Conformity Assessment.

- R&D in electronics may focus on developing technologies for use in the fields of manufacturing, communication, health, agriculture, security, energy, environment and education.
- Strengthening of relevant public sector educational and research institutions.
- The electronics equipment being manufactured in the country should be able to get accreditation by conforming to international standards. It will boost exports and local consumption by ensuring the quality. Electromagnetic Compatibility (EMC) testing facilities will also be required.
- PhDs obtaining degrees in the electronics from abroad and returning to country may be facilitated to establish their own companies / design houses by providing initial financial support by the government.
- Vocational institutes need to develop superior skills in technician level manpower for adaptability, service, reuse and re-life of equipment.
- State institutes should invest in the development of technologies with a long term vision.
- Defense projects be invited/assigned to universities, teams of scientists and engineers in the country on the model of ICT R&D Fund in Pakistan and Defense Advanced Research Projects Agency (DARPA) of United States.
- The government should lure foreign investors to establish electronics manufacturing industry while making sure that the technology transfer / deletion policy is implemented.
- Design and development of cargo scanners to reduce the import bill and enhance exports.

#### **Potential Socio-Economic Impact**

Development of electronics sector can contribute to growth and development of national economy in multiple ways such as import substitution, increase in exports, creating more job opportunities, reducing poverty and hence increasing total national GDP.

# **12. Space Technology**



#### **Problem Statement**

Several Asian countries have space programs and are actively competing to achieve scientific and technological advancements in space. China, India and Japan are considered as the major players in the area of space technology whereas Iran, Israel, North Korea, South Korea, Pakistan and Bangladesh are considered as the minor players.

Historically, the space race' between the United States and the Soviet Union was all about national security. But now the acquisition of space technology means much more than that as future is for those who can develop and use space technologies for various purposes including intelligence. Various applications of space technologies are generating billions of dollars of business for industries that provide satellite communications (VSAT business communication systems, mobile telephones and data, direct-to-home TV, satellite radio, wideband data services, etc.), remote sensing (including mapping, agriculture, resource management, land use, etc.), and a growing set of industries that provide positioning, navigation, and timing services based on the Global Positioning System (GPS) and other related capabilities. It has been estimated that these services provide over US \$65 billion of value around the world annually. Presently, Pakistan is not deriving any real benefits from this global business because of lack of capabilities and capacities in space technology.

#### **Present State of Development**

Realizing the importance and need of Space Technology in the modern age, Pakistan Space & Upper Atmosphere Research Commission (SUPARCO) was established to execute space programmes. Then, a Space Research Council (SRC) was established to oversee and formulate

policies for Pakistan's Space Programme. This was further extended to include Satellite Research & Development Center, Satellite Ground Control Station, National Center for Remote Sensing and Geo-informatics, Remote Sensing and GIS Labs, Pakistan Mission Control Center (PMCC) and Local User Terminal (LUT) for COSPAS-SARSAT International search & rescue programme, Ionospheric Research Station (IRS), Geomagnetic Observatory, Space & Atmospheric Research Station and a Geomagnetic Observatory. Pakistan launched its first sounding rocket Rehbar-1 for upper atmosphere research in 1961 becoming the third nation in Asia and the tenth in the world to launch such a rocket. It later developed sounding rockets indigenously. SUPARCO also developed two experimental satellites Badr-1 and Badr-B which were launched in 1990 and 2001 respectively. Later, work was undertaken on development of prototype communication and remote-sensing satellites. Development of Paksat-1R communication satellite in collaboration with China and it was successfully launched on 12 Aug 2011 from Xichang Satellite Launch Centre in China. Research and development work on SRS applications to meet Pakistan's specific needs has also been undertaken by SUPARCO.

#### **Relevance with the Pakistan Vision 2025**

The Vision 2025 does not mention space technology; however, in the modern era the applications of space technology are revolutionizing the daily life of people, therefore, developing capabilities in this important sector cannot be overlooked. Further, the applications of space technologies can help achieve Vision goals in the areas of food security, energy, communications etc.

#### **Focus Areas of Research**

- Space Technology for Disaster Management
- Launch Propulsion Systems and In-Space Propulsion Technologies
- Robotics, Tele Robotics, and Autonomous Systems
- Communication and Navigation
- Science Instruments, Observatories, and Sensor Systems
- Modeling, Simulation, Information Technology, and Processing
- Satellite ground equipment and software
- Development of the satellite bus and Payload designs
- Development of space launch vehicles for satellites

#### Recommendations

- To develop a national level consensus, at the highest forum, for space programmes' funding compatible with the expected outcome.
- Setting up a Space Corporation with the involvement of SUPARCO to coordinate and harmonize the commercial potentials of the national space programme in coordination with international space programmes through optimal utilization of technologies and human resource potentials.
- Government may consider ten years tax break for space segment related ground equipment manufactured or software produced in Pakistan. It will give incentives to

establish companies to set up their plants in Pakistan, and local entrepreneurs to make ground equipment in Pakistan.

- Establishment of satellite development centre.
- Establishment of Space Technology Park.
- To align the pace of space technology and diverts with endeavors.
- To develop pace delivery vehicles for LEO and GSO satellites.

#### **Potential Socio-Economic Impact**

Enhanced capabilities in the space technology would not only ensure national security but it will also positively impact the socio-economic condition of the nation through various emerging applications of space technologies.

## **13. Marine Resources**



#### **Problem Statement**

The ocean and its resources are increasingly seen as indispensable in addressing the multiple challenges the planet will be facing in the decades to come. Fish is considered as one of the best source of quality proteins with valuable health benefits. By mid of the current century, much more food, jobs, energy, raw materials and economic growth will be required to sustain the significantly increased population in Pakistan; likely to swell to 344 million by the year 2050. Pakistan's Marine Sector with its vast area and resources has an immense potential in contributing towards meeting those requirements and enhance national economic growth and progress. Despite having huge potential of fulfilling domestic fish requirements from own resources, we are importing \$40million worth of fish annually. The potential of the ocean resources to help meet these requirements would have to be utilized.

#### **Present State of Development**

The marine sector is very diverse, and includes at least offshore energy, maritime transport and construction, marine fisheries and aquaculture, tourism, and environmental aspects. Marine resources sustain a diverse range of economic activities. Growing population and improving knowledge and technological capability in respect to the oceans will lead to increasing utilization of marine resources. Pakistan's marine territory covers 290,000 sq. km (EEZ 240,000+ CS 50000), and is equivalent to the area of Punjab Province. The high quality of the Pakistan's marine and coastal environment provides a major competitive advantage in the fields of marine food and tourism, in addition to a source of new drugs / medicines. The rough estimates indicate that the marine sector in Pakistan contributes a considerable amount per year to the economy and supports over 100,000 jobs.

The natural resources of coastal zone of Pakistan include about 0.369 million metric tons of annual fish landing, about 612,000 hectare of mangrove forest, considerable resources of

minerals, seaweeds and sea salt, and estimated 14-16 billion barrels of oil and about 16 trillion cubic foot of gas, promising potential for mariculture, industrial use and potential of the coastal belt for recreation, tourisms, and sewage / waste disposal.

The marine and coastal resources exploitation, with the exception of fisheries and forestry sectors in Pakistan, is at its lowest level. The oil and gas, minerals, transport, and tourism are not being exploited because of inadequate exploratory surveys and lack of infrastructure.

#### **Relevance with the Pakistan Vision 2025**

The Vision 2025 has identified Marine and Coastal resources as an important natural resource. R&D in the area of marine resources will support achievement of the targets 'triple labour and capital productivity', increase the number of tourist arrivals to 2 million' and 'increase annual exports from US\$ 25 billion to US\$ 150 billion'.

#### Focus Areas of Research

- Living and non-living coastal and marine resources
- Marine and coastal biodiversity
- Mangroves and seaweed resource potential
- Marine Biotechnology
- Coastal zone management
- Persistent organic pollutants in marine environment
- Ocean-based energy sources (wave, tidal, thermal conversion, salinity gradient, gas hydrates)
- Low cost technologies for desalination of seawater for large scale production of water for drinking, industrial use and small scale irrigation
- Exploitation of available seaweeds for fertilizer and manure as well as for medicinal purposes
- Impact of climate change and global environment on marine resources of Pakistan

#### Recommendations

- Mapping of oceanic resources including both living and non-living resources in the maritime Exclusive Economic Zone as well as under seabed for assessing the potential of their utilization.
- Establishment of Marine Remote Sensing Facility for strengthening ocean research.
- Development of sea-based aquaculture and fishery industry.
- Integrated Coastal Zone Management Plans be prepared and implemented.
- Managing marine resources on an ecosystem basis to conserve marine biodiversity.
- Enhancing the existing fish processing capacities in the private sector.
- Capacity building of fisheries departments and fisheries managing institutions is the foremost requirement to promote 'mariculture' in the country.
- Government should declare the recommended sites by the experts as Marine Protected Areas.
- Promote and support marine resources entrepreneurship.

#### **Potential Socio-Economic Impact**

The successful and appropriate utilization of the marine resources would result in socioeconomic growth of coastal communities, development of fisheries sector, enhanced tourism, development of coastal and marine infrastructure, and hence poverty reduction, especially on the coastal areas as well as decreased import and increased import of fish, earning valuable foreign exchange.

## 14. Automobile



#### **Problem Statement**

The overall performance of Pakistan Automotive Sector has been unable to meet its true potential even motorcycles are not manufactured indigenously except the assembling. The reason for low performance automotive industry may be attributed due to lack of infrastructure, bad governance and absence of friendly industrial policies. Car assemblers, with very few exceptions, are using technology and providing features lesser as compared to similar cars in the global market. In the small car segment, the technologies being used are obsolete and have been phased out in the global market. Domestic consumers are also being deprived of best available technologies and basic safety considerations like air bags, ABS etc. Manufacturers continua to rely on fuel-inefficient technologies leading to resort to alternate cheaper fuels whereas engines are not so designed, thereby burdening the consumers further. The existing market segmentation has allowed only assembly of cars to operate within closed, captive market which offers restricted options to buyers. Hence, the vehicles assembled in Pakistan are not upto consumer satisfaction, safety standards and environmental compliance continua short fall of expectations. Even prices of small cars are very high as compared to our neighboring country India, e.g. prices of small (800-1000 cc) cars in Pakistan ranges from 7200-11500 USD while in India ranges from 3500-5800 USD.

#### **Present State of Development**

The automotive industry of Pakistan is considered as one of the thriving industrial sectors of the country. It has large potential to grow, contribute towards GDP and exports as well as provides an opportunity of growth due to its forward & backward integration. Auto industry is the second biggest tax payer in the country. According to recent statistics, it has contributed 63 billion Pak rupees as indirect tax in the national exchequer (Economic Survey of Pakistan 2015-

16) and total contribution of Auto industry to GDP is 2.8%. Presently, auto sector is contributing 16% to the manufacturing sector. Around 2000 auto parts manufacturers (out of which around 400 are in organized sector) in the country that supply parts to original equipment manufacturers (OEMs). Besides that, automotive industry of Pakistan is providing employment opportunities to thousands of people all across the country. Currently, over 192000 people are directly employed by manufacturers with total investment 1.5 billion US dollar.

Pakistan automotive sector comprises assembly and manufacturing units for production of cars (3 units), tractors (8 units), trucks / buses (10 units), Jeeps (2 units), LCVs / pickups / vans (8 units), two / three-wheelers (113 units). In addition, the downstream vending industry comprises around 2000 parts manufacturers. Some of the leading world automakers have established their assembly plants in the country which are helping in the transfer of latest global technology to Pakistani industry. Besides that, various international auto companies, including Toyota, General Motors, Honda, Suzuki and Nissan Motors are in joint ventures with local companies. Currently, our automotive industry is largely dominated by three major companies which include, Indus Motors, Honda Atlas Motors and Pak Suzuki. All these companies have comfortable position in the market and have made in-house investments in sheet metals and plastic component manufacturing too. In the cars segment, Japanese manufacturers share the entire market, whereas their share are 41%, 69%, 62% and 96% in production of motorcycle, buses, jeeps and LCVs, respectively.

#### **Relevance with the Pakistan Vision 2025**

Automotive sector will have to contribute in a big way if we wish to achieve the goal of becoming one of the largest 25 economies in the world by 2025. It can make significant contributions in meeting targets of the Vision such as decreasing heavy import bill and increasing contribution in GDP from existing 2.8%, increasing annual Foreign Direct Investment (FDI) and reducing poverty level.

#### **Focus Areas of Research**

- Developing capacity for designing and manufacturing of engines & components including light & heavy vehicles.
- Designing for enhancement of visibility during driving.
- Light weight of engine units, components & sub-components.
- Increasing fuel efficiency of vehicles.
- Developing environment friendly vehicles to meet emission and safety regulations.
- Development of catalytic converter to reduce the emission.
- Conforming to national & international standards and practices.
- Standardization and Conformity Assessment.

#### Recommendations

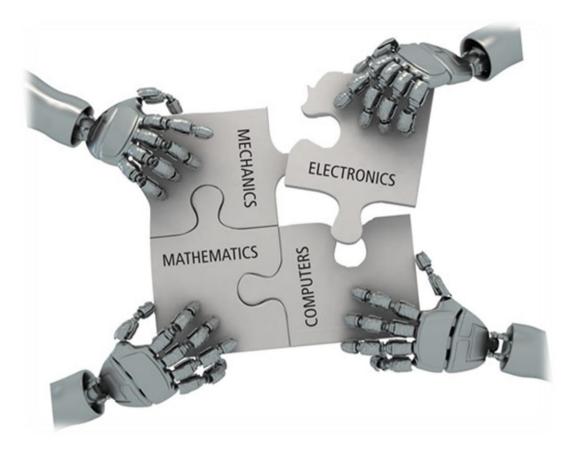
• Infrastructure regarding automotive design, testing and standardization may be established.

- Friendly industrial policies may be devised for uplift of automotive industry while keeping in view the local manufacturers as well as to attract foreign investors.
- Creating enabling tariff structure and mechanism for development of automotive sector.
- Automotive import policy needs to be rationalized.
- Regulatory & enforcement mechanisms for Quality, Safety and Environmental Standards (QS&ES).
- Establishing Technology development / acquisition & innovation Fund.
- Customers Welfare (CW) may be ensured through provision of quality, safety, choice and value for money.
- Auto industry should be encouraged to procure new technologies and management system to increase efficiency and productivity.
- Establishment of Pakistan Automotive Institute.
- Establishment of Automobiles Design and Research Centre.
- Establishment of automotive and auxiliaries testing labs.
- Auto clusters should be developed.
- Re-organization of Auto Industry Development Committee (AIDC).

#### **Potential Socio-economic Impact**

Development of automotive sector can contribute to growth and development of national economy in multiple ways such as import substitution, increase in exports, creating more job opportunities, reducing poverty and hence increasing total national GDP.

## **15. Robotics**



#### **Problem Statement**

Pakistan's efforts in the past in bringing about what the world deems as the "fourth industrial revolution" to its industries have been dismal. However, in recent years, research laboratories in the leading private and public universities in the country have started to actively take initiatives in sowing the seeds of industrial automation in Pakistan. Efforts need to be expedited in effecting this technological revolution in the country. Through automation of industry, we may revolutionalize our industry to meet goals by 2025.

It was back in 1939-1940, during the New York World Fair that the first humanoid robot was exhibited. Since then, there has been continuous research and development in the area of robotics, world over. In Pakistan, the field of robotics is being explored by many private organizations, universities, incubators, startups and freelancers, are contributing in robotics from grassroots to advanced level. Robotics is being taught as a subject in multiple public and private academic institutions, along with few research groups have been engaged in robotics research. However, it is still in embryonic stage as compared to other countries of Asia such as Japan, China, India, Singapore and Malaysia. Pakistan is importing hardware used for fabrication in house robots. The facilities of design fabrications are rear in the country so for every redesign or change in approach introduce huge delays in finalizing the hardware. Lack of skills / expertise in robotics is one of the hampering reasons in developing indigenous robots. Present State of Development

Since past couple of decades Pakistan took initiatives in developing robot's industry in the country with several startups, organizations, research groups, universities and incubators. Pakistan has been able to develop programmable logic controllers for use in automatic industrial controls having applications in the manufacturing industry. Both NUST and CIIT are extensively working on visual guided robotic systems for use in surgery, navigation control, mapping and geometric representation of environmental parameters. NIE, LUMS and CASE institutions are also engaged in research on Robotics and Artificial Intelligence. The National Engineering and Robotics Contest (NERC), is the biggest robotics contest held annually at national level.

The government is spending in design & development of intelligent mobile robots for disaster management and firefighting, development of tele-surgical training robot and simulator, and myoprosthetic upper limb. RoboMinors, Robokids and STEMERS are the leading startup companies that are promoting awareness on robot and its applications.

In 2013 two indigenously built tactical drones, named Burraq and Shahpar, were inducted into Pakistan Army and Air Force. Robotics has even made its entrance in medicine and surgeries in Pakistan. Surgeons in the top healthcare institutes of the country have employed advanced 3D imaging to get a deeper understanding of the body and plan their surgeries precisely. The availability of robotic arms and exoscopes in operating theatres has enabled more targeted, less-invasive treatment for patients.

#### **Relevance with the Pakistan Vision 2025**

Application of robot in various industries will have to contribute in a big way if we wish to achieve the goal of becoming one of the largest 25 economies in the world by 2025. It can make significant contributions in meeting targets of the Vision such as enhancing productivity, quality, decreasing heavy import bill and increasing contribution in GDP from existing 2.8% and reducing poverty level. It will also help in defence as well as disaster management.

#### **Focus Areas of Research**

- Developing Disaster Management robots
- Developing Environment Monitoring & Surveillance robots
- Developing Medical and Rehabilitation robots
- Developing Marine and agriculture robots
- Automation of local industries
- Developing defence related robots

#### Recommendations

- Establish robot research and design labs in Pakistan
- Awareness about the importance of STEM education
- The centers of excellence in robot research should be established in various engineering universities.
- The investment on robot research should be enhanced.

- The government should allocate special budget for specialization in robotics (PhDs).
- Training programmes need to be initiated for capacity building of professionals.
- Widen the ownership of business capital to ensure equitable distribution of robots.
- The training session should be conducted for workers to be able to operate and monitor automotive technology and systems.
- Robot technology incubation centers should be established in various engineering institutions.
- National R&D Organizations with mandate to robot research should be established.
- National Robot Technology Park should be established.
- The multidisciplinary robot research institution should be established at national level.
- Establishing robotic technology development / acquisition & innovation fund.
- Establish effective linkages between academia and industry.
- Public and private partnership model may be promoted.

#### **Potential Socio-economic Impact**

The robotics industry in Pakistan is still in its infancy, however, trends around the world have shown that a proliferation of robots in industry and agriculture increase productivity, wages and total labor demand, but mainly benefit higher-skilled workers. All of this will, however, come at the expense of low - middle skilled and wage workers leading to income inequality.



# Pakistan Council for Science and Technology Ministry of Science & Technology

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## THE SEMINAR ON HEALTH RESEARCH PRIORITIES FOR PAKISTAN

FEBRUARY 26-27, 2001 ISLAMABAD

## PAKISTAN MEDICAL RESEARCH COUNCIL

## **BACKGROUND:**

In 1996 the World Health Organization (WHO) convened an Ad Hoc Committee on Health Research to review the health needs and related priorities for research and development in the low-income and middle-income countries. The report of the Committee lists and discusses the key challenges faced by governments and the health systems. The report states that "-----. Yet the governments of middleincome and low-income countries must somehow respond to the multiple and complex health needs ahead of them. To do so effectively, they will need new information, tools and policy instruments that they can obtain only through research and development. But finances and capacity for R&D are limited, and in order to make the best use of both, priorities must be set and incentives for efficiency created". Earlier, the Commission on Health Research for Development, an independent international initiative, had recommended in its report published in 1990 that all countries vigorously undertake Essential National Health Research (ENHR) to accelerate health action in diverse national and community settings, and to ensure that resources available for the health sector achieve maximum results. Three months after the publication of the Commission's report, the technical discussions of the World Health Assembly focused on the theme," The Role of Health Research in the Strategy for Health for All by the Year 2000". Resolution WHA 43.19 of the Assembly included a call to the WHO member states to undertake ENHR appropriate to national needs. In 1993, the Council on Health Research for Development (COHRED) was constituted to "promote, facilitate, support and evaluate the ENHR strategy and other health issues of international priority".

Pakistan is a constituent member of COHRED and the Pakistan Medical Research Council is endeavoring to implement the ENHR strategy in the country. The following are the principle objectives of ENHR:

- 1. To identify country specific health problems and design and evaluate action programs for dealing with them;
- 2. To join in the international effort to find new knowledge, methods, and technologies for addressing global health problems that are of high priority for the country in question.

These objectives provide the basis for the realistic planning of health research facilities that will be aimed at the highest–priority health problems and consistent with what can be afforded over time (as mentioned in the Commission's report).

The Seminar on Health Research Priorities for Pakistan was organized as the first essential step in the effective implementation of the ENHR strategy. Although the activity was organized over a very short period of time the response from the institutions and stakeholders invited to participate, was overwhelming. From among the key policy and decision-makers, the Minister for Science and Technology inaugurated the Seminar and participants were later invited for informal discussion over a dinner hosted by the Minister, Health. The Deputy Chairman, Planning Commission, presided over the session in which the groups made their presentations. The Secretary, Health, sent his nominee the Executive Director, National Institute of Cardio-Vascular Diseases to preside over the concluding session and the Director General, Health, presented the Keynote Address at the inaugural session. The participants included leading and senior researchers and academicians from public sector medical colleges and postgraduate medical institutions, the Aga Khan University, the Zia-uddin Medical University, the Armed Forces Institutions, the National Institute of Health, the Health Services Academy, the National Institute of Population Studies, the Pakistan Council on Science and Technology, the Ministry of Science and Technology, other private sector academic medical institutions and some leading very active and revered retired academicians and researchers. In addition, international representatives from COHRED and the John Hopkins University especially came to attend and facilitate the Seminar.

In the organization of the Seminar, the Pakistan Medical Research Council received technical support from COHRED, the Global Forum for Health Research, the Department of International Health of the John Hopkins University and the Health Services Academy. This process of organization and management of the Seminar was itself a collaborative venture to promote health research in Pakistan.

## 1. PROCEEDINGS OF THE SEMINAR

The Seminar was held on February 26-27, 2001, in the auditorium of the Pakistan Academy of Sciences, Islamabad. The participants included health professionals, scientists, researchers and leading academicians of the health policy-makers, and senior level manager decision-makers, etc. A special newspaper supplement was published on February 25, 2001, to focus the attention of stakeholders on the need and objective of the activity. Messages of support from Dr. Abdul Malik Kasi, Federal Minister for Health; Dr. Atta-ur-Rehman, Federal Minister for Science & Technology; Dr. Shahid Amjad Chaudhary, Deputy Chairman, Planning Division; Mr. Ejaz Rahim, Secretary, Ministry of Health; and Rear Admiral Surgeon Muhammad Aslam, Director General, Health, are placed at No.3.0 in the **Seminar Supplement Section** of this report. The programme of the Seminar and the list of participants are attached at **Annexure-2.6** and **Annexure-2.7** respectively.

## 1.1 Plenary Session

#### a) <u>Welcome and introduction of speakers</u>

Dr. Tasleem Akhtar, Executive Director, PMRC, while welcoming the participants expressed her overwhelming gratitude for their support to the PMRC in the past and for sparing their time at very short notice to participate in the Seminar. She informed the participants that the role of the PMRC is to facilitate and assist the health research effort in the country. The Council is dependent on their support and guidance for the achievement of its functions. She said that the Council was making a fresh effort to re-vitalize health research, to put it on the country's priority list with the ultimate goal of institutionalizing it, not only within the health care delivery system but in all other sectors and spheres of life. This she said, is the need and demand of the new millennium, which could no longer be ignored if Pakistan sincerely wanted to participate as an equal among nations in the globalized world.

After giving the brief purpose of the Seminar Dr. Tasleem introduced the two speakers of the plenary session: Dr. Chitr Sitti-Amorn and Dr. Adnan Hyder.

**Dr. Chitr,** she said, was representing the Council on Health Research for Development (COHRED). Introducing COHRED she said that it is a Geneva based organization, which was created to promote the implementation of Essential National Health Research in developing countries. Dr. Chitr is the founder Dean of the College of Public Health at the Chulalongkorn University Bangkok, Thailand. He is a member of the WHO Advisory Council for Health Research. His knowledge and experience will help us a lot in achieving the objective of our Seminar.

When introducing **Dr. Adnan Hyder**, she informed the participants that he is a graduate of the Aga Khan University and has acquired his Masters in Public Health and Ph.D in Public Health from the John Hopkins University, USA. He is an Assistant Research Professor and Director of the Doctor of Public Health (DrPH) Program in the Department of International Health of the School of Hygiene and Public Health at the John Hopkins University. Dr. Hyder also serves as a consultant to the Global Forum for Health Research and the World Health Organization in Geneva. In addition, he is Program Manager for Pakistan on the Council for COHRED. Dr. Hyder has been working on health systems development in developing countries for many years. He has adjunct positions in Pakistan with a number of organizations especially the Health Services Academy, Islamabad and has worked with the Pakistan Medical Research Council for several years. (Full text of her welcome address is given at Annexure-2.1)

## b. <u>Essential National Health Research (ENHR): Key for</u> <u>National Development (Dr. Chitr Sitti-Amorn):</u>

A full text has not been received. The following is the slide presentation made by the speaker.

#### STRATEGIES IN 1990

- COUNTRY FOCUS (based on ENHR 2% expenditure)
- "N-S" PARTNERSHIPS focused on highest priority problems
- GREATER INVESTMENT IN HRD (5% of aid)
- INTERNATIONAL MECHANISMS monitoring and technical support

#### Essential National Health Research (ENHR)

- Research on country-specific health problems, needed to formulate sound policies and plans for field action
- Contributions to global health research:
  - New knowledge and technologies to solve health problems of general significance
  - Relevant to problems of the country

- Goal: promote health and development based on equity and social justice
- Content:
  - Research: biomedical, clinical, epidemiological, behavioral and social
  - o Health system research and policy analysis

# Emphasis on important problems affecting the population and disadvantaged and vulnerable groups

- Mode of Operation: Inclusiveness (researchers, health care providers, community) in planning, promoting and implementing programs.
- Essential National Health Research Questions:
  - 1. To what extent have the recommendations been implemented?
  - 2. Have they made a real difference in the lives of the disadvantaged?
  - 3. What is the current situation in health research for development?
  - 4. What impact on health and equity do national and global efforts have?
  - 5. Where do we go from here?

#### **Unprecedented Changing Paradigm in the Last Decade:**

- Collapse of the Communist Block
- Economic crisis in Asia
- Ethnic and territorial conflicts throughout the world
- Massive population movement and migration
- National disasters
- Globalization, information, communication and knowledge

#### **Unprecedented Changes in Health Areas:**

- Spread of health problems across national boundaries: AIDS, drugresistant malaria, tuberculosis: vulnerability of nations
- Scientific breakthroughs: genomes; new drugs and vaccines; new methods (reform efforts and health system performances)
- Attention to health and poverty: Millennium Summit of World Leaders at the UN
- More inequity

#### **New Initiatives**

- The WDR 1993: Investing in Health
  - Test the development of nationally defined health intervention packages
  - Redirecting investment in equity-oriented health development led by the World Bank
- The Ad Hoc Committee five-step approach to resource allocation for strategic health research
- Global Forum for Health Research
- Alliances for Policies and Systems Research
- Global Public and Private Partnerships:
  - Pharmaceutical industry's involvement in the neglected areas of health research
  - o Bill and Melinda Gates Foundation
  - Rockefeller Foundation:

# Do these efforts contribute optimally to a strong and self-reliant national health research system?

Do these efforts strengthen or weaken international efforts to support the national systems?

#### **Response to Commission's Recommendation:**

- Strategies adopted by 55 countries:
- International partnership to address high priority health problems:
  - o Ad Hoc Committee
  - Private-Public Partnership on specific problems
  - Vertical more than horizontal/systems => may affect capacity at country level

#### Mobilization of financial resources: Not materialized

- GFHR 2000
- Resource flows

#### International mechanism to monitor progress and provide support:

- COHRED
- GFHR
- Others

#### **Revitalization of Health Research: What is needed?**

- Vision for Health Research
  - o Driven by Equity

- Country Focus: Needs and Priorities
- o Within an interactive regional and global framework

#### • Key Features:

- o Strengthen immediate work environment of health researchers
- Strategic international networks, partnerships and alliances to make the voices of developing countries heard
- o Link health research closely with development agenda

#### • Develop an Effective Health Research System

- Clearly defined goals and shared values
- Operating Principles:
- Appropriate functions: stewardship; financing; knowledge generation; utilization and management of knowledge; capacity development
- Structure and Governance

#### • Some Operating Principles

- National policies, plans & priorities
- o Targeted financing
- o Integration with health development
- o Multi- inter- sectorality
- Long-term perspective
- Ethical code
- o Communication and networking
- o Subsidiary
- o Monitoring & evaluation

#### • Desirable Characteristics of "Structures"

- Robustness of Vision: advance health research for development at all levels in a comprehensive manner (5 functions)
- Competence and Effectiveness: top notched technical advisor and effective external review process
- o Credibility and accountability with multiple stakeholders
- Effective advocate and linkage with Health Development System
- Capacity to generate research funds
- o Support lower level entities in their organizational effectiveness
- Good governance (Internal Review Process)
- o Cost-effectiveness

#### • The Framework

- Equity (including gender equality & sensitivity)
- o EVIDENCE as basis for improved health
- EXCELLENCE

• KNOWLEDGE = PUBLIC GOOD

#### Governance: Key for Development of the Health and Research System

#### • Research is essential for the Good Governance of the Health System

- Empowerment of the public
- o Enhance effectiveness of NGOs
- Enhance accountability of executive branch
- Align donors to national priorities

#### **CIVIL SOCIETY**

#### **STRATEGY 1 (Target)**

#### • MORE KNOWLEDGE

- More in quantity
- o Better quality
- Better management and use

#### STRATEGY 2 ("level")

•

- NATIONAL FOCUS
  - Mechanisms at country level
  - More effective arrangements at all levels, focused on country strengthening
  - o Connectivity

#### **STRATEGY 3 (means)**

#### • CAPACITY DEVELOPMENT

- o health research quality
- o research management, use & demand
- ICT mechanisms
- o ALL players
- o retention of capacity
- o strategic partnerships

#### **STRATEGY 4** (support)

#### • MORE MONEY

- o assess baseline and flows
- o increase resources (% from national and donor "purses")
- o increase appropriate use (focused on HR for equity)

o strengthen management capacity

### **STRATEGY 5** (governance)

### • WELL-ALIGNED GLOBAL STRUCTURES FOR EFFECTIVE SUPPORT OF COUNTRY AND REGIONAL HRD

- o codes of good practice
- o monitor & review
- o advocacy

After the in-depth presentation by Dr. Chitr, **Dr. Hyder** was invited to give his talk on priority setting for health research. The salient points of his talk are given below:

## c) <u>Presentation on Priority Setting - Methods and Framework</u> (Dr. Adnan Hyder):

Full text has not been received. The slide presentation follows:

#### Health Research & Development: A Global Imperative

- It is estimated that 85% of the world's population lives in low and middleincome nations; it is also estimated that these same countries suffer 92% of the disease burden
- The burden for all types of diseases is higher in low and middle-income nations as compared to high-income nations. The rate of DALYs per 100,000 for the year 1998 indicates that in low and middle-income nations the rate of:
- The 10-90 disequilibrium in health research is a major inequity. It reflects that of the estimated \$70 billion spent every year on health research, only 10% or less is used for health problems relating to 90% of the world's people.
- What can we do about the 10-90 disequilibrium?

#### Why Prioritise a Research Agenda

- Limited resources for health and health research
- Balancing interest of different constituencies
- Coordination amongst actors in health research
- Addressing local needs and requirements
- Focus on both tool development (generation of knowledge) as well as implementation
- Levels of intervention differ from local to national

#### **Priority Setting Tools**

The features of a generic priority setting method are:

- Systematic method
  - Applicable at various levels
  - Evidence based
  - Provides links between research for tool development, application and policies
  - o Useful for comparisons amongst (within) diseases
  - Useful for the identification of research gaps

#### **Priority Setting Process**

A generic priority setting process for health research will have the following steps:

- Problem definition
- Identification of stakeholders
- Description of an 'ideal' control situation
- Identification of literature on research
- Description of information gaps
- Review of national activities
- Review of institutional comparative advantage
- Matching requirements of other programmes

#### **Examples of Priority Setting Tools**

- The Visual Health Profile of WHO released in December 1997
- The «Five Steps » in Priority Setting proposed by the Ad Hoc Committee of WHO in 1996 :
  - What is the disease/risk factor burden?
  - Why does the burden persist?
  - How cost effective are present interventions?
  - How cost effective could future interventions be?
  - What are the resources currently flowing to address this issue?
- The addition to the «Five Step» process, an institutional overview of the determinants of health by the Global Forum for Health Research in 1999:
  - o Individual, family and community determinants
  - o Level of Health Ministry, research institutions, health systems
  - Sectors other than health
  - o Central Government

The placement of the five-steps in rows and the determinants in columns lead to the framework proposed by the Global Forum.

#### **Common Framework**

The features of a useful framework for priority setting in health research are that it:

- Consolidates information
- Promotes communication
- Identifies linkages between types of research (basis to be applied)
- Places research into context; and
- Assists identification of new research areas (helps define competitive advantages)

#### **Factors Necessary for Capacity Strengthening:**

- Defined national research priorities
- Systematic effort involving all actors
- Multi-disciplinary approach
- Sustained effort with a long-term perspective

- Balance between human and physical capacities
- Defined policy to limit brain drain
- Measurable indicators of success
- Systematic analysis of factors of success/failure
- Regular consultations at regional/international levels

#### **Points for Discussion**

The following are issues that will require further discussion within any country:

- Overall health research governance:
  - diversity of actors
  - defining roles and collaboration principles
- Fields of health research:
  - (1) biomedical issues
  - (2) behavioural and community issues
  - (3) sectors outside health with profound influence on health
  - (4) good governance issues affecting health research
- The research "loop":
  - (1) creation of knowledge
  - (2) validation of knowledge
  - (3) transformation into best practices
  - (4) dissemination
  - (5) identification of gaps and development of initiatives to fill the gaps
  - (6) development of indicators to measure impact on health status
  - (7) feedback on orientation and design of future research focus on the weakest link/s
- How to increase the efficiency/effectiveness of the research "loop":
  - research (process, tool)
  - knowledge (research outcome)
  - change in health status of populations (global objective)

Communication is a critical part of the research process and should be considered integral to it. It involves an interactive dialogue with :

- community/people/customers
- policy-makers/decision-makers

#### Conclusions

- Identifying priorities is as important as conducting research itself.
- The *process* is a critical part.
- The methods used are *tools* and are as good as the users and the purpose.
- Review information available and research conducted elsewhere.
- Consider a wide variety of areas including conditions and risk factors.

These two presentations were followed by a discussion in which the participants fully contributed and exchanged their views and comments with the speakers.

The plenary session ended at 1330 hours.

### **1.2 Inaugural Session:**

Dr. Atta-ur-Rehman, Federal Minister for Science and Technology presided over the inaugural session. The Director General Health delivered the keynote address.

In her welcome address, Dr. Tasleem Akhtar, Executive Director, PMRC, acknowledged the contribution and efforts of certain institutions and individuals to the health research effort in Pakistan. Dr Akhtar regretted that overall health research had, as yet, not found a place even on the priorities list of the Ministry of Health, leave alone the country. She said that research culture is lacking and that there is no demand for research. The Pakistan Medical Research Council, she said, was established with the primary responsibility of addressing these issues but, owing to reasons known to the participants, had not been able to make an impact. She assured them that the Council is fully conscious of its responsibilities and has resolved to revitalize health research in the country. She emphasized the fact that the Council is not an isolated, discrete entity working in its own isolated offices and institutions. Without their guidance, cooperation, collaboration and participation there can be no effectively functioning PMRC. She described the actions, which the Council is contemplating for more effectively achieving its objectives (full text given as Annexure 2.2).

Surgeon Rear Admiral Mohammad Aslam, Director General, Ministry of Health, presented the keynote address. He drew the attention of participants to the immense problems in the health sector, which include the less than satisfactory governance, the increasing burden of disease and the widening gap between needs and available resources. He also described some of the actions being taken by the government. These include the Primary Health Care programme, the poly-immunization program, which is on the verge of eradicating polio, and the National Program, which is taking health care to the households and families through the lady health workers. He mentioned the health sector reform effort with its key components of devolution of authority to the district level, the award of autonomy to hospitals and the development of public-private partnerships for the delivery of health services.

He acknowledged that evidence-based policy, planning and decision-making is yet to be institutionalized. He dilated on the critical role of knowledge in the development of countries and the key role of information in the efficient utilization of the spectacular advances made in the health field. Alternate to this, he said, is the danger of the accentuation of inequality. He expressed the opinion that an essential need of the country is to develop capacity for acquiring, adapting and applying the available knowledge to its own specific needs. He acknowledged the role of the Commission on Health Research for Development in focusing world attention to the global neglect of research on the health problems of developing countries. He said that the report of the Commission has triggered and accelerated global effort for the promotion of health research in the developing countries and that Essential National Health Research (ENHR), the strategy recommended by the Commission, is being adopted by many developing countries. The closing years of the last millennium, he said, saw the near universal acceptance of the fact that research is a need and not a luxury.

He went on to narrate the development of health research in Pakistan and the role and responsibility given to the Pakistan Medical Research Council. He discussed some of the reason as to why health research had not yet taken off in the country and informed the participants about the actions being taken to strengthen the PMRC and revitalize research.

Before concluding his address the DG announced that the Ministry of Health had decided to accede to the PMRC request for the grant of a lump sum amount from the Central Health Research Fund. (Full text of the keynote address is placed as Annexure-2.3).

## 1.3. Summary of Proceedings

Dr. Adnan Hyder developed and presented the following summary of the deliberations of the meeting:

#### **The Meeting Process**

The Seminar on Health Research Priorities for Pakistan began with a plenary session, which explored the rationale and need for setting health research priorities at the national level. In addition, the plenary speakers provided the audience with suggested guidelines for group work and criteria for selecting priorities. The meeting then proceeded with group work for more than 6 hours using the top intellectual and human resources present at the meeting. The group discussions were based on the values of *equity* and *social justice* and had the mission of developing a relevant and essential national research agenda. The entire deliberations were framed within the context of scarcity of resources for health and especially health research in Pakistan.

The working meeting provided an excellent opportunity for researchers, health professionals, representatives of NGOs and policy-makers to discuss and share views. The participants were divided into 8 groups and reported their findings as described below. List of groups and participants and their reports are placed at **Annexure 2.4 to 2.7**.

#### **Communicable Conditions**

The group assigned to explore research priorities within communicable conditions established a specific consultative group process. They decided to use the following criteria for setting priorities:

- Magnitude of the disease burden
- Prior research work done on the disease
- Feasibility of research and research products
- Potential impact of research product

The group was self-critical of the somewhat subjective nature of the process but considered it a good beginning.

The group listed the following priorities based on their evaluation:

- \* TB (epidemiology, resistance)
- Respiratory infections (etiology, prognosis)
- Malaria (epidemiology, resistance)
- Hepatitis B, C, E (risk definition)
- Viral diseases
- Microbial resistance (quality control, labs)
- HIV/AIDS
- Diarrheal diseases
- Vaccine preventable diseases (measles)
- Social, economic, behavioral factors
- Surveillance and outbreak response

However, the group did not have time to further work out the priority list within this list and decided to postpone that for post-meeting interactions.

#### Non-Communicable Conditions

The priorities listed by the group discussing non-communicable conditions were:

- Cardiovascular conditions
- Diabetes
- Cancers (especially breast, lung, oral) development of a tumor registry
- Risk factors (HTN, lipids, smoking, obesity)
- "Accidents" (especially road crashes)
- Violence against women

The group, however, did not stop at thinking through the research priorities but also spent some time exploring control efforts at multiple levels such as:

- Individual, community, society
- Institutional levels, systems

- Knowledge of community/public awareness
- Food producers

They wanted to discuss the potential impact of any recommendations that may emanate from research conducted within Pakistan and to map out the other stakeholders within the country.

A second group was convened on communicable diseases in consultation with the Group facilitator after the seminar.

#### **Mental Health**

The group discussing mental health issues was very dynamic and began deliberations by exploring the major issue around mental health in Pakistan – social stigma. They propose a package of research and action interventions that they called, "Country Specific Action Based on Research and Equity" (CARE).

The group came up with more than 32 specific research areas requiring work within Pakistan. However, they further prioritized that list and suggested that priorities for the short term include:

- Better assessments of the epidemiology of mental health in Pakistan, including estimates of the burden of disease
- Knowledge Attitude Practice assessments for different stakeholders within the country to enhance our understanding of the ground realities.

The group suggested that research priorities for the long term would include:

- Development of a mental health registry,
- Evaluations of local treatment strategies, and
- Evaluation of the effectiveness of the recent new mental health legislation of 2001.

The group stressed that changes in the research environment in Pakistan were critical for the promotion of relevant health research. The group also suggested specific research into existing inequities with the recognition of "special groups" and "risk factors" for mental health. The group placed an important stress on the "process" of national health research by indicating that good leadership was important together with strong international linkages. Finally they proposed the creation of an ENHR Unit within the PMRC.

#### **Reproductive Health**

The group on reproductive health began by developing their one conceptual framework for health research priorities. They developed a simple list of 4 questions that they attempted to answer:

- What research is required in Pakistan for reproductive health?
- Why is this research required?
- Can such research be done in the country?
- What will be the result of that research?

Using this framework the group proposed the following list of priority issues:

- \* Safe motherhood & maternal health: especially maternal mortality\*\*
- Adolescent health: especially estimates of morbidity\*\*
- Family planning: community based delivery systems\*\*
- Reproductive Tract Infections (including STDs): especially morbidity estimates\*\*
- Vital registration systems
- Infertility research and intervention studies
- Cancers of the reproductive system\*\*
- Violence against women
- Male participation in reproductive health programs

The group went on to select the marked topics as high priority (\*\*HIGH priority) based on their understanding of the issues in Pakistan.

#### **Capacity Building**

The group discussing capacity development had a vast agenda and explored the application of capacity development at two different levels:

- Strategic management of an institution/s (as part of the mission)
- Operational aspects (including educational development issues, use and generation of resources, and marketing of programs and products)

As a priority the group recommended the development of a "National Health Research Policy" for Pakistan. This national policy would guide the development of research agendas and the conduct of research within the country. The group also stressed the need for strengthening the PMRC, which has the function of promoting, coordinating and disseminating research within the country.

The group indicated that the research on the issues of capacity development revolves around human resources (largely evaluative research) and how they have been developed and used. The increasing importance of the private sector in Pakistan for health care delivery was another area for concern and work in terms of health research. This also reflected on the national need for research on standards and quality assurance of the health care system in the country.

#### Health Systems/Policy

The conceptual framework used by the health systems group included two axes. One considered the role of behaviors, institutions, and the context of research while the other focused on the need to improve the goals of the health system. The group focused on the operational principles of multi-sectoral, multi-disciplinary and multi-institutional research that focused on cooperation, collaboration, and networking.

The group proposed a long list of research topics and indicated that priority health systems research issues include:

- Health sector reform/health financing/health policy
- Socio-cultural/traditional aspects of health
- Macro assessments of health care/public-private mix

The group also suggested that the certain organizational issues and actions would be required to catalyze such research within the country. They suggested that health systems research funds be generated in a joint capacity by institutions; and that efforts for capacity development need evaluation more than a simple count of publications.

#### Perinatal & Child Health

The perinatal health group decided to use the five-step process as modified by the Global Forum and provided the participants with the results of their process. The Global Forum framework was found to be entirely or partly useful within disease/condition entities. The specific references to all the 4 types of determinants for a disease could not be used in every case.

The group proposed research priorities within the following five areas:

- Perinatal/newborn health: especially socio-behavioral issues and further development of community based interventions
- Malnutrition: micronutrient deficiencies, maternal nutrition, and low birth weight
- Poverty and child health: impact of health sector reform, development and resting of social safety nets for children
- Communicable conditions: diseases not usually funded such as typhoid
- Evaluation of current/previous programs for perinatal and neonatal health to learn of their impact on the health status of the current population.

#### **Common Themes from Groups**

The working groups used different group processes and varied their use of criteria for setting research priorities. However, they all shared some common features as follows:

- The level of prioritization differed between groups some produced a general list while others developed their "top" priorities.
- Capacity building for health research was a common theme in all of the groups.
- Improving the research environment was important to all of the discussions.

- Generation of resources widen the definition of "resources" to include human, technical, equipment and financial issues were clarified several times during the meeting.
- Use of products for research (policy development and implementation) is part of the "research enterprise" and needs to be addressed
- Recognition of the determinants/risk factors for each disease and condition is important for the research agenda within Pakistan.

#### **Additional Issues to Consider**

As a result of the discussions at the seminar some additional issues for health research in Pakistan were also recognized:

- The use of methods for priority setting may differ according to the issue under discussion. This means that the same specific method or criteria may not be suitable for all types of research.
- The process needs to be informed by evidence and national data needs to be considered. This was within the context of questioning the quality of information available in the country.
- There are important health systems issues awaiting research such as the poor use of existing structures (such as the primary health care system) in the country. These issues must be addressed urgently.
- Ethics of research must be addressed within the context of national ethical guidelines and the development of institutional ethics committees.
- Operational quality and scientific rigor of research must be maintained. The system of peer-review needs to be strengthened, as do the skills of national researchers.

#### Conclusion

The participants concluded that the meeting was an important step in a larger *process* of health development in Pakistan. The success of this meeting depends on the action plan and next steps taken to implement the suggestions made in the meeting. More importantly, the meeting and action plan are not just for the Pakistan Medical Research Council, but also for all partners within Pakistan.

# 1.4. Health Research Agenda: Action Plan and Next Steps

Presented by Dr. Tasleem Akhtar, Executive Director, PMRC:

#### **Summary of Activities:**

Dr. Tasleem informed the participants that the on-going Seminar was part of the process started by the PMRC for boosting health research in Pakistan

• The process started in November 1998 with the National Seminar at Islamabad on the role of health research in development and the restructuring of the PMRC;

- The Seminar on health research priorities for Pakistan is a continuation of the national dialogue;
- This will be followed by further consultations to:
  - Refine, develop and disseminate a comprehensive research agenda
  - o Operationalize the research agenda developed

#### **Immediate Next Steps**

- Convene a smaller group/groups to convert the tentative list of priorities recommended by the Seminar into a comprehensive National Health Research Agenda document.
- Disseminate the agenda to stakeholders including:
  - Policy-makers
  - Donors
  - NGO's
  - Civil society
- Continue dialogue on research priorities, especially with other partners

#### Prepare a Plan of Action for:

- The adoption of the national health research agenda by decision-makers
- Generating resources for operationalizing the agenda
- Planning for impact assessment of the research undertaken under the agenda.
- Development of an "oversight" function to evaluate and monitor research and research investments in the country

#### Generating "Resources" within the Country

Working together under the principle of *solidarity and collective* action for the benefit of all project plans and proposals will be developed to access the funds from the following resources available within country:

- Central Research Fund in the country
- R&D Allocation in grants and loans
- Annual development plan budgets
- WHO and Bilateral aid plans

#### **Developing Human Resources:**

- Identification of skills/strengths within institutions for capacity development;
- Identification of needs, based on national health research agenda;
- Development of projects and programs for capacity development at the national, provincial and local levels;
- Planning career structures and pathways for researchers in the country.

#### Linking with "Resources" Outside of the Country

- International organizations (COHRED, Global Forum)
- Donors (World Bank)
- International Networks (INCLEN)
- REGIONAL efforts (WHO-EMRO)

#### **Improving Research Environment**

- Important "need" within Pakistan to sustain research efforts
- Identification of "career pathways" for researchers
- Use of professional incentives in creative ways
- Addressing "brain drain" (internal and external) reasons for qualified personnel moving to other locations and institutions
- "Centers of Excellence" concept (WHO) to be applied within the country so that intra-country technical support can be obtained on specific issues

#### **Role of PMRC in the Action Plan**

- Provide leadership for the implementation of the national health research agenda. Promote, organize and coordinate action.
- Establish linkages and collaboration
- Advocate utilization of the research undertaken
- Facilitate and assist researchers in accessing resources
- Generate resources
- Plan and implement capacity building for research

#### **Role of Partners in the Action Plan**

Diversity of partners and their roles need to be acknowledged; some will be involved in promoting research, others in conducting it and still others in utilizing the results – but all are important stakeholders in this national health research enterprise. Different agencies have a role at various points in the process.

More specifically the partners will:

- Take the national health research agenda to individual institutions to promote dialogue and ownership "internalize it"
- Disseminate within and outside of the country at every opportunity
- Contribute to the further refinement of the agenda over time
- Contribute to operationalizing it both within the institution and the country

Dr. Tasleem concluded that with the hope and support, cooperation and collaboration of the participants and other stakeholders, PMRC will be able to achieve its immediate objective of revitalizing health research and implementing the research agenda, based on the priorities identified by the participants of the Seminar. The Seminar, she said, will prove to be a milestone in the institutionalization of Essential National Health Research in Pakistan.

# Welcome and Introduction of Speakers at the Plenary Session

Dr.Tasleem Akhtar, Executive Director PMRC

Dr. Chitr Sitti-Amorn, Dr. Adnan Hyder, colleagues, ladies and gentleman, it is difficult for me to find words to express my overwhelming gratitude to you all, for sparing your time to participate in the PMRC's various activities, whenever we have called you; often at short notice. The last time we met was in November 1998, when we all sat together to discuss the role of health research in national development and to formulate recommendations for the strengthening and restructuring of the PMRC, to enable it to be a leader in the field as envisioned by its founders. I must assure you that your recommendations on that occasion have not gone into cold storage. In fact, this Seminar is one of the recommendations of that consultation, which is being implemented. The implementation of the other recommendations; like capacity building, identification and accessing of financial resources for research, strategies for linking research to policy and the establishment of an information resource center, has been started. We are depending on all of you for your support and guidance in our efforts and activities for re-vitalizing health research, putting it on the priorities list of the country and ultimately institutionalizing it, not only within the health care delivery system of the country but in all other sectors and spheres of our lives. This is the need and demand of the new millennium and we can no longer afford to ignore it if we sincerely want our country to participate as an equal among nations in the globalized world of today.

The program of this Seminar has undergone some revision. This session, which previously combined the inaugural and plenary sessions, has been split up. The Minister for Science and Technology, who very kindly accepted to inaugurate will join us in the evening. Therefore, the Inaugural Session will be in this auditorium at 1630 hours. I apologize for any inconvenience, which may have been caused by this adjustment.

It is my pleasure to introduce the two speakers of this plenary session: Dr. Chitr Sitti-Amorn and Dr. Adnan Hyder.

Dr. Chitr is representing the Council on Health Research for Development (COHRED). COHRED, as most of you know, is a Geneva based organization, which was created to promote the implementation of Essential National Health Research in developing countries. Dr. Chitr is the founder Dean of the College of Public Health at the Chulalongkorn University, Bangkok, Thailand. He is also the president–elect of the International Epidemiology Association. He has had a very diverse background, starting as a neuroscientist, then becoming a clinician, an epidemiologist and finally a founding dean of a public health institution at the oldest university of Thailand. He is a member of the WHO Advisory Council for Health Research, the Advisory Committees on the Rational Use of Drugs Program and Management Sciences for Health and is the COHRED's Asian Focal Point. He is an important member of a group, which is very successfully promoting

ENHR in the South East Asian countries. His knowledge and experience will help us a lot in achieving the objective of our Seminar.

Dr. Adnan Hyder is a 1990 graduate of the Aga Khan University, Karachi. He is an Assistant Research Professor and Director of the Doctor of Public Health (DrPH) Program in the Department of International Health of the School of Hygiene and Public Health at the John Hopkins University. He is also Joint Faculty of the John Hopkins Bio-ethics Institute. Dr. Hyder also serves as a longterm consultant to the Global Forum for Health Research and the World Health Organization in Geneva. In addition, he is Pakistan Program Manager for the Council for Health Research and Development in Geneva. Dr. Hyder has been working on health systems development in developing countries for many years and has widely published issues related to the burden of disease measures, ethics and equity, and the new burden of injuries in the Third World. Dr. Hyder has adjunct positions in Pakistan with a number of organizations especially the Health Services Academy, Islamabad and has worked with the Pakistan Medical Research Council for several years. Dr. Hyder obtained his MBBS from the Aga Khan University and his Masters in Public Health and Ph.D in Public Health from the John Hopkins University, USA.

# Welcome Address at the Inaugural Session

#### Dr.Tasleem Akhtar, Executive Director PMRC

Dr. Atta-ur-Rehman, Minister for Science and Technology, Rear Admiral Surgeon Mohammed Aslam, Director General Health, guests, colleagues, ladies and gentlemen, it is my proud privilege to welcome you all to this Seminar for developing a consensus on the health research priorities for Pakistan. It will be presumptuous on my part to set out to inform the distinguished participants of this Seminar, on the fundamental importance of this activity in the field of health research. In your response to my first letter on the subject, and most of you very kindly took the trouble to respond, you emphasized that this was something long overdue.

When I say that health research has yet to take off in Pakistan, I do not mean to belittle the individual contribution and efforts of certain institutions and individuals who we all know are doing a splendid job. What I want to record is that health research has, as yet, not found a place even on the priority list of the Ministry of Health, leave alone the country. We have as yet not created the required research culture, environment and the demand for research in our different spheres of activities and the lack of evidence-based policy, planning and decision-making continues. The Pakistan Medical Research Council was established with the primary responsibility of addressing these issues. I am not going to waste your time on reasons and excuses for the lack of impact of the efforts of the Council so far. I would like to assure you that the Council is fully conscious of its responsibilities and has resolved at the dawn of the new millennium, to review and revise its policies, plans and strategies to revitalize its efforts to achieve its objectives. Our core strategy of collaboration with you all, and facilitating and assisting the research efforts of institutions and individuals will be implemented with new vigor and commitment. I take this opportunity to emphasize the fact that the Council is not an isolated, discrete entity working in its own isolated offices and institutions. All of you are the PMRC and without your guidance, cooperation, collaboration and participation there can be no effectively functioning PMRC.

The re-thinking of strategies has been going on within the Council for some time now. In 1998 we convened a national consultation to define the role of health research in national development and to get your advice and guidance on the restructuring of the PMRC to make it more effective. Most of you participated in that activity. This Seminar is one of the recommendations of the consultation. We have also started working on the implementation of the other recommendations of the consultation. The fundamental issue of resources for health research is being addressed by locating the various sources of funds and with the help and support of the Ministry of Health accessing these funds. A dialogue has been initiated with the Ministry of Health (MoH) and the Finance Division on optimizing the utilization of the Central Research Fund, which has been established with the 1% levy for research on the profits of the pharmaceutical industry, since 1978. PC1s have been submitted to the Ministry of Health for the funding of capacity building of the PMRC and institutionalization of Health Systems Research within the Health Care delivery system of the provinces under SAPP 11. Recommendations for allocation for health research capacity building and funding of research under the JPRM of MoH and WHO have been submitted for consideration on the occasion of the visit of the Director General WHO. The research agenda that is expected to emerge from the deliberations of this Seminar, will form the basis of accessing the Health sector allocation from the substantial amount of funding made available for R&D by the present government. Strengthening of the PMRC head office is being done to enable it to meet its functions of a health information resource, a provider and promoter of the utilization of research in policy and planning and as a coordinator of health research.

The results of the deliberations of this Seminar are of critical importance for us. The health research priorities, which will be identified by the different groups, will form the basis for developing a research agenda. This research agenda will guide the determination of the resource needs for health research over the coming years and will help define the direction of health research in Pakistan.

I thank Dr. Atta-ur-Rehman and all of you once again for your participation, support and guidance in this essential national activity."

# Keynote Address by: Surgeon Rear Admiral Mohammad Aslam

Director General Health, Govt. of Pakistan

Dr. Atta-ur-Rehman, Minister for Science and Technology, Mr. Ejaz Rahim, Secretary Health, Dr. Tasleem Akhtar, Executive Director Pakistan Medical Research Council, participants of the Seminar, guests from abroad, ladies and gentleman, I join the Secretary Health in welcoming you to the Seminar. The research agenda, which will be developed on the basis of the research priorities listed by you all, will be a major input for boosting health research and putting it on track in Pakistan. We, in the MoH, look forward with immense interest to the outcome of your two days of deliberations and I assure you that whatever action is required of the MoH will be taken on your recommendations.

All of you, being senior level professionals and leaders in your respective fields, are well aware of the immense problems in the health sector, which include the less than satisfactory governance, the increasing burden of disease within our population and the widening gap between needs and available resources. You also know of the many programs, which have been undertaken and which are currently on going to respond to these problems. We are proud to have implemented a well-structured Primary Health Care program, a polyimmunization program, which is on the verge of eradicating polio, and a National Program of Lady Health Workers, which is taking health care to the households and families. The currently on-going health sector reform effort is aimed at addressing the governance and resource constraint issues of the health sector. The devolution of authority to the grass roots level through the District Governments will enable the different stakeholders to participate in health care. Through this strategy it is hoped that the long talked about but elusive concepts of community participation and the inter- sectoral approach to health care will start to be implemented. The other two components of health sector reform being implemented currently are the award of autonomy to hospitals and the development of public-private partnerships for the delivery of health services.

A still to be addressed issue is the institutionalization of evidence-based policy, planning and decision-making. Knowledge has become a key factor in the development of countries. According to the World Bank, today's knowledge explosion is dividing the world into fast-moving rich countries that use knowledge and the slow-moving poor countries that do not. Nowhere is this more true than in the health field. The spectacular scientific breakthroughs, such as the human genome mapping, the new technologies for drug and vaccine development and the evaluative frameworks for the appraisal of health reform efforts and the performance of national health systems hold the promise of more effective prevention, management and treatment for disease provided countries have the capacity and necessary strategies to use this knowledge for the betterment of the health of their population and for their health sector development. The alternate is the danger of the accentuation of inequality. Our resources and the present level of capacity in the health field prevent us from becoming major producers of knowledge. What we need to concentrate on is to develop the capacity for

acquiring, adapting and applying the available knowledge to our own specific needs.

Those who know have never denied the need for research. However, it was the National Commission on Health Research for Development, an independent international initiative, formed in 1987 with the aim of improving the health of people in developing countries, which emphasized the critical role of research development in its report released in 1990. This report has triggered and accelerated global effort for the promotion of health research in the developing countries and Essential National Health Research (ENHR). Its recommended strategy is being adopted by many developing countries. The closing years of the last millennium saw the near universal acceptance of the fact that research is a need and not a luxury. Research generates information, which helps in identifying needs, prioritizing needs and distributing resources according to need. As very wisely stated by a leader of one of the developing countries," It is because we are a poor country, that we cannot afford not to do research".

The need for research as an essential underpinning of development was recognized early in Pakistan. The Pakistan Medical Research Council was established in 1962 on the recommendation of the Medical Reforms Committee to promote, organize and coordinate research and link it to the development plans of the country. The Council has succeeded in establishing a network of research centres all over the country to assist and facilitate health research and promote research collaboration within the country. We are far ahead of many developing countries as far as infrastructure is concerned. However, owing to the neglect of human resource development, the effective operationalization of this infrastructure has not happened. The system has been working under the assumption that advance qualifications automatically confer on individuals, the understanding and capacity for research. This may be true for the pure sciences to some extent, but not for medical sciences. Research has no place in our premedical, undergraduate medical and most postgraduate medical education. Coupled with the socio-cultural influences, which actively suppress critical thinking, the lack of exposure to research in the educational system results in an end product devoid of the capacity for critical analysis. Our health care delivery system therefore suffers from a severe lack of capacity for research both at the academic and the service delivery levels. Now that this critical issue has been recognized, appropriate measures are being taken to address it. As a first step, capacity strengthening within the PMRC is being done to develop a core group, which in turn will help develop a critical mass of researchers within the health care system. The Council has adopted the Essential National Health Research strategy put forward by the previously mentioned Commission on Health Research and now being promoted by the Council on Health Research for Development (COHRED). After a prolonged ban on recruitment, the Council has at last been allowed to fill some of its large number of vacancies. The Council is also taking advantage of the Ministry of Science and Technology's program of provision of short-term consultants. A PCI for provision of funds under SAP for capacity building with the PMRC has been put up. A career structure for health researchers has been developed and is with the MoH for review and approval. Proposals and recommendations for the restructuring and strengthening of the Council have been prepared and are under consideration.

This Seminar for developing a consensus on the health research priorities for Pakistan is the first essential step in revitalizing health research in general and the PMRC in particular. On behalf of the MoH I thank you for your participation in this very important activity and look forward to the results of your deliberations. I assure you that your efforts will not be allowed to go in vain.

I wish you all success with your discussions and deliberations.

#### Annexure-2.4

#### **GROUPS:**

- 1. CAPACITY BUILDING FOR HEALTH CARE
- 2. HEALTH SYSTEMS RESEARCH
- 3. REPRODUCTIVE HEALTH
- 4. PERINATAL AND CHILD HEALTH
- 5. COMMUNICABLE DISEASES
- 6. NON-COMMUNICABLE DISEASES AND INJURIES
- 7. MENTAL HEALTH
- 8. HEALTH CARE FINANCING

Group	Moderator	Presenter and Facilitator
CAPACITY BUILDING FOR HEALTH CARE	Prof. Nasiruddin Azam Khan	Dr. Franklin White
HEALTH SYSTEMS RESEARCH	Maj.Gen. ® Akhtar A. Qureshi,	Dr. Anwar Islam
REPRODUCTIVE HEALTH	Dr. Sadeqa Jaffery	Farid Midhet
PERINATAL AND CHILD HEALTH	Dr. Fehmida Jalil,	Dr. Zulfiqar Bhutta
COMMUNICABLE DISEASES	Dr. Abdul Rab	Dr. Faisal Sultan
NON-COMMUNICABLE DISEASES AND ACCIDENT	Dr. S.J Zuberi,	Maj. Gen. (Retd.) Iftikhar A Malik
MENTAL HEALTH	Col. M. Rana,	Prof. Malik H Mubashir,
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# **Group Reports**

# 1. <u>CAPACITY BUILDING FOR HEALTH CARE</u>

# Prepared by: Franklin White, Chairman, Community Health Sciences, Aga Khan University, Karachi.

#### The Need for a National Research Policy:

Pakistan needs a national research policy; this may require an "ordinance". The concept of "national" needs to be broadened beyond the federal public sector, to include the private sector, in order to reflect and to take full advantage of capacities evolving throughout the country. This principle may also be applied to the PMRC.

#### **Importance of a Strategic Approach:**

The promotion and development of research (viewed as a "rigorous enquiry to increase knowledge and improve practices") cannot be achieved in any institution unless this is embodied within the mission of the institution. Relevant institutions therefore are to be encouraged to review their missions, to ensure that there is adequate recognition for their role in research and development, and if this is found to be deficient in terms of the vision of any particular institution, to consider revising this aspect of the mission statement.

#### The Pakistan Medical Research Council:

The PMRC itself needs to be strengthened. Its role should be facilitative, to guide and coordinate but not to be the sole structure for research. For example, university faculties must also develop their research capacities. Furthermore, there is a need to link the PMRC with all health sciences (not only medicine, but also nursing and other allied health sciences). While the PMRC must emphasize ENHR and promote priorities and equity, this must not in the process restrict research, which must be nurtured where it exists. The PMRC may identify centres of excellence based on merit, and subject these to periodic review to ensure continued validity and accountability. The PMRC should have a training capacity, and should have direct involvement in some national priority projects.

#### **Specific Research Needs:**

The working group focused mostly on human resource requirements, with reference to such issues as: quantity, quality, impact, barriers, incentives, effectiveness, efficiency, and consumer satisfaction. The health systems approach was thought to be most relevant, with a shift in emphasis away from traditional supply side issues to questions more directly relevant to population needs. In this connection, the present role and effectiveness of the PMDC was questioned. However, action is also required at the level of medical colleges themselves, especially in relation to the need to fully implement community-oriented education and problem-based learning.

Based on this discussion, the following issues for research emerged:

- why some medical colleges are not implementing PMDC recommendations on community-oriented education
- the need for medical colleges to innovate and evaluate (e.g. 5<sup>th</sup> year preinternship)
- to assess the potential need, pros and cons of a national accreditation examination
- the involvement of medical students in projects in order to expose them to research
- the need for faculty development/teacher training programs
- to review mission statements for reference to research, and to encourage revisions if necessary

#### The Private Sector:

The reality of a growing and now dominant private sector (estimated at 80% of service delivery in the National Health Survey of Pakistan), requires representation in relevant national policy forae. The following related questions emerged:

- 1. What are the characteristics (i.e. components, effectiveness, efficiency) of the private sector?
- 2. Why do people choose the private sector?
- 3. What is the meaning of this in terms of community participation, quality of care, and resource allocation?
- 4. How can public-private sector partnerships be developed?
- 5. How can the private sector become involved in health policy development?

Following discussion of these questions, the following recommendations emerged:

- That PMDC inspections and approvals of medical colleges must be unbiased with respect to whether the institution is of public or private origin.
- That a method of quality assurance be developed for all hospitals and related facilities (e.g. laboratories), that is to say, a uniform standard to be applied to

both public and private sector, keeping in mind that the ultimate goal is to meet the needs of the patient or consumers.

#### **Alternative Practitioners:**

There needs to be an independent assessment of alternative medical practices; research is needed in this area.

#### **Medical Products:**

Research is needed on drugs and equipment and related materials that have potential for marketing and income generation and/or conservation for Pakistan.

#### **Discussion:**

Following presentation of this report in plenary on February 27, questions from the floor included a query about the "brain drain" which represents a continuing loss of research capacity from Pakistan. In reply, the existence of both an internal and an external brain drain were noted, of which the internal (ie., talented people forsaking research to go into practice, due to the relative lack of support for research) may constitute the greater loss, given that those who leave the country to engage in research careers elsewhere, are at least still engaged in research (which may return some indirect benefits to the country, along with the world at large). The creation of a "research friendly" environment is the long term solution to this, and requires attention to many needs, from supportive mission statements, to adequate resource allocations, to mechanisms for supporting career development (including financial incentives for research). Another question had to do with requirements for accreditation of allied health professionals, other than PMDC and the Nursing Council; the group had not addressed this matter. Finally, there was a query as to whether "another regulatory layer" (i.e. a national accreditation examination as a requirement for medical licensure) was in the best interests of the country. While the group had not made such a recommendation, it had recommended that the adequacy of the present system (which allows any medical graduate to become licensed with the award of a medical degree, even without the requirement of an internship), should be studied. To give this question serious consideration at this time, as had been done in many other countries, may be in the best interests of professional competence and quality of care.

# 2. <u>HEALTH SYSTEM RESEARCH</u>

Prepared by Dr. Anwar Islam, Associate Professor and Head, Health Systems Division, Department of Community Health Sciences, Aga Khan University, Karachi

#### **Conceptual Framework:**

1. Health System is composed of three broad elements:

- (a) A set of cultural beliefs about health and illness that forms the basis for health seeking and health promoting behavior.
- (b) The institutional arrangements within which that behavior occurs; and
- (c) The socio-economic, political and physical context for those beliefs and institutions.
- 2. Health Systems Research (HSR) must encompass research into all these elements of the health system. HSR includes all types of research that contribute to improving the functioning of the health system through:
  - (a) providing new information for decision-making;
  - (b) providing information to support advocacy for change in the system; and
  - (c) contributing to the body of knowledge relating to theories, concepts and methods that is required for generation of such knowledge.
- 3. Burden of Disease (BOD) measures alone must not be used to set priority. BOD suffers from three drawbacks. They are:
  - (a) It is often based on inaccurate and/or insufficient data. Quite often quality of the available data is also suspect;
  - (b) It is insensitive to the relative value of disease/injury. For example, BOD does not discriminate between the loss of a day-laborer's leg (much severe implications for the individual) and that of a university professor; and
  - (c) BOD is focused exclusively on the individual, ignoring the impact of disease burden on the family and/or others.
- 4. Health Systems Research must not ignore the *political context* of decisionmaking within the broader health system.

## **Operational Principles:**

Health Systems Research must be:

- (a) Multi-sectoral;
- (b) Multi-disciplinary;
- (c) Multi-institutional effort;
- (d) Based on cooperation, collaboration and networking among institutions; and
- (e) Ensuring meaningful participation of partners/stakeholders in all phases of HSR even in organizing and structuring a seminar/workshop to share ideas. It was also felt that:
- (f) Pakistan Public Health Network could be an excellent medium for promoting HSR/ENHR.

#### **Priority HSR Issues:**

The following priority areas were identified for Health Systems Research:

- 1. Decentralization/Devolution/Restructuring
  - Impact on Health
  - Equity/Accessibility
  - Sustainability
- 2. Health Sector Reform/Financing
  - Local Government: Capacity for Management of Services
  - Local Government: Generation of Financial Resources
  - Local Government: Capacity for Planning, Implementing, Monitoring, and Evaluation
  - Other HS Reform Issues
- 3. Globalization, Information-Communication Revolution, and Health and Development
- 4. Public-Private Mix: Dynamics and Trends
  - Implications for Health and Development
  - Public-Private Partnership Issues
- 5. Policy Research
  - How are policies made?
  - What information goes into policy-making?
  - How to influence policy?
  - Policy Impact Assessment
- 6. Social, Structural and Cultural Aspects of Health, Illness and Health Seeking Behavior
  - Understanding cultural idioms and meanings associated with health and illness
  - Social and cultural determinants of health seeking behavior
  - Structural barriers to access health (particularly for women)
- 7. Macro/meta Assessment/Evaluation of the Health Institutional Structure
  - Ministry of Health Efficiency, Effectiveness
  - PMRC Efficiency and Effectiveness
- 8. Traditional Health Systems
  - Diversity of traditional health systems
  - Clinical validity of traditional medicine
  - Traditional-modern dichotomy
- 9. Meter Evaluation of Existing Health Research Funding Mechanism/Institutions

- 10. Environmental/Occupational Health
- 11. Patterns of Clinical Practice
  - Prescription drugs
  - Over-the-counter drugs
  - Legal framework for Health Care Services
  - Consumer protection/rights

#### **Organizational Issues/Actions**

- 1. Establish a Resource Data Bank.
- 2. Actively promote/seek freedom of access to all information collected by public institutions and promote sharing of data/information
- 3. Initiate joint research on HSR (public/private institutions).
- 4. Actively promote sharing/exchange of resources/people across public/private institutions.
- 5. Hold an annual (or biannual) convention/seminar on HSR.
- 6. PMRC should set aside a portion of its funds for Health Systems Research.
- 7. Support/strengthen/consolidate existing Pakistani journal on health.
- 8. Strengthen the capacity for HSR, including proposal writing.
- **9**. Funds collected from pharmaceutical companies for health research must be used for health research. These funds could be earmarked for PMRC and NIH.

# 3. <u>REPRODUCTIVE HEALTH</u>

# Prepared by: Dr. Farid Midhet, Principal Investigator, Asia Foundation, Islamabad.

The group began with a presentation by Dr. Sadeqa Jaffery on the current situation of maternal and reproductive health in Pakistan. The group discussed the situation analysis with the view to identify the main problems in this area. A big list of issues and problems in reproductive health in Pakistan was thus identified. The list was categorized into several headings, including safe motherhood, maternal mortality, maternal health services, adolescent sexuality, child abuse, sexual health, etc. The list was then reviewed by the group to put the issues into research perspective. A prioritization exercise was then conducted by asking the following questions for each research issue on the list:

- 1. Would the research help find a solution for the problem?
- 2. Should we address this issue at all?
- 3. Why should we address this issue?
- 4. Is the research addressing this issue feasible?
- 5. What will be the outcome of the research?

The research priority areas resulting from the first round of discussions were:

- 1. Adolescent health:
  - 1.1 Morbidity studies among adolescents
  - 1.2 Reproductive health issues among adolescents
  - 1.3 Health seeking behaviors among youth
  - 1.4 Sexual abuse
- 2. Reproductive tract infections including sexually transmitted infections:
  - 2.1 Morbidity patterns (male, female, post-delivery, post abortion, etc.)
  - 2.2 Health seeking behaviors in RTIs and STIs.
  - 2.3 Screening studies for RTIs and STIs
- 3. Safe motherhood and maternal health:
  - 3.1 Estimation of levels and causes of maternal mortality
  - 3.2 Quality of care issues in safe motherhood
  - 3.3 Estimation of levels and causes of maternal morbidity
  - 3.4 Cost-effectiveness studies of health care options
  - 3.5 Skilled birth attendants.
- 4. Family Planning:
  - 4.1 Causes of contraceptive method failure
  - 4.2 Quality of care issues in family planning
  - 4.3 Analysis of unmet needs
  - 4.4 Providers' perceptions and knowledge about family planning
  - 4.5 Service delivery issues: target-based versus non target-based approach, integrated versus vertical approach, etc.
- 5. Vital registration (recording of births and deaths)
- 6. Infertility research and intervention studies:
  - 6.1 Prevalence and determinants of infertility
  - 6.2 Socio-cultural issues
  - 6.3 Health seeking behaviors among infertile couples
  - 6.4 Male and female, primary versus secondary etc.
- 7. Cancers of the male and female reproductive systems:
  - 7.1 Setting up a national cancer registry
  - 7.2 Screening studies for cervical cancer
  - 7.3 Risk factors for cervical cancer
  - 7.4 Operations research to find interventions for early detection of cancers of reproductive systems.
- 8. Violence against women:

- 8.1 Prevalence and types of violence against women
- 8.2 Risk factors
- 8.3 Operations research to determine the possible role of lady health workers in support systems
- 8.4 Community's role in combating violence against women
- 8.5 Women's perceptions of violence
- 8.6 Violence during pregnancy and the postpartum period.
- 9. Male participation in reproductive health:
  - 9.1 Men's role in health seeking behaviors for safe motherhood
  - 9.2 Men's role in reproductive health decision-making

The "big list" above was further scrutinized in a second round of the group prioritization exercise where the discussion focused mainly on the immediate need and relevance of the research area to the most pressing reproductive health problems in Pakistan. The following was the result of the second round of discussions:-

- 1. Safe motherhood and maternal health:
  - 1.1 Estimates of and trends in maternal mortality ratio
  - 1.2 Maternal morbidity estimates and determinants
  - 1.3 Quality of maternal care
  - 1.4 'Best options' for skilled birth attendance
  - 1.5 Cost-effectiveness studies for basic and comprehensive essential obstetric care strategies
- 2. Adolescent health:
  - 2.1 Obstetrical and gynecological morbidity studies among female adolescents
  - 2.2 Reproductive morbidity among male adolescents
  - 2.3 Reproductive health seeking behavior among adolescents
- 3. Family planning:
  - 3.1 Operations research studies to test various options for communitybased delivery of contraceptive methods
  - 3.2 Providers' understanding of reproductive health and family planning
- 4. Reproductive tract infections:
  - 4.1 Morbidity patterns (studies of prevalence and determinants of RTIs and STIs)
- 5. Infertility:
  - 5.1 Prevalence and determinants of infertility

- 5.2 Socio-cultural issues related with infertility.
- 6. Cancers of the reproductive system:
  - 6.1 Studies of prevalence and determinants of common cancers of the male and female reproductive systems
  - 6.2 Effectiveness studies for the use of PAP smears in screening for cervical cancer
  - 6.3 Studies of the prevalence and determinants of cancer of the prostate
  - 6.4 Studies of the prevalence and determinants of ovarian cancer in Pakistan

The group felt that these (17) areas needed urgent attention in terms of research. However, the research should be relevant to the needs of the Pakistani population and must be conducted in the Pakistani urban and rural contexts. It was felt that there was not much information and hard data available in any of these areas.

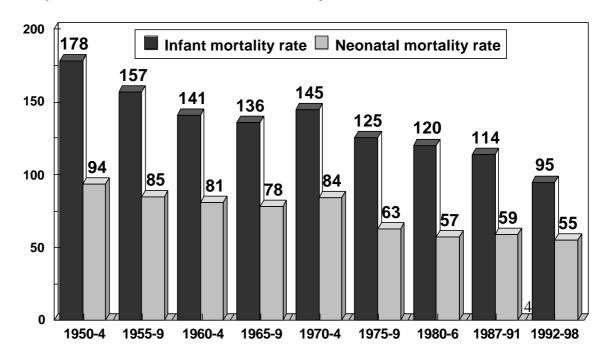
The group urged the Government, scientists and NGOs to address these areas of research and collect information that is reliable, relevant and accurate.

# 4. PERINATAL AND CHILD HEALTH

Prepared by: Prof Zulfiqar Ahmed Bhutta, Professor of Pediatrics, Aga Khan University, Karachi.

#### Background

The group began its deliberations by a background presentation on the current state of perinatal and child health by Dr Zulfiqar A. Bhutta. Dr Bhutta highlighted the trends in infant mortality and made the case to focus on virtually static perinatal and neonatal mortality and morbidity rates (Figure 1).



#### Comparative infant and neonatal mortality for Pakistan

It was further highlighted that despite vast improvements in child health in the region and our neighbourhood, the infant mortality rates in Pakistan were still very high (Figure 2).

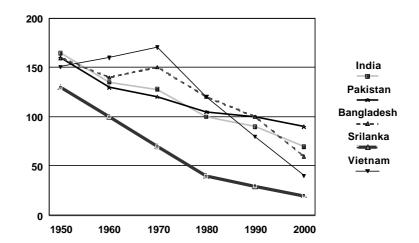
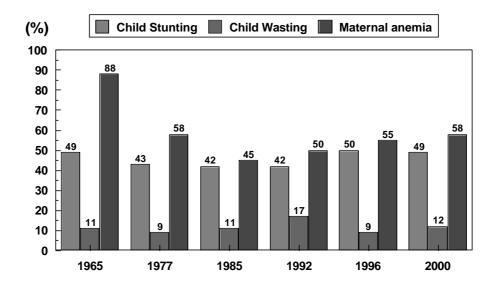


Figure 2: Trends in Infant mortality rates in South Asia and Vietnam

The gaps in information on critical elements and determinants of child health and their impact on development were also highlighted. It was pointed out that despite major vertical programs and available data the overall national rates of malnutrition had hardly changed over several decades (Figure 2) and that malnutrition underlay over half the deaths, under the age of five in Pakistan.

# Nutrition trends in Pakistan

(Pregnant women and children under 5)



#### Recommendations

The group then met in three separate sessions and agreed upon the following major elements as their recommendations for focusing efforts on research.

#### 1. Perinatal and neonatal care

This was universally acknowledged as a much under-researched and underresourced area. In particular, the following areas were highlighted for enhanced attention in targeted research for future programs

- Better regional and national burden estimates of perinatal and neonatal mortality/morbidity
- Evaluation of the socio-behavioural determinants of perinatal and neonatal mortality/morbidity in diverse but representative settings
- These would include an evaluation of the current barriers for careseeking and potential acceptability of future intervention strategies.

In this regard it was highlighted that there were several large and communitybased data sets on reproductive health and related behaviour already available with several government agencies and autonomous bodies. As a specific proposal it was indicated that these disparate data sets and additional information could be pooled under a collaborative research exercise under the auspices of the PMRC. This composite analysis would give a comprehensive picture of existing reproductive health behaviour and practices that impact on perinatal and newborn care in Pakistan. Any gaps still left could be the subject of further research. A specific proposal will be submitted to the PMRC in this regard this summer.

• It was specifically stated that much work was needed in Pakistan to undertake studies of cost-effective community-based interventions in perinatal and newborn care, especially those that combine elements of maternal and postnatal care.

#### 2. Maternal and Childhood Malnutrition

Given the available information on persistent high rates of childhood malnutrition especially wasting and stunting in Pakistan, this area was highlighted by the group as a priority area for action oriented research. In particular the following were highlighted as key areas:

- Socio-cultural determinants of childhood malnutrition and barriers to change.
- It was pointed out that the positive-deviance approach did identify children who were well nourished within the same socio-economic environment and that a better understanding of child caring and feeding behaviours may indicate strategies that may lead to better national or regional interventions.

- The need for cost-effective and sustainable nutrition interventions was highlighted as a priority and this should be the focus of effectiveness studies at a community level.
- In the same context the importance of micronutrient malnutrition was highlighted. It was pointed out that no nationally representative data on vitamin A status was available even though it was now the focus of national intervention studies. It was stressed that the national nutrition survey must be undertaken forthwith with the appropriate target micronutrients.
- While both supplementation and fortification are important strategies for improving micronutrient status of the populace, it was important to conduct relevant studies in Pakistan to identify the most cost-effective and sustainable solutions.
- In this context, the lack of representative studies addressing issues of complementary feeding was stressed. This was an important underlying factor behind much of the malnutrition and anaemia among children in Pakistan.

The group spent much time on the issue of maternal malnutrition and low birth weight (LBW) in Pakistan. It was evident that community-based estimates of the latter were inexact and limited. However, recent data suggested that this was a much bigger issue than previously imagined. The importance of LBW in the national context was also underscored by the important contribution it made to the life course and adult outcomes (Figure 4).

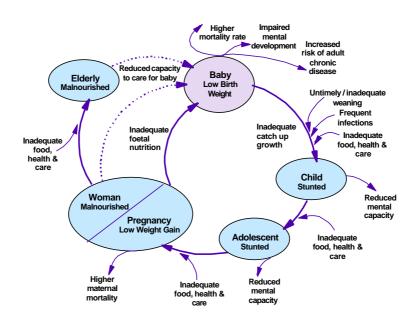


Figure 4

In this context, the need for culturally acceptable interventions in pregnancy targeting maternal and foetal malnutrition, especially those that led to an evaluation of outcomes beyond the immediate neonatal period, were stressed. This was regarded as an important opportunity to link maternal, foetal and child health research and interventions.

# **3.** Impact of structural adjustments and economic downturn on perinatal and child health

Increasing poverty and dwindling resources were highlighted as important underlying factors responsible for the static child health indicators and worsening nutrition trends. It was clear that the burden of increasing poverty was disproportionately felt by women and in the words of Sridath Ramphal, "Debt has a child's face".

The group recommended urgent research to study the impact of economic and structural adjustment programs that Pakistan was following, on maternal and child health. If results indicated an important link then further work was necessary to identify effective and sustainable social safety nets. It was important to underscore the ineffectiveness of the current social action plan on improving maternal and child health in the wake of dwindling resources.

## 4. Preventive strategies for childhood infections especially diarrhea

Available evidence from national data on childhood diarrheal diseases and respiratory infections, indicated that while mortality rates have declined, there has been little impact on the incidence of disease. Few preventive strategies other than breastfeeding had been instituted at a programmatic level. The group strongly recommended formative work and concerted studies on effective and sustainable preventive strategies on reducing the burden of these diseases at the household and community level.

#### 5. New and emerging infectious diseases

The group recognized that this was an important and under-researched area with wide ranging ramifications. These had implications for both existing and future national programs. The group highlighted the fact that in the absence of representative and well-researched information from the community, it was impossible to develop appropriate algorithms for community-based management strategies. To illustrate the current IMCI program for Pakistan: anti-malarial administration is recommended for every sick febrile child with no localising features, a recommendation that had no basis in local literature. On the other hand, despite evidence of the importance of typhoid in national adult and paediatric data, there was little information provided to care givers on its recognition and management.

The following diseases were highlighted as meriting nationally representative research to highlight their importance during childhood.

- Typhoid
- Tuberculosis
- Emerging viral infections e.g. Dengue haemorrhagic fever

In addition, it was stressed that the burden and spectrum of childhood *Haemophilus influenzae* and *Streptococcal pneumoniae* infections was an underresearched area. Given the preventive potential of newer vaccination strategies, it was stressed that essential nationally representative research was needed in this important area as a priority.

## 6. A re-evaluation of vertical national programs in child health

Lastly, the group did recognize that child health had been the focus of several national programs in Pakistan ranging from the expanded program for immunization to the recently launched integrated management of the sick child initiative. However, given the limited impact that these isolated vertical programs have had on improving child health in comparison to regional countries, it was unanimously agreed that a re-evaluation of these programs was needed. In particular, an evaluation of alternative strategies particularly local and community-based interventions was warranted. It was also emphasized that these approaches would be entirely compatible with the devolution of power and local control of the SAP II program. In contrast to previous approaches, this must be done by incorporating appropriate research within these programs from an early stage.

# 5. <u>COMMUNICABLE DISEASES</u>

# Prepared by: Dr. Faisal Sultan, Director Medical, Shaukat Khanum Memorial Hospital, Johar Town, Lahore.

The discussion started with a brief initial presentation by Dr. Faisal Sultan on some pertinent institutional data from Shaukat Khanum Cancer Hospital. This included statistics on patterns of bacterial resistance, incidence of tuberculosis and the prevalence of hepatitis B and C in the healthy volunteer blood donor population.

The group then focused on deciding a general methodology in assigning importance to various areas of research in the field of infectious diseases. It was decided to assign empiric scores (based on the experience and views of the committee members) to various topics on the following:

- 1. Magnitude of the problem in Pakistan at the present time
- 2. Potential magnitude in the future
- 3. Feasibility of research in the said field, considering available resource
- 4. Potential practical impact of research in the field

Topics were then identified and discussed individually, using the parameters described above. It was recognised that such an assignment of importance in research was largely empiric and should take into consideration the individual skills and interests of investigators. The following areas of infectious diseases were considered important for research. The list is clearly not all-inclusive.

#### Tuberculosis

The areas of fruitful research included patterns and incidence of resistance and epidemiology.

Malaria Epidemiology and innovative methods of prevention

Hepatitis B and C Epidemiology, assessment of risk factors and prevention

Childhood viral diseases Vaccination strategies, epidemiology

#### HIV

Risk / protection factors and epidemiology in Pakistan

Bacterial resistance Epidemiology

Diarrheal diseases Epidemiology and prevention strategies

#### Rabies

Epidemiology – both in humans and in the animal reservoir. Prevention and vaccine work

Viral hemorrhagic fevers Viral detection methodology, epidemiology

Typhoid Epidemiology and variations in Pakistan, resistance patterns

#### Amebiasis

Basic science research

It was agreed that modest basic science projects involving a wide variety of infectious diseases would be important in laying the foundation for more fundamental work in the future.

# 6. <u>NON-COMMUNICABLE DISEASES IN PAKISTAN</u>

# Prepared by Dr. Sania Nishtar, President, National Heart Foundation of Pakistan, Islamabad.

Cardiovascular diseases, diabetes and cancer are the three major noncommunicable diseases (NCD's), for the purpose of this report however, and in keeping with logistic issues, environmental health has been classed under the broad head of non-communicable diseases.

NCD's are emerging as a major health related challenge for the developing world, this trend a feature of the health transition propelled largely by demographic and environmental changes is currently a double burden in addition to communicable diseases. The projected trends for this epidemic as part of the global epidemiological transition, however, places NCD's as the leading cause of death and disability and premature death in the next two decades, with serious implications for a country like Pakistan.

Fortunately scientific evidence testifies to the preventability of NCD's, particularly in the case of cardiovascular disease and diabetes and offers the greatest opportunity for prevention. It is therefore, imperative to invest in the prevention and control of NCD's before they take a pandemic shape. Comprehensive strategies that address issues related to control should begin with an initial quantification and baseline evaluation of the problem, and therefore the need to prioritize research that will unveil the crucial gaps in our knowledge. Following is the working outline of the health research priorities in non-communicable diseases.

CARDIOVASCULAR DISEASE SECTOR						
	Prevalence <sup>i</sup>	Burden <sup>ii</sup>	Feasibility of Intervention <sup>iii</sup>	Research Priority <sup>iv</sup>		Assumptions <sup>v</sup>
Hypertension	High prevalence	High mortality and morbidity	Moderate to high	Health promotion and appropriate lifestyle modifications as primary control strategies and low cost	1)	CVD and its biological risk states are recognized as a major public health challenge, at the macro policy level.
				therapeutics for selected high- risk individuals.	2)	Primary and secondary prevention given precedence over high technology curative care.
					3)	CVD gets integrated as part of the primary health care package at the grass root outreach of the public sector health initiatives.
					4)	Participation of the media through partnership.
					5)	Policy change with respect to CVD will integrate food and nutrition, agro industrial diversification, urban and rural planning and the departments of trade and taxation.
					6)	Unregulated and for profit pharmaceutical and clinical care industry continues to

Coronary Artery Disease (and its risk factors	High based on assumptions; but overall poorly quantified	High	Moderate	1)	Identification of community based risk reduction interventions. Quantification of the baseline of the baseline	7)	support expensive treatment for inappropriately selected individuals. Adequate financing.
Cerebro- vascular Diseases	Poorly quantified	High	Moderate	1) 2)	prevalence. Document baseline prevalence. Research to identify health promotion and appropriate lifestyle modifications as primary control strategies and low cost therapeutics for selected high-risk individuals.		
Rheumatic Heart Disease	Low	High	Moderate	3) 1) 2)	Low Identification of health promotive efforts to prevent rheumatic fever. Cost effective algorithms for the identification of GAS pharyngitis obviating the need for throat cultures.	living econo	ved social conditions and better standards are linked to over all mic policy and are beyond the of health and social sectors.
			DIABET	ES			

NIDDM	High	High	Moderate	<ol> <li>Primary prevention through diet, exercise and behavior change.</li> <li>Low cost treatment.</li> <li>Prevention of complications.</li> </ol>	Same as for Cardiovascular diseases.
	Т		ONMENTAL HEAL		
Safe drinking water	<ol> <li>High prevalence of diarrhea in children.</li> <li>High prevalence of water borne diseases in general population.</li> </ol>	<ol> <li>High Morbidity</li> <li>High childhood mortality (300,000) childhood deaths per year)</li> </ol>	Moderate to High	Solar water disinfection validation Home chlorination Water quality surveillance for small communities.	High political support. Adequate financing
Sanitation	High degree of fecal contamination of water, food and environment due to improper sanitation		Moderate to High	Low cost on site sanitation systems. Community participation for low cost off site sanitation systems. Evaluation of low capital and low O&M system.	
Food Quality	Poorly quantified	Moderate to high if infectious outbreaks of food poisoning included, Low in the short term if infectious outbreaks are excluded.	Moderate	HACCP for local street vendors, restaurants, food based product manufacturers. Cost effective surveillance strategies to enforce adherence to	Participation of District Health Office staff, Food Inspectors, Food Manufacturer's Associations, Restaurant Owners and Street Vendors (either individually or through their representatives/ associations, if any).

		Moderate in the long term if higher incidence of cancer, chronic disease and developmental		HACCP and Codex Alimentarius.	
		defects included.			
Solid Waste			Moderate	Recycling Environmental sound disposal Source reduction.	Participation of municipalities essential at both the research as well as the operational level.
Air Quality	High in urban areas	High morbidity due to upper and lower respiratory tract irritation.	Low	Burden of disease measurements Protection of high risk groups Linkage of Environmental Health in the country's strategic planning for energy policy.	

Health Care	High for all health	Responsible for high	High	Cost effective,	Needs integrated approach including
Waste	care waste providers	burden of		sustainable and	federal and provincial health
		transmission of		environmentally and	departments, private and public sector
		Hepatitis B & C and		occupationally sound	hospitals, GP's as well as other
		possibly AIDS		hospital waste disposal	registered as well as unregistered
				options	generators of biomedical waste

<sup>i</sup> Based on existing data, estimates or assumptions.

<sup>ii</sup> Higher priority is given to mortality, especially childhood mortality, as compared to morbidity, especially adult morbidity. A more refined method, beyond the scope of this workshop, would be to use standardized Burden of Disease (BoD) measures including Disability Adjusted Life Years (DALY's) and Cost per Life Year Saved.

<sup>iii</sup> High if domain of intervention is within the health sector and cost is affordable; moderate if cost is high but benefit is also high, the assumption here being that there is strong political commitment. Low if cost and cost to benefit ratios are high and stakeholders are predominantly outside the health sector.

<sup>iii</sup> Identifies current research priorities. This list is by no means exhaustive, and focuses primarily on gaps in existing baseline knowledge, as well as emphasizing the operational and applied aspect of environmental health as opposed to the mere collection of data.

<sup>iv</sup> Identifies current research priorities. This list is by no means exhaustive, and focuses primarily on gaps in existing baseline knowledge, as well as emphasizing the operational and applied aspect of environmental health as opposed to the mere collection of data.

\* Assumptions are political support by the highest level of government for the relevant sector, financing and ownership of the results of the research by key stakeholders.

# 7. <u>REPORT OF MENTAL HEALTH RESEARCH GROUP</u>

# Prepared by: Prof. Malik H Mubbashar, Institute of Psychiatry, RGH, Rawalpindi.

#### MAJOR ISSUES IN MENTAL HEALTH RESEARCH:

The group identified the following list of priority issues that mental health research agenda of PMRC must address:

#### 1. ISSUES RELATED WITH STIGMA OF MENTAL ILLNESS

- Across the board myths and misconceptions (about mentally ill, mental illness, mental health professionals and mental health interventions)
- Maltreatment of mentally ill

## 2. ISSUES RELATED TO RESEARCH ENVIRONMENT

- Non existent quality training in research methodology
- Scarcity of research tools
- Absence of a data bank on existing research
- Minimal expertise in research methods and medical writing
- Absence of links and coordination between the mental health professionals, researcher and the policy makers, researcher and the funding body, researcher and the potential clients of his research findings
- Mental health has a low priority in health research agenda.

## **3. GAPS**

Yawning gaps exist in the following areas:

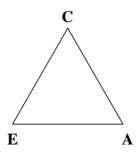
- Evidence (epidemiological data, clinical data),
- Access to health services
- Utilization of treatment facilities and existing services
- Research environment.
- Evidence and research-based policy and action
- Evaluation of utilization and effectiveness of existing mental health facilities.

## 4. INEQUITY

Gross inequities exist in distribution of specialist manpower and available resources.

#### **RECOMMENDATIONS:**

The challenge posed by the issues identified above call for what the group terms as Mental Health Country specific Action based on Research and Equity or **MH CARE THROUGH** the Essential National Mental Health Research (NMHR) Initiative of PMRC.



#### A THREE PRONGED STRATEGY IS SUGGESTED FOR ACTION:

- STEP 1. Identify priorities
- STEP 2. Improve research environment.
- STEP 3. Provide leadership to ensure linkage and utilization of research in action for development in health in its broader perspective.

The details of the suggested plan are as follows:

#### **STEP 1:**

**DRAWING PRIORITIES:** The priorities need to be based on countries' needs, ensuring equity (by covering the rural communities, slums, women, children, old, disabled and unemployed,), with outcomes that can be translated into policy and action for development. Such evidence based action plans can produce positive trends in health, social and economic parameters that can be evaluated in health economic terms. The outlined list of such priorities appear as **Appendix-1** and the details of the ten high priority studies that need immediate start appear as **Appendix-2**. A detailed list of research agenda for short and long term use appear as **Appendix-3**.

#### **STEPS 2:**

#### **IMPROVING RESEARCH ENVIRONMENT:**

#### I) <u>STEPS AIMED AT THE RESEARCHER:</u>

The single most important player in the game of research is the researcher himself, hitherto left unattended. The guiding principles

in ensuring his unfailing commitment and improving his quality as a researcher include:

- a. Methods to ensure a feeling of economic, social and intellectual security in him.
- b. It is also crucial to equip him in research methods and research tools, link him with international and local research bodies and potential clients (stakeholders). Support and assistance should also be given by ensuring time for research in his otherwise diverse and busy schedule as a trainee or a practicing doctor, and provision of the infrastructure and finances needed. Once these needs are catered for it is then mandatory to evaluate him and link his progress to his career with the quantity and quality of his research.

#### II) <u>ENMHR BANK:</u>

Setting up a data bank as a hub of all research activities can serve as a potent resource for drawing the country profile, situation analysis for all future mental health initiatives for research, policy and action. This data bank will comprise all published research, review of the existing research database, comments on limitations, strengths, potential uses (indications for its use). The bank will also arrange investment of available research data into health projects as a pilot for the policy-makers and thus set the direction for action.

#### III) <u>ENMHR CALENDAR:</u>

A timekeeper, monitoring and reporting body on the progress of research on priorities developed in this Seminar will bring a structure and ensure ongoing progress.

#### **STEP 3:**

#### **DEVELOPING LEADERSHIP AND LINKAGES:**

**ENMHR** (ESSENTIAL NATIONAL MENTAL HEALTH RESEARCH) CELL based at PMRC will serve as a body comprising of mental health leaders, researchers and research methodology experts that:

- I) provides technical assistant, (in priority setting, designing the research question, the study design, statistical support and guidance, evaluation of data)
- II) creates awareness amongst stakeholders
- III) assists in publication and dissemination of research
- IV) finds partners (international, local)
- V) links up research findings with policy-makers and potential consumers and buyers
- VI) assists in implementation and translation into action
- VII) evaluates the action based on research findings

These steps can help start up a potent and a dynamic research loop.

# Appendix-I

## **RESEARCH PRIORITIES**

## **OUTLINE:**

- 1. PUBLIC MENTAL HEALTH RESEARCH
  - EPIDEMIOLOGICAL SURVEYS
  - HEALTH SYSTEMS
  - INTERSECTORALITY
  - HEALTH ECONOMICS

# 2. CLINICAL ASPECTS

- BIOLOGICAL
- SOCIAL
- PSYCHOLOGICAL

### 3. RESEARCH ON SPECIAL GROUPS:

- CHILD AND ADOLESCENT
- LEARNING DISBILITY
- FORENSIC
- SUBSTANCE ABUSE
- LIAISON
- PSYCHOGERIATRICS
- REPRODUCTIVE HEALTH

# Appendix-II

### **PRIORITY RESEARCH AREAS:**

## SHORT-TERM

- 1. Development of a consensus document for management of major psychiatric disorders.
- 2. National Epidemiological Survey for psychiatric morbidity.
- 3. Knowledge, attitudes and perceptions towards mental health issues.
- 4. Genetic and Biological Markers for Severe Mental Disorders.
- 5. Re-evaluation of current therapeutic interventions for substance abuse and their outcome.

# LONG-TERM

- 1. Development of a National Case Register identification of families with mental illnesses.
- 2. Prevalence of psychiatric morbidity in suicide and para-suicide cases.
- 3. Study of treatment gaps for major psychiatric disorders.
- 4. Impact of Mental Health Ordinance 2001 on current mental health practices.
- 5. Prevalence and patterns of childhood abuse: victims and offenders.

### DETAILS OF THE PRIORITIZED AREAS:

- 1. PUBLIC MENTAL HEALTH RESEARCH
  - EPIDEMIOLOGICAL:
    - i. NEEDS ASSESSMENT SURVEY IN COMMUNITY CONCERNS ON MENTAL HEALTH
    - ii. ATTITIUDE AND BELIEF STUDY OF DIFFERENT GROUPS TOWARDS MENTAL HEALTH
    - iii. EPIDEMIOLOGICAL STUDIES ON PREVALENCE, COURSE AND OUTCOME IN RURAL AND URBAN POPULATION
    - iv. DISABILITY AND BURDEN OF DISEASE SURVEYS ON CHILDREN AND ADULTS
  - HEALTH SYSTEMS:
    - i. STUDY OF LEVELS OF MENTAL HEALTH CARE POSSIBLE AT DIFFERENT HEALTH CARE FACILITIES
    - ii. DEVELOPMENT OF INDICATORS OF PRIMARY MENTAL HEALTH CARE AT PHC
    - iii. IMPACT OF INTRODUCTION OF MENTAL HEALTH CARE PROGRAMME ON OTHER HEALTH INITIATIVES AND PROGRAMS
    - iv. UTILIZATION OF GENERAL HEALTH SERVICES
    - v. EVALUATION AND EFFECTIVENESS OF TRAINING PROGRAM ON KNOWLEDGE, ATTITUDE SKILLS AND PRACTICES OF HEALTH PROFESSIONALS
    - vi. DEVELOPMENT OF SIMPLE INFORMATION SYSTEMS IN HOSPITAL AND PRIMARY CARE FACILITIES
    - vii. STUDY OF TREATMENT GAPS IN MAJOR PSYCHIATRIC DISORDERS (SCHIZOPHRENIA, DEPRESSION, EPILEPSY)
  - INTERSECTORAL COLLABORATION:

EDUCATION SECTOR:

STUDY ON CURRENT LEVELS OF AWARENESS, ATTITUDE AND BELIEFS AMONGST TEACHERS

EVALUATION ON ROLE OF SCHOOL CHILDREN FOR BRINGING SOCIAL AND BEHAVIOURAL CHANGES IN HOMES AND COMMUNITY (SCHOOL CHILDREN AS AGENTS OF CHANGE)

EVALUATION OF THE IMPACT OF SCHOOL MENTAL HEALTH PROGRAM NATIVE FAITH HEALERS:

ROLE OF FAITH HEALERS IN DETECTION PREVENTION AND TREATMENT OF MENTAL HEALTH AND RELATED GENERAL HEALTH ISSUES COMPARATIVE STUDIES BETWEEN NATIVE FAITH HEALERS AND PHYSICIANS TO ASSESS THEIR IMPACT ON ATTITUDES OF THE COMMUNITY

#### ROLE OF MASS MEDIA:

USE OF MEDIA AS AN EDUCATION TOOL FOR PREVENTION, RECOGNITION AND TREATMENT OF PSYCHIATRIC DISORDERS. STUDY THE IMPACT OF PUBLIC EDUCATION AND AWARENESS ON THE HEALTH BEHAVIOUR

ROLE OF SOCIAL AND RELIGIOUS INSTITUTES:

PREVALENCE OF MENTAL DISORDERS IN POPULATION SEEKING HELP FROM SOCIAL WELFARE AGENCIES

CHILD LABOR AND ITS IMPACT ON MENTAL HEALTH, MENTAL HEALTH NEEDS FOR DIVORCED, SEXUALLY ASSAULTED, SINGLE PARENTS IN URBAN SLUMS.

• HEALTH ECONOMICS:

INCIDENCE OF UNEMPLOYMENT IN PATIENTS WITH PSYCHIATRIC DISORDERS

ECONOMIC BURDEN OF THE MENTALLY ILL ON FAMILIES

COST COMPARISON OF COMMUNITY CARE VS HOSPITAL CARE OF THE MENTALLY ILL.

- 2. CLINICAL
  - <u>BIOLOGICAL PSYCHIATRY:</u>

BIOLOGICAL MARKERS IN SEVERE MENTAL ILLNESS

DEVELOPING NATIONAL REGISTRY FOR FAMILIES WITH SEVERE MENTAL ILLNESS, TWINS, AND ADOPTIONS: DETECTION AND SCREENING FOR PSYCHIATRIC MORBIDITY

<u>MANAGEMENT ISSUES/THERAPEUTICS</u>

EFFECTIVE MANAGEMENT STRATEGIES AND SCHEDULES FOR DEPRESSION, SCHIZOPHRENIA, BIPOLAR AFFECTIVE DISORDERS, EPILEPSY, DEMENTIAS, LEARNING DISABILITIES COMPARISON OF INTERVENTION STRATEGIES FOR DEPRESSION, NEUROSES, PSYCHOSES, ORGANIC BRAIN SYNDROMES, SUBSTANCE ABUSE

ROLE OF GENETIC COUNSELING IN PSYCHIATRIC MORBIDITY

ROLE OF HOTLINE SERVICES AS A DETECTION AND INTERVENTION TOOL IN PSYCHIATRIC MORBIDITY ESPECIALLY ATTEMPTED SUICIDE

• <u>AETIOLOGY</u>

CAUSES AND PATTERNS OF PRESENTATION OF PSYCHIATRIC DISORDERS

## RESEARCH ON SPECIAL GROUPS

• FORENSIC:

IMPACT OF MENTAL HEALTH ORDINANCE 2001 ON THE CURRENT MENTAL HEALTH PRACTICES

MENTAL HEALTH ISSUES AMONGST PRISONERS

<u>CHILD AND ADOLESCENTS</u>

PREVALENCE OF PSYCHIATRIC MORBIDITY IN CHILDREN AND ADOLESCENCE

CROSS CULTURAL STUDIES IN CHILD REARING PRACTICES AND CHILD DEVELOPMENT

DETECTION OF CHILDHOOD ABUSE: VICTIMS AND OFFENDERS

MANAGEMENT OF MENTAL HEALTH ISSUES: PATHWAYS TO CARE

• <u>SUBSTANCE ABUSE:</u>

EVALUATION OF COST EFFECTIVENESS OF CURRENTLY AVAILABLE THERAPEUTIC INTERVENTIONS

COURSE AND OUTCOME FOLLOWING ACUTE TREATMENT (DETOXIFICATION)

• LEARNING DISABILITY:

COST EFFECTIVE INTERVENTIONS TO PREVENT LEARNING DISABILITIES

PREVALENCE AND PATTERNS OF LEARNING DISABILITY IN CONSANGUINITY

• <u>PSYCHOGERIATRICS:</u>

PREVALENCE OF PSYCHIATRIC MORBIDITY IN OLD AGE

IMPACT OF INTERVENTIONS AT PHC LEVEL ON COURSE AND OUTCOME

DEPRESSION IN OLD AGE

• LIAISON PSYCHIATRY:

DETECTION OF PSYCHIATRIC MORBIDITY IN GENERAL HEALTH CARE SETTINGS

PSYCHIATRIC MORBIDITY IN PARASUICIDE

CHANGES IN ATTITUDES AND PRACTICES OF HEALTH PROFESSIONALS FOLLOWING TRAINING IN MENTAL HEALTH ISSUES

• <u>REPRODUCTIVE HEALTH:</u>

PREVALENCE AND PATTERNS OF PSYCHIATRIC MORBIDITY IN RH CONDITIONS

CASE CONTROL STUDY ON IMPACT OF ANTENATAL CARE ON REDUCING THE RISK OF LEARNING DISABILITIES

MYTHS AND MISCONCEPTIONS IN RH SETTINGS

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Annexure-2.6

# **PROGRAMME OF SEMINAR**

DAY 1: MONDAY February 26, 2001

#### PLENERY SESSION:

0900 - 1130

# Venue Main Auditorium of Pakistan Academy of Sciences, Constitution Avenue, G-5/2, Islamabad

- 0900 0905 Recitation from the Holy Quran.
- 0905 0920 Welcome and introduction of the speakers by Dr. Tasleem Akhtar, Executive Director/Chairperson, Pakistan Medical Research Council Islamabad
- 0920 0935 Presentation on ENHR: Key for national development: Dr. Chitr Sitti Amorn, Dean, College of Public Health, Chulalongkorn University, Bangkok, Thailand
- 0935 0950 Presentation on priority setting: Methods and frameworks by Dr. Adnan Hyder, John Hopkins University

#### Refreshment

1030 – 1100 Reassemble in main auditorium for guidelines and instructions to groups

#### **Group Sessions**

Venue Pakistan Medical Research Council Head Office and Pakistan Council for Science & Technology, G-5/2, Islamabad

SESSION 2:	GROUP DISCUSSION	1115 - 1300
SESSION 2.	GROUP DISCUSSION	1113 - 1300

LUNCH

SESSION 3:

#### N 3: GROUP DISCUSSION (CONTD)

#### INAUGURAL SESSION:

#### Venue: Main Auditorium Pakistan Academy of Sciences

- 1630 1635 Recitation from the Holy Quran.
- 1635 1650 Welcome address by Dr. Tasleem Akhtar, Chairperson/Executive Director PMRC
- 1650 1705 Keynote address by Rear Admiral Surgeon Mohammad Aslam, Director General Health, Ministry of Health
- 1705 1725 Inaugural address by Dr. Atta-ur- Rehman, Minister for Science and Technology
- 1725 1730 Vote of Thanks by Dr. Tasleem Akhtar, Executive Director/ Chairperson, PMRC

Refreshment

DAY 2: TUESDAY FEBRUARY 27, 2001 1400 - 1600

1630 - 1730

1300 - 1400

SESSION 4:	GROUP DISCUSSION	0830 - 1030
TEA BREAK		1030 - 1100
SESSION 5: GROUPS' I	PRESENTATIONS & DISCUSSIONS	1100 - 1300
Venue:	Main Auditorium Pakistan Sciences, G-5/2, Islamabad	Academy of
Chairman:	Dr. Shahid Amjad Chau Chairman Planning & Division, Govt. of Pakistan	dhry, Deputy Development
Groups' Presentations		
Discussion		
Chairman's Remarks	Dr. Tasleem Akhtar	
Lunch Break	1300 - 1400	
SESSION 6:	CONCLUDING SESSION	1400 - 1700
Venue:	Main Auditorium Pakistan Sciences, G-5/2, Islamabad	Academy of
Chairman:	Mr. Ejaz Rahim, Secretary H Pakistan	ealth, Govt. of
Recitation from the Holy Qurar	1	
Summary of issues Generated	Dr. Adnan Hyder	
Reflections on the meeting	Dr. Chitr Sitti-Amorn	
Action Plan and the next step	Dr. Tasleem Akhtar	
Chairman remarks	Mr. Ejaz Rahim, Secretary H	ealth, Govt. of

Pakistan

Refreshment

**GROUPS:** 

- 1. HEALTH CARE FINANCING
- 2. CAPACITY BUILDING FOR HEALTH CARE
- 3. HEALTH SYSTEMS RESEARCH
- 4. **REPRODUCTIVE HEALTH**

# 5. PERINATAL AND CHILD HEALTH

- 6. COMMUNICABLE DISEASES
- 7. NONCOMMUNICABLE DISEASES AND INJURIES
- 8. MENTAL HEALTH

Group	Moderator	Presenter and Facilitator
HEALTH CARE	Dr. Mushtaq A. Khan	Dr. Abdul Ghaffar/
FINANCING		Dr. Sameen Siddiqui
CAPACITY BUILDING FOR HEALTH CARE	Prof. Nasiruddin Azam Khan	Dr. Franklin White
HEALTH SYSTEMS RESEARCH	Maj.Gen. ® Akhtar A. Qureshi,	Dr. Anwar Islam
REPRODUCTIVE HEALTH	Dr. Sadeqa Jaffery	Farid Midhat
PERINATAL AND CHILD HEALTH	Dr. Fehmida Jalil,	Dr. Zulfiqar Bhutta
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# Message From Dr. Abdul Malik Kasi Federal Minister for Health Govt. of Pakistan

I am happy to learn that the Pakistan Medical Research Council is organizing a two-day national seminar on Health Research Priorities for Pakistan. This is a timely activity and will help give direction to health research in Pakistan. Research is now accepted as the essential underpinning for policy, planning and decision-making.

PMRC has succeeded in establishing an infrastructure for health research in the country. The Council's vision for Essential National Health Research (ENHR) within the health care system of the country is worthy of support. In today's world, knowledge and information have become the driving force for development.

I wish the seminar all success and look forward to the results of the two days' deliberations of the eminent participants of the seminar.

# Message From

#### Dr. Atta-ur-Rehman,

Minister for Science and Technology, Government of Pakistan

I am happy to know that the Pakistan Medical Research Council is organizing a two-day seminar on Health Research Priorities for Pakistan, which is the basic step for developing a coherent agenda for health research in the country.

Science & Technology have at last achieved the long overdue recognition in Pakistan and the present government has for the first time in the country's history made a substantial financial allocation to the field. The Ministry of Science & Technology has the immense responsibility of ensuring that each penny of this fund, which has been spared from the grossly inadequate budget of the country, is put to use to achieve the objective of enabling Pakistan to claim its due place among the comity of nations. We are conscious of the fact that investing in the health and education of the nation is the key to the achievement of the objective. Unfortunately medical research remains in a pathetic state and no significant world class medical research has been conducted in Pakistan. This is the challenge that PMRC is faced with. It is only through well-organized and coordinated research that credible, relevant and timely information can be generated for the purpose. The PMRC has been assigned the responsibility of organizing, coordinating and promoting health research in the country. I hope that the Council can revitalize the much neglected health research and I assure the Council of my help and support in the endeavor.

I wish the seminar success.

# Message From Mr. Ejaz Rahim, Secretary, Government of Pakistan, Ministry of Health

I wish to extend felicitations to the Pakistan Medical Research Council for organizing the two-day seminar on Health Research Priorities for Pakistan. Research is an essential component of modern health care delivery systems. It is a necessary tool to progress. As pointed out by the Commission on Health Research for Development, "Every country, no matter how small and poor, should establish a research base to understand its own problems, to enhance the effectiveness of limited resources and to improve policy and management".

Setting priorities is the first essential step in developing a health research agenda. I am pleased to know that eminent health professionals, scientists and health managers are participating in the seminar to develop a consensus on the health research needs of the country. The Ministry of Health fully supports this and other efforts of the PMRC to promote and institutionalize Essential National Health Research (ENHR) in Pakistan. PMRC has earned the credit of undertaking and completing the National Health Survey of Pakistan, which has been widely used and recognized.

I wish the seminar all success and look forward to receiving the recommendations of the eminent participants of the seminar. I am confident that PMRC will develop a vision of its future agenda through these proceedings.

# Message From Dr. Shahid Amjad Chaudhary, Deputy Chairman Planning Division Government of Pakistan

I am very pleased to hear that the Pakistan Medical Research Council is holding a seminar to develop consensus on the health research priorities of Pakistan. In today's globalized world information has become the key determinant of the status of a country. To be able to participate at the international level and compete as an equal among countries no country can afford to neglect research

The critical role of information in development is no longer a debatable issue. At the national level development is closely linked to the availability of resources, the most important being human resource. The health status of a population is a key determinant of the quality of human resource available and health research is a crucial input for promoting health and preventing disease. Reliable, relevant and timely health research generated information must be the foundation for developing coherent policies and plans, setting national priorities and disbursing resources equitably.

I am certain that the eminent participants of the seminar will focus on the information needs of health policy, planning and decision-making and look forward to results of their two days deliberations.

# Message From Surgeon Rear Admiral Muhammed Aslam Director General Health Government of Pakistan Ministry of Health

I am delighted to know that PMRC is organizing a two-day seminar on Health Research Priorities for Pakistan.

The Pakistani population is bearing the so-called 'double burden of disease'. It is becoming increasingly difficult to balance the needs of the health care system with the resources available. It has therefore become imperative to establish a credible and sustainable information generation system in the country, which will provide timely and relevant information for prioritizing problems and establishing equity in the distribution of resources. PMRC has managed to lay down an infrastructure for health research and is now endeavoring to operationalize the structure to address the information needs of the health system of the country. The Ministry of Health is fully supporting and facilitating the Council's efforts and endorses the Council's agenda of establishing Essential National Health Research in the country.

I hope this seminar will achieve its objective of developing consensus on the health research needs and priorities of the country. I am convinced that the positive outcome of the seminar will prove to be a land mark in the development of the country in general and the health sector in particular.

# RESEARCH CAPACITY BUILDING FOR HEALTH CARE Franklin White, Professor & Chair Community Health Sciences The Aga Khan University

ABSTRACT: Research may be viewed as rigorous inquiry to advance knowledge Strengthening research capacity is one of the most and improve practices. powerful, cost-effective, and sustainable means of advancing health and development. In health organizations, the concept of research is broad, and includes biomedical and clinical research, epidemiological and related community health research, health systems research, health services research, operational research and other forms. Building research capacity for health is not altogether different from building other kinds of capacity. In addressing research capacity building, there are two main levels: the context of strategic management, and the operational context. In organizations in the health field, if reference to research is not in the mission, then developing a relevant research capacity is made vastly more difficult. Research capacities that take years to develop can easily be destroyed through inadequate support or poor management. This paper examines: capacity building primarily as a challenge for senior management, the requirements for operational effectiveness and efficiency, the realities of resource mobilization, and the need for effective marketing of the research enterprise.

B uilding research capacity for health is not altogether different from building other kinds of capacity. In the lexicon of contemporary management practices, it should also be part of a commitment to "continuous quality improvement". Research is not a marginal activity, but should be viewed as part of the mainstream. Etymologically, research means "re" to do again, and "search" to look for, in effect "to look again". A utilitarian definition is simply: "rigorous inquiry to increase knowledge and improve practices".

To quote Fortune Magazine, a decade ago: "Forget your old tired ideas about leadership. The most successful corporation of the (future) will be... a 'learning organization'". In management terms, an enterprise with a functional capacity for research and development may be viewed as such an organization (Senge 1990). In health organizations, the concept of research is of course much broader than traditional biomedical and clinical research, and includes other forms such as: epidemiological and related community health research, health systems research, health services research, operational research and so on. Research may also be disguised by other names, such as planning, evaluation, surveillance, investigation, problem analysis, and external audit. As Shakespeare reminds us: *a rose by any other name would smell as sweet*. So we must not enshroud research in any kind of mystery; it is as basic to effective and efficient health care as hand washing.

The ideas of effectiveness and efficiency in health services are also by no means new, and were drawn to our attention in the early 1970s by the late Archie Cochrane in his critical analysis of the British National Health Service. In the 1980s, the concept of "health as a resource" was recognized in the health promotion movement, and the idea of "investing" in this resource was made by the World Bank in 1993. All this owes its origins to the strength of evidencebased approaches to good management at all levels, and its increasing application to policy, programmatic and clinical decision making. According to the International Commission on Health Research for Development in its 1990 report, "strengthening research capacity in developing countries is one of the most powerful, cost-effective, and sustainable means of advancing health and development." That this is a continuing need that applies to countries at all stages of development, is illustrated by the following quotes from the WHO Regional Office for Europe in 1997:

- uncertainty surrounds the relationship between the quality of outcomes and the volume of work undertaken.
- although the literature about clinical effectiveness is increasingly well developed, there is little research-based evidence about the components of effective hospital management.
- uncertainty concerning the impact of new technology on... ways that care is provided.

The challenge of capacity development for health research, with a developing country focus, is even more recently addressed by the Global Forum on Health (1999). This takes an international perspective with particular reference to the role of the UN and other development agencies. However, the approach I now offer is based mostly on my observations as a health science manager with direct

experience in research and development operations in both developed and developing countries.

In addressing research capacity building, there are two main levels: the strategic management context, and the operational context. In many forae, there is a tendency to focus only at the second level. However, the first is more fundamental, as it deals with philosophy, organizational design and integration within a strategic framework.

#### The Strategic Management Context

Just like other good management practices, support for research (or "rigorous inquiry to increase knowledge and improve practices") must stem from the top. In a learning organization (and surely all health institutions should seek to be learning organizations) this commitment must start with a Vision and/or Mission statement. Any reference to improvement in quality requires that some form of research be done, for how else can one ensure that such quality is being sought, let alone actually delivered?

By way of illustration, I quote from the Aga Khan University Order 1983:

Whereas His Highness Prince Karim Aga Khan and the Aga Khan Foundation have established in Pakistan a Health Sciences Complex whose programs will promote human welfare in general and the welfare of the people of Pakistan in particular and have expressed the desire to establish an autonomous University in Pakistan for the promotion and dissemination of knowledge and technology and for providing instruction, training, research, demonstration and service in the health sciences and such other branches of learning as the University may determine;...

From the Vision stems the Mission, and at AKU the Faculty of Health Sciences has an eleven point Mission statement (1993), of which the second element reads:

To design and develop community, clinically and laboratory based research focused on high priority health problems of Pakistan and the developing world.

Planning cycles generally flow from the Mission statement, which becomes the key factor in the formulation of goals, objectives, strategies and action plans, moving on from there to monitoring and evaluation, and then back to revisit the mission once again, and then onward to revised goals, objectives and so on. This process is often termed the "management cycle", itself an application of general systems theory. The theory may be applied to organizations as a whole, to systems within organizations, and also to particular functions within those systems.

To borrow a quote from the business sector:

The industrialist who rejects the aid of science... will... be found wanting, and his business will soon pass to other hands. The wise investor will avoid him...

*Arthur Dehon Little* The Handwriting on the Wall In organizations in the health field, if reference to research is not in the Mission, at least implicitly, then developing a relevant research capacity is made vastly more difficult.

To extend this generic thought to Pakistan, while not absolving private sector institutions from this consideration, one often hears from people working in the public sector that they cannot develop or achieve their research goals as there is no managerial support, time or funding allocated to it. If we look carefully, we may find that there is also little or no reference to it in the Mission statement of their institutions. This may reflect the pace at which organizations have adapted to changing management paradigms. Some may not even have a Mission statement. Developing or revising a Mission statement is an important opportunity that will allow the potential role of research to be addressed or updated and thereby help to achieve a learning organization. Overall responsibility for the existence of a research-friendly environment therefore goes straight to the top. This applies equally beyond the institution to the public policy environment as a whole, and brings us to the issue of priorities, which must be connected to the present topic of capacity building.

Priorities must be addressed of course both at strategic management and at operational levels. At the macro level, the national priorities for education, higher education, health services, management and related research across the board are reflected in the level of public sector investment, especially when compared with other expenditures or with countries experiencing similar resource constraints. Priorities of course cannot be reformulated overnight, but nonetheless must be considered at all levels when attempting to build capacity for health research: what is the priority for health, and what is the priority for research for the advancement of knowledge and improving health practices?

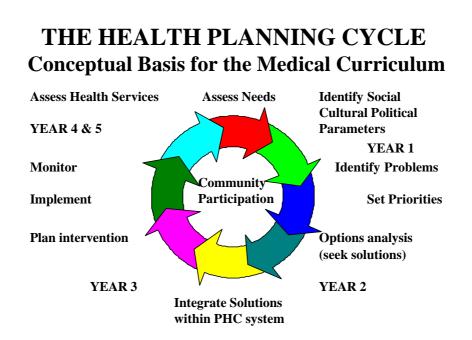
Beyond vision, mission, priorities and planning, appropriate structures must also be developed. At national level the Pakistan Medical Research Council is a vital element in the required structures. At the University level, there may be a Research Office, whose role is to facilitate access to information on grant opportunities, to facilitate ethical reviews, and to promote internal peer review, developing linkages, and promoting skills development. Of course, it takes time and effort to build effective structures and to achieve smoothly running functions. Research capacities that take years to develop can easily be damaged or even destroyed through inadequate support or poor management. Like other areas of capacity building, a modest way is often safer, while steadily working towards more complex challenges built upon initial successes.

### The Operational Context

Just as successful learning organizations are self correcting, so too has the paradigm of good medical practice shifted from a synthesis of patho-physiological concepts, experience and common sense, to one that now recognizes everemerging scientific evidence as its basis. The education of physicians and increasingly other health professionals now requires the discipline: *keep on asking, keep on searching, keep on learning*. (Espallardo NL, Leopando ZE 2000). We are however living in an era when many physicians still practice the medicine of their year of graduation rather than moving with the times.(Sackett et

al 1985) How then can one promote the discipline of *lifetime learning*? This is a major aim of contemporary professional education, and requires the capacity to critically read and understand health science literature, and to incorporate what is relevant into practices, and in the process discard outmoded approaches (such as undue reliance on textbooks as distinct from journals, medline searches and intelligent use of the internet). Even if our future physicians (for example) do not intend to become researchers (and few will), they must at least have the capacity to assess and apply in their practices relevant scientific evidence derived from research. The same applies to any other category of health professional called upon to exercise independent judgment. In other words, *commitment to a research mentality in health care must not only be top down, it must also be bottom up.* For example, teaching primary health care at AKU utilizes the cycle illustrated in Figure 1. In this way, our medical students are presented from their very first day with the concept of an information driven self-correcting system:

### Figure 1:



The most critical element in any enterprise is usually the human resource. In health care, building the best possible team requires good operational management, which depends in turn on the strategic approach already referred to: team members must share a common mission and a self-correcting cycle must have the right mix of skills to ensure success. The right mix requires well thought-out post descriptions, and formal criteria for appointment and promotion, ensuring that the right people are hired and promoted for the jobs to be done. Performance appraisal systems must be keyed to realistic and evolving expectations, mutually negotiated between team member and team leader.

Having just outlined an ideal approach, let us now briefly visit a reality which we would all like to see recede over time: people promoted to jobs for which they are inadequately qualified; qualified people assigned to posts for which their training is underutilized, or not even recognized. Keeping in mind that these are generic

issues which may apply to all areas of human service organizations, let us now take note of the following questions:

- What is the relative importance of seniority and merit in appointments?
- What are the minimum requirements to be appointed to a given post?
- Is research built on brilliant individuals or well trained teams?
- How do we develop leadership for research friendly environments?

There is an important distinction between being a researcher, and being a research manager. Not all of the former are well equipped to become the latter, so beware of promoting a brilliant researcher into a research management role if he or she is not a competent manager. In developing the management of research, one really needs to be in a planning mode, armed with the four classical planning questions:

- 1. Where are we?
- 2. Where do we want to be?
- 3. How are we going to get there? and...
- 4. How will we know when we get there?

The first of these is the situation analysis, the second is the setting of goals and objectives, the third is the action plan, and the fourth is a commitment to monitoring and evaluation. Only after assessing the current situation can one identify the potential needs. Only after developing goals and objectives can one recognize the gaps between where we are and where we would like to be. Only with an operational plan can one clearly see how those gaps and deficiencies be closed, and only with a commitment to monitoring and evaluation can we be accountable for getting there. *Only if a researcher can relate to these questions, should he or she be appointed or promoted into a research management role.* To do so without reference to these qualities is to act on the Peter Principle... to promote people to their level of incompetence. (Peter & Hull 1969) If we want to succeed in building research capacity, it is critical not to confuse seniority with merit.

There are of course, specific skills in developing research abilities for which appropriate post-graduate education is essential. Interestingly, this is an area in which Pakistan may (in respect of post-graduate medical education) be ahead of the world, namely: that anyone seeking to be certified in a medical specialty in this country must develop a dissertation. Other options (not limited to the physician example) are to do a post-graduate degree that requires research training, such as a relevant MSc with thesis requirement or in some instances a doctorate. There is no single ideal model, and some people may develop equivalent skills through a combination of aptitude plus good quality short courses which may have a project requirement. In the end, one sooner or later learns that research is only about 10% inspiration, the remaining 90% being perspiration! Even before a grant is obtained for research, under competitive circumstances, dozens or even hundreds of hours might go into the proposal formulation. Once the grant is obtained, keeping in mind that only a minority of submissions actually succeed in attracting funding, one must then deliver on the project. If one fails to deliver on this, the likelihood of securing future funding from the same source will be reduced.

Regarding the training and development of the research manager, research training itself is not enough without attending equally to the managerial dimension, which requires skills in risk analysis, priority setting, planning, budgeting, human relations, team building, the development of incentives and rewards, and everything else that goes with being a good manager. The research enterprise is no luxury; it is a highly demanding necessity and requires strong leadership and advanced managerial skills.

Perhaps the most important task of the research manager is to create an atmosphere of freedom from fear of intelligent failure. The research endeavor requires acceptance that *uncertainty is an inevitable ingredient*. This must be understood elsewhere in the working environment, including the offices of CEO, personnel and finance, each of which may be called upon to be flexible and creative in order to be supportive. While productivity cannot be measured in the same way as other kinds of work, researchers may be assessed in terms of their contribution to the advancement of relevant knowledge and contribution to improvements in practices. This implies that the research outputs in themselves are not necessarily enough to justify the investment; equal efforts are needed to ensure dissemination and promote application at all relevant levels from policy to practice. This of course is where the concept of Essential National Health Research (ENHR) should serve as an example: linking research activities to national priorities and seeking to strengthen the link between research and its policy and programmatic applications. These principles are no less true of course for research conducted in any other context: whether regional, provincial, local or institutional.

### Resource Mobilization for Research

There are many good ways of resource mobilization that are essential to building capacity. For starters: not all research projects require money, although relevant skill is always a prerequisite, and implies appropriately trained staff ideally working in teams with complementary skills. In its simplest form, the case report or the programme review is mostly a process of examining and writing up observations in a critical manner. A literature review requires little by way of funding. Process analyses in the context of the quality improvement cycle are now routinely conducted by many institutions at management level. There are also many forms of field research that are relatively inexpensive as they require little in the way of laboratory infrastructure; they do however, require epidemiological and statistical rigour, which returns us once again to the necessity of appropriate training and human resource development. In other words, if the Mission is supportive, and the human resource prepared, even with no explicit research funding as such, individuals and institutions can carry out research and (when applicable) publish their observations. As Pasteur would have us recognize: Chance favours the mind that is prepared. Time and money also are often interchangeable. To a large extent, having at least a basic research capacity, is a matter of priorities and attitude.

Making a start on research capacity building with very little actual financial investment is of course different from the situation where one may aspire to building research at a capacity that can become a national or regional resource.

This is the pathway chosen by AKU for example, and involves a major amount of planning and development. To be realistic, most health care organizations cannot aspire to this, but most certainly in a country the size of Pakistan there must be several leading centres in both public and private sectors that have the explicit Mission and capacity to make a contribution of this nature. In building this capacity one must examine not only national priorities, or priorities at other levels (provincial, regional), but also the linked issues of "mandate" and "comparative advantage". For example, in many countries authority for product regulation exists at federal level; it stands to reason therefore that there should be developed a particular research capacity to support this role, such as appropriate food and drug laboratories. By contrast, one should not expect a university teaching hospital to develop regulatory research, especially as conflict may arise with the quite different need to develop capacity, quality and rapid turn-around in relation to its diagnostic laboratory work. A similar contrast may be drawn from environmental health research: for example, the AKU Community Health Sciences Department recently concluded a study of blood lead levels in Karachi children, in which the laboratory determinations were carried out under subcontract by the federal PCSIR laboratories.

One of the key ingredients in the development of research capacity is the development of grant writing skills. Formal training takes care of the basics, but there is no limit to the amount of practice that helps one to become steadily more effective over time. Grant writing workshops can expand the pool of researchers in a given institution, and lift standards. Peer review both internally and externally is essential to raising and maintaining standards. In the end however, there is always an element of chance. It is absolutely critical for example, to write proposals with very careful attention to every part that makes up the request for proposals, or the requirements of the particular granting agency. To take a pedestrian example, a proposal formally received at 9am on Tuesday in Glasgow will be returned unopened to Karachi, if the deadline was 5pm the night before. The likelihood of funding a small project in the AKU intra-mural competition, which is designed to encourage proposals from AKU faculty and thereby help to build research capacity, is currently about 25%. The likelihood of funding any given larger project proposal from major international granting agencies such as the US National Institutes of Health or the UK Welcome Trust, statistically is probably less than 10%.

Good ideas can sometimes be shot down because they do not fit within the established priorities of the organization or the nation, and one must recognize in this the potential short-comings of priority setting, including "whose" priorities are being addressed, and how adequate was the process. Some priorities are influenced by "the latest fashion", and some may be "donor driven", with the potential to distort national or local priorities. Some proposals may be recognized as sound, but not funded for reasons such as competition for an insufficient available research budget. Some poorly constructed research proposals will be approved, because these fit the official list of priorities. On some occasions the nod will be given to groups that are well established, simply because they are well established, not necessarily because they put forward the best proposals. Good proposals from lesser known institutions and individuals may be viewed as risky. In the end however, unless there is some return to the researcher in terms of

recognition and funding, there will be a brain drain away from research, either out of the geographic area, or to other occupations perceived as more rewarding for the effort. At the organizational level, rather than "capacity building", this is "capacity destroying". Unfortunately, we all know that this also happens.

From time to time, grant flows diminish due to external factors not under the control of the investigator. In these situations, other strategies can be used to maintain capacity. One can partially revert to activities that require little or no funding, one can solicit smaller grants or contracts with new and more diverse and sometimes more flexible agencies. Partnerships can be developed that effectively pool resources. Some kinds of consulting contracts offer value similar to a small grant, provided the potential for independence is adequately protected. One may also have to seek ways of bridge financing, in order to ensure that a research capacity built up painstakingly over time is not destroyed overnight due to an externally generated funding freeze. One can use the time creatively to develop more ambitious grant submissions that may be viable once the freeze lifts, or submit these to previously uninvolved agencies. During the 12-15 months since the change in government October 1999, the Department of Community Health Sciences at AKU, sustained a 30% decline in the value of research and development funding, doubled the actual number of grants and contracts, increased publications output, and maintained research capacity by using all the above approaches. We have more recently, ma'shallah, secured new grants that restore the previous funding level.

One of the key risks, particularly during times of grant instability is opportunism, especially with regard to consulting contracts. To avoid this, it is critical to be true to one's Mission. In the Department of Community Health Sciences we examine each potential project (whether grant or contract) for consistency within the departmental Mission, itself a relevant extract from the Mission of the Faculty of Health Sciences:

To train young people for leadership in addressing health problems of the people of Pakistan, particularly those of the more deprived populations through the primary care approach, and to contribute to improvements in the health services of Pakistan, particularly through the development of prototypes that are effective and affordable.

In practice, once capacity is developed and is reasonably mature, it is possible for a local resource to become a national one, and a national one to become a regional one, and so on. For example, at AKU, projects elsewhere in Asia and Africa are also considered, and these help to broaden the base of experience and expertise, maintain capacity and buffer periods when viable opportunities within Pakistan may be restricted, such as recently.

Related to resource mobilization there are a few important rules for research managers:

• Planned research projects are not sacred, however much they may be someone's "pet project". Research must sometimes be suspended or

terminated when conditions render them unfeasible or when better proposals come along.

- Time given to unsuccessful ventures cannot be recouped, and can be an opportunity cost. Just as in financial investments, where one does not want to "throw good money after bad", a responsible research manager must be prepared to cull projects.
- Project ideas should get attention anytime, not just at budget time.
- There should be no projects in the "nothing-better-to -do" category.
- There should be "over-booking"; a backlog of ideas and submissions outstanding. None are guaranteed success. This is what I call the "shots on goal" theory.
- Contracting out and partnerships must always be considered. There is often no good reason why institution B could not be doing research under contract to institution A, if B has the capacity and the independence to do a better job.

### The Marketing of Research

And now for a crucial question: *How can we get our national leaders to become more receptive to the importance of building appropriate research capacity?* Unless this is achieved, there is perhaps little likelihood that national priorities for health or related research will greatly change. One may equally need to recognize the importance of promoting research at all levels in the health, social and educational sectors. Perhaps our organizational CEOs may be a necessary part of the solution, as these are mostly highly influential people, with the opportunity to translate and communicate the importance of research to higher levels of governance. However, even at this level there is a challenge.

### Consider a quote from our industrial cousins:

"The expertise of a chief executive can most influence any new... development program in the programs's early stages – during preliminary study, design and development. But current research suggests to the author that chief executive officers actually devote only trivial amounts of their time and energy to these early stages... Instead, they typically have significant involvement only during production and marketing – when it's too late to do anything that can influence the outcome."

### Edward Roberts

CEOs have a major influence on shaping the institutional environment and its destiny. Thus, it follows that R&D should be part of the training of all prospective CEOs. For current CEOs, many of whom have risen to their positions without this advantage, we must turn to other approaches. Research priorities, project activities and outputs must be brought regularly to their attention. This is no less true for Ministers of Health and social sectors, as well as Heads of Government. Similar actions can be taken at other appropriate levels, such as opportunities for upgrading other Health Services Administrators. District Health Officers are a case in point, as they are effectively the health CEOs for populations of typically 1-2 million in Pakistan, which entails a major level of responsibility for resource management in support of primary health care.

### Conclusion

Research may be viewed as rigorous inquiry to advance knowledge and improve practices. Strengthening research capacity is one of the most powerful, costeffective, and sustainable means of advancing health and development. Capacity for research is a basic element of any organization that aspires not only to survive, but to advance the quality, relevance and impact of its services. Research capacity building is a challenge for governance, health systems and institutional leadership, and requires as much attention to good management practices as it does to the research itself.

#### Acknowledgments

I thank Debra Nanan for critical reviews of successive drafts of this paper, and helping me to tone down the rhetoric, and Kausar Khan for contributing the utilitarian definition of research.

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# HEALTH SECTOR DEVELOPMENT AND HEALTH RESEARCH CAPACITY IN PAKISTAN

# **AN OVERVIEW**

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Pakistan became an independent sovereign state on August 14, 1947. At the time of independence the territories, which became Pakistan had one medical teaching college and attached hospital and one university at Lahore. The public sector health care delivery system consisted of a few district and civil hospitals. In 1954 a Medical Reforms Commission was set up to advise the government on the organization and structure of the medical services. One of the recommendations of the Commission was the establishment of a Medical Research Fund. In 1962 a Medical Reforms Committee advised the establishment of the Pakistan Medical Research Council. The Council was created under the Ministry of Health and was assigned the responsibility of promoting, organizing and coordinating medical research in the country and linking medical research to the over-all socio-economic development plans of the country.

In the first two decades after independence rapid expansion occurred in the health sector. By the early sixties the number of medical colleges stood at five and a postgraduate institute, called the Jinnah Postgraduate Medical Centre (JPMC) had been established. The National Health Laboratory, now called the National Institute of Health (NIH) was also established in the sixties. A journal for the publication of original research called the Journal of Pakistan Medical Association (JPMA) was started. A Pakistan Medical and Dental Council was established to set standards and oversee medical education. Currently the country has 18 undergraduate Medical Colleges in the public sector with 4 Postgraduate Medical Institutes, a National Institute of Health, a Pakistan Institute of Medical Sciences, a National Institute of Cardio-Vascular Diseases, an Armed Forces Institute of Cardio-Vascular Diseases, an Armed Forces Institute of Pathology, a Pakistan College of Physicians and Surgeons, two Institutes of Public Health, two Health Services Academies and three Provincial Health Development Centres. The private sectors have established three medical universities and several medical colleges.

Over the years and especially in the eighties, many commissions and committees were constituted to advise the government on health sector reform and development. However the concepts of universal access, equity, quality and community participation in the provision of health care, which were put forward in the recommendations of the Health Survey and Development Committee (Bhore Committee), set up in 1946, and endorsed by the subsequent commissions and committees to-date elude implementation as envisioned.

The expansion and development in the Health Sector in Pakistan described above, has not occurred under any policy and long term planning. Since the early sixties development has been going on under Five Year Plans and Annual Development Plans. An abortive attempt at health policy making was made in 1990. It was in 1997 that the first Health Policy of the country was announced. However the starting of the present Health Sector Reform effort preceded the Health Policy and is being undertaken under the umbrella of the Social Action Programme (SAP)

#### Health Research Capacity And Status In Pakistan:

Research in Pakistan has remained a low priority area in all fields. This is well indicated by the total scientific and technical manpower of 14,576 and a total number of 1843 PhDs in all fields, in a country of 130 million plus population. The total allocation to the Research and Development (R & D) organizations and universities, in the annual budgets of the country ranged between Rs. 8336.396 million (\$ 154 million) in 1988-89 to 12878.313 million (\$239 million) in 1994-95<sup>6</sup>. The allocation to Health and Population sector research institutions was a small fraction of even this paltry spending.

In the field of health the number of research scientists is 966 with a total of just 42 PhDs (with 24 of these at the Aga Khan University, Karachi). The neglect of health research and development in the country cannot be blamed on the early planners and decision-makers since a Medical Research Fund was established as early as 1954 on the recommendation of the Medical Reform Commission. The Pakistan Medical Research Council was created in 1962 on the recommendation of the Medical Reforms Committee. Why the early promising start could not be built on is a matter for research itself.

The Pakistan Medical Research Council was assigned the functions of promoting, organizing and coordinating health research and linking research to the socioeconomic development plans of the country. The Council adopted the strategy of establishment of Research Centres in Medical Academic institutions where the research capacity was assumed to be concentrated, to achieve its functions. Unfortunately this strategy has failed to deliver. Again the reasons could be many and need research. However one reason is failure of the Council to attract competent researchers and develop a core group of research trainers. With severe lack of capacity in its own research centres the Council has been unable to develop a health research human resource in the country. The Council's assumption that adequate research capacity is available within the medical institutions and that all that is needed is to provide some technical and logistic facilities through the research centres to promote research has proved wrong. Research know-how is severely deficient and the mere provision of equipment and support facilities has failed to help the Council achieve its objectives.

Several institutions are involved in health research in Pakistan. These include, besides the Research Centres of the Pakistan Medical Research Council, the Aga Khan University, the Health Services Academy, Population Council, Asia Foundation, Federal Bureau of Statistics, National Institute of Population Studies and the postgraduate medical Institutions. However, health research remains individual-based, fragmented, uncoordinated, of poor quality and mostly irrelevant to the health policy and planning needs of the country.

### Suggestions And Recommendations For Promoting Health Research And Enhancing The Use Of Research In Policy And Planning:

In a recently undertaken study (Sameen Siddiqui and Tasleem Akhtar) in which top decision-makers of the health sector were interviewed the following suggestions were given to enhance the use of research for improved decisionmaking:

- Research must be a part of all government plans and proposals and must have separate allocation in each such plans and proposals.
- Research capacity in the country needs to be strengthened. Suggestions given were:
  - a) Creating a demand for research;
  - b) Strengthening of Research in Academic Institutions;
  - c) Developing human resource capable of independent research in health;
  - d) Networking and collaborative linkages among institutions;
  - e) Information support to researchers;
  - f) Adequate financial resources allocation for research
- Decision makers should be educated through:
  - a) Capacity building of mid-level human resource and deploying these close to policy-makers so that information based on sound evidence is conveyed to them as and when required;
  - b) Expose high level policy-makers to systems where such a process is working "study tours" could be one option;
  - c) Enhance the value of social sector research in the eyes of decision-makers through establishment of resource centres and making information more accessible;
  - d) Organize awareness workshops.
- As regards the development of a research culture where research is considered an investment rather than a liability, there were two views on what has obstructed the creation of a research environment: 1) The decision-makers do not demand research for policy and planning and base their decisions on intuition rather than information, and 2) the researchers do not conduct policy relevant research and often take up esoteric research, which has little relevance to the needs of the country. There is thus a gap between the researchers and policy-makers, which needs to be bridged through:
  - a) Development of human resource for research, provision of incentives and funds for research;
  - b) Creation of an enabling environment that encourages research. Establishment of information resource centers, strengthening research institutions, training professionals in research methodologies, providing monetary as well as non-monetary incentives to research scientists;
  - c) Dissemination of research results through inviting multi-disciplinary teams of professionals such as lawyers, politicians, journalists and media men and women;
  - d) Establishment of common forum for researchers, academics, bureaucrats and policy-makers such as joint dinners and get-togethers;
  - e) Institutionalization of Research;
  - f) Provision of relevant information to decision-makers on a timely basis;
  - g) Utilization of examples of successful research use in policy-making for convincing policy-makers.

# RESEARCH PRIORITIES IN REPRODUCTIVE HEALTH IN PAKISTAN

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## **Research and Planning:**

deally, planning should always be guided by research. Unfortunately in our country, the planning processes rely more on foreign experts and less on hard data. This is especially true for the planning of health services and programs. When national health policies and strategies are not based on research data, it is hard to monitor their success in achieving their objectives. Pakistan is one of the few countries that do not have reliable data on some very important health indicators, including those related to women's health status. As a result, we do not know if the government's health services interventions have improved women's health in Pakistan. An example is maternal mortality ratio (MMR), which is an important indicator of women's health and the state of the health services available to them. It measures the number of deaths due to complications of pregnancy and childbirth for every 100,000 live births. The MMR is therefore an estimate of the risk of death associated with pregnancy and childbirth. We do not have a national figure for MMR. Similarly, the data on the frequency and severity of pregnancy-related illnesses are also lacking. We also have a very limited understanding of the prevalence and determinants of major reproductive illnesses like sexually transmitted infections and cancer of the cervix. Similarly, we do not know why a vast majority of Pakistani women prefer having births at home. And we have very little information about the scope, the quality and the utilization of health services available to women at government health facilities, particularly those located in rural areas. Last but not the least, there are no reliable information on men's reproductive health status and needs.

Yet in all these areas, policies are formed and new strategies are routinely developed and launched at the national level. It is not surprising, however, that these policies and strategies have had little impact on women's health status in this country. Here are a few examples:

- 1. Only 18% of all deliveries are performed by trained health personnel; 80% deliveries occur at home.
- 2. Just about one third of all pregnant women receive some kind of antenatal care.
- 3. More than 60% of pregnant women do not receive immunization against tetanus.
- 4. Contraceptive use rate is just 24%, while that for modern methods is only 17%.
- 5. Total fertility rate (average number of children a woman is expected to bear in her lifetime) is over five.
- 6. About 28% of the women who desire no more children or who wish to delay their next pregnancy do not use a modern family planning method due to lack of access to services and/or information.

- 7. Forty percent of the women aged 15 years or older are anemic. Anemia increases steadily with age, from 35% among teenage women to 66% among those aged 45-50 years, which is an alarming indicator of the poor state of health services available to women.
- 8. About one quarter of the women give birth when they are less than 18 years or over 35 years of age, which puts them at higher risk of obstetric complications. About 20% are also grand multiparous -- having given birth to four or more children already which increases their risk manifold.
- 9. The sex ratio in 1998 was 108 women per 100 men, indicating a higher number of men than women in the population. At least in part, this depicts higher female mortality during early childhood and in the reproductive ages.
- 10. Maternal mortality ratio is believed to range somewhere between 300 and 700 per 100,000 live births, which is among the highest in the world. Because a woman is at risk each time she becomes pregnant, her lifetime risk of maternal mortality accumulates to about 2.5% -- meaning that one in every 40 Pakistani women dies of complications of pregnancy and childbirth.

## A Reproductive Health Research Agenda for Pakistan:

The International Conference on Population and Development (ICPD) in Cairo in 1994 defined reproductive health as "...a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its functions and process. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so".

After the ICPD, three broad areas for research and interventions in reproductive health were identified:

- 1. Sexually transmitted infections, their prevalence and determinants.
- 2. Family planning use, particularly with regard to modern contraceptive methods.
- 3. Safe motherhood: safe pregnancy and delivery and healthy outcome of pregnancy.

Within these broad areas, each country must assign priority areas for reproductive health research and interventions. For Pakistan, some relevant research questions in reproductive health would be:

- 1. What is the maternal mortality ratio in Pakistan? What are the causes of maternal mortality?
- 2. How many women suffer from obstetric complications? What are the major causes of maternal morbidity?
- 3. What are the major causes of neonatal mortality and morbidity?
- 4. Who are the women using modern contraceptives in the rural areas?
- 5. How many women receive appropriate prenatal care during pregnancy?
- 6. How many women receive skilled birth attendance?
- 7. Who are the women who receive skilled birth attendance?
- 8. Who performs the most deliveries in rural areas?
- 9. Who performs the most deliveries in urban areas?

- 10. What is the prevalence and determinants of common obstetric complications?
- 11. Who are the "birth attendants" in the urban and rural areas?
- 12. Whom had we trained as trained birth attendants during 1980s? Where are they?
- 13. What are the various categories of traditional birth attendants?
- 14. What are the family dynamics in terms of selection of a birth attendant?
- 15. Who are 'birthing supervisors', 'cord-cutters' and 'mother's maids'?
- 16. How do we move from "mostly unskilled" to "mostly skilled" birth attendance?
- 17. How much does it cost to deliver a baby at home?
- 18. How much does it cost for a normal delivery in a government hospital?
- 19. What are the implications of delivery at home?
- 20. How can the proportion of skilled birth attendance be increased?
- 21. What is the current level of reproductive health knowledge among married men?
- 22. Why is vasectomy not popular in the country?
- 23. Where is the family in family planning?
- 24. What is the role of the (nuclear and joint) family system in safe motherhood?
- 25. What family values and dynamics determine the adolescents' sexual behavior?
- 26. What media campaigns of the Ministry of Population Welfare have worked?
- 27. What communication strategies of the non-governmental organizations have worked?
- 28. What communication strategies have not worked?
- 29. Why the increase in the contraceptive prevalence rates is so slow?
- 30. What are the ethical questions in reproductive health research?
- 31. Is there an ethics code for reproductive health research in Pakistan?
- 32. Are consents sought from respondents and participants in RH research?
- 33. Why gender in Pakistan means women only?
- 34. What are the social and cultural aspects of male isolation in reproductive health?
- 35. Why has Bangladesh's family planning program worked better than Pakistan's?
- 36. What lessons have we learned and applied from success stories in South Asia?

Some experts might think that we already have answers to many, or most, of these questions. I believe otherwise. Each of these questions need hard data before they are answered, not just opinions. These questions are important from two points of view: first, they need to be answered *before* initiating an intervention program, and second, these questions need to be asked continuously throughout the course of the program, and also at its end.

I will discuss one other example: Recently, there is a global trend of 'dumping' the *Dai* training programs and stopping any further investment in traditional *Dais*. Some policy documents of our government also follow the same pattern, without considering the ground realities in our country. The argument given against *Dais* 

is that their training (about 53,000 *Dais* were trained in the country during the 1980s) have failed to bring down maternal mortality. However, those who have worked closely with these training programs will testify that most programs were ill-organized and weak. I will pose the following questions to the opponents of continuation of *Dai* training programs:

- 1. Who are the "trained" *Dais* employed at government health facilities in many rural areas of Pakistan?
- 2. Who were the *Dais* who were trained during the 1980s? How were they selected? What were the mechanisms for follow-up training and for their supervision and support, and for linking them with the health system?
- 3. Do we have a definition of who a *Dai* really is?
- 4. A vast majority of deliveries occur at home and are performed by *Dais*. How soon can trained midwives replace the *Dais* in all areas of Pakistan?
- 5. Where is the evidence that the deliveries performed by *Dais* are at any greater risk of complications than those performed by trained health personnel?

This is only an illustrative case to make the point that research is needed before taking policy decisions. It also proves that research is simply an extension of and an aid to common wisdom. It is clear that the Dai training programs were launched without much preparation and there was no effective system of their monitoring. 'Failure' of Dai training program cannot be attributed to Dais alone, especially when there are no data to substantiate this claim. More importantly, a decision to totally ignore the Dais will be dangerous, for a very simple reason: In the best case scenario, the health system may require a minimum of ten years to deploy enough trained midwives to displace Dais out of their profession. Some sort of intervention will be needed for this interim period. Moreover, untrained birth attendants are not the only barrier to women's access to emergency obstetric care. A number of other factors are operative at home and community level, which cause delays in transferring a woman to hospital when she needs emergency care. Moreover, a significant number of deliveries in the rural areas are performed or supervised by older female relatives who have the decision-making power to seek (or not to seek) medical care during emergencies. Providing skilled birth attendants in all villages may remove some, but not all barriers to access to medical care. More research is needed to find appropriate solution to this problem. Setting research priorities in reproductive health should follow a comprehensive process to identify major areas of need and concern. The seminar organized by the Pakistan Medical Research Council will handle precisely this question.

# TRENDS IN HEALTH CARE FINANCING IN PAKISTAN

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# **Investing in the Health Sector**

Increased worker productivity, improved utilization of natural resources, improved learning ability and school enrollment of children, synergism between health gains and fertility reduction and reduced expenditure on medical care. Investments in health not only lead to improvement in health status but also contributes to alleviation of poverty.

Pakistan lags well behind the averages for low-income economics in terms of social indicators. Government spending on health has traditionally been well below 1 percent of its GDP. Factors attributable to poor health status can be attributed to social and developmental issues and health sector issues. The former include *inter alia* high level of poverty, low level of education – especially female education, low status of women and inadequate sanitation and water supplies. Health sector issues are varied but the major ones are inadequate allocation and inefficient utilization of resources, unregulated health sector, human resource imbalances in health, centralized decision making and managerial weaknesses, gender imbalances, political interference insufficient focus on preventive interventions, insufficient interaction with non-governmental health sector and communities.

# Financing of Health Sector in Pakistan

Health sector in Pakistan is financed or administered through the public exchequer and by the private sector. Sources of public sector financing include government revenues raised through taxation, donor financing through projects and programs, cost recovery at health facilities (user charges), social security insurance and *Zakat* funds. Private sector financing covers out-of pocket payment (fee for service), private health insurance, NGOs working in the health sector (through donor financing).

The following three tables provide an overview of the trends of public sector financing of the health sector. It covers total government expenditure on health and population, provincial and federal contribution to total public sector expenditure on health and the contribution of the Second Social Action Project.

	1993-94	1994-95	1995-96	1996-97	1997-98			
Total Public Sector Expenditure on Health								
Current	8.596 (71%)	9.433 (64%)	11.234 (68%)	12.988 (71%)	14.777 (71%)			
Development	3.460 (29%)	5.237 (36%)	5.387 (32%)	5.339 (29%)	6.166 (29%)			
Total	12.056	14.670	16.621	18.327	20.943			
Ministry of Population Welfare Exp	Ministry of Population Welfare Expenditure							
Total	0.794	1.077	1.389	1.460	2.073			
GDP at Market Rates	1564.60	1866.30	2214.30	2503.25	2932.00			
Govt. Health Expenditure as % of GDP	0.77	0.78	0.75	0.73	0.71			
MOPW Expenditure as % of GDP	0.05	0.06	0.06	0.06	0.07			

Table 1: Total Government Expenditure on Health and Population

Table 2: Provincial and Federal Contribution toTotal Public Sector Expenditure on Health

	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Federal	14%	12%	15%	18%	20%	19%	17%
FANA, FANA, AJK	4%	5%	4.5%	5	5	5	6
Punjab	39%	44%	38%	37%	34%	38%	42%
Sindh	21.5%	18&	19%	17%	19%	17%	17%
NWFP	14.5%	14%	15%	15%	14%	13%	12%
Balochistan	7%	7.5%	8%	8%	8%	7%	7%
Total Health Exp. As %of GDP	100%	100%	100%	100%	100%	100%	100%

Table 3: Second Social Action Program Project – Financial Summary –Estimated Program Costs (1997-2003)

	Elementary Education	Primary Health	Population	RWSS	Others
Punjab	3,315.7	698.5	-	439.1	-
Sindh	1,331.0	319.9	-	185.9	-
NWFP	1,022.2	188.4	-	177.4	-
Balochistan	514.2	174.0	-	125.4	-
Federally Administered Area	338.6	158.2	-	74.3	-
Federal Programs	103.7	417.5	379.2	-	-
PDP	-	-	-	-	47.1
M&E	-	-	-	-	28.8
ТА	-	-	-	-	16.9
Total	6,625.4(66%)	1956.5(19.5%)	379.2(3.8%)	1002.1(10%)	92.8(0.9%)

## **Cost recovery at Health Facilities – User charges**

Nominal user charges are levied for out-patient consultation, in-patient admission and diagnostics. Cost recovery in public facilities from user charges at all levels amount to about 2% of total government spending on health. Proceeds from almost all user charges accrue to the provincial or federal treasuries. Raising substantial additional resources from general revenues seems unlikely. Institutional capacity has to be crated that allows for mobilization of additional resources from the system's clients – who are willing and able to pay for services through introduction of user charges.

Facilities would require permission to retain the proceeds from user charges and use them for improving operations and quality of services. Poor and women and children have to be protected from user charges through exemptions or cross-subsides. Structure of the user fees requires further studies – those bypassing the system could be charged higher fees. Devolution may provide some flexibility in introducing user charges.

# **Employees Social Security Institutions**

It was established in 1967 under the Provincial Employees' Social Security ordinance 1965. Provincial ESSI under the general direction of a governing body manages it. It covers employees of industrial and commercial establishments with 10 or more workers and drawing salary up to Rs.3000 per month. The benefits offered include medical care for secured workers, medical care for dependents, cash benefits. The scheme is financed through contributions at 7% of the wages of workers paid by employers. Over 500,000 employees – mostly urban – are registered in Punjab, Sindh and NWFP. ESSIs run their own network of facilities and in some cases provide care in private health facilities. ESSI system accounts for up to 1% of all health care financing in the country. Concerns with the concept of ESSI include that funding is guaranteed regardless of performance, thereby efficiency is poor and quality of care low, maximum wage for insurance is ESSI is rarely adjusted, many who need it are excluded.

### Zakat Health Funds

In 1991-92, Rs.2.6 billion in *Zakat* funds were collected out of which Rs.90 million (or 4%) were designated and spent on health related projects. *Zakat* funds for health are distributed to the "Mustahiqeens" through two mechanisms – the Patient Welfare Society and through direct disbursement to facilities (Fatimid Foundation, PIMS, FGSH). *Zakat* Funds are only being used for purposes of health services and not for any capital and development purposes. There are major procedural and administrative problems in the disbursement of *Zakat* Funds. *Zakat* funds amount to 0.5-1% of the country's health expenditures and are not adequate to cover the health costs of the indigent in Pakistan.

### **Private Sector Financing**

Private sector expenditure on health accounts for almost two-thirds of total health expenditure in the country. Most health care in the private sector is paid for directly by individuals. Out-of-Pocket household expenditures are high, with estimations of about Rs.20 per capita per month. Private sector provides curative health services to almost 80% population – 56% private doctors, 14% private dispensers; 5% hakims homeopaths; 3% private pharmacies; and 21 government health facilities. Private health sector in Pakistan is largely unregulated – and there is lack of legislation that would allow for enforcement of standards of health care.

The breakdown of estimated household expenditures on health comprises doctor/hospital fee 35.6%, medicines 63.1% and other expenses 1.3%. Based on the finding of a Household Income Expenditure Survey on a representative sample of almost 15,000 households, by Federal Bureau of Statistics in 1998-99 the average household expenditure per month was Rs.145.0. The estimated number of households in Pakistan is 19.71 million. The annual household expenditure on medical care amounts to Rs.34.295 billion. For the same year the total public sector expenditure on health was Rs.18.327 billion. Thus the total expenditure on health was approximately 52.622 billion out of which private sector expenditure on health accounts for 65% and public sector expenditure 35%.

## **Private Health Insurance**

Private Health Insurance Market in Pakistan is limited. Most private and state owned insurance companies do not offer health care insurance products. New Jubilee and Adamjee Insurance Companies offer health insurance to their clients with a limited range of services. Membership base of private health insurance is approximately 25,000. In 1994 the USAID conducted a study for the Federal MOH on – Development of Private Health Insurance Based on Managed Care Principles.

### **Conclusions and Recommendations**

Health improvement has an instrumental value in enhancing productivity and economic development. Pakistan has one of the lowest health investments in Asia and in the world. Public sector contribution to health and population combined is less than 0.8% of the GDP. Donors finance up to 20% of the public expenditure on health through loans and grants. Over 80% financing of SAP as well as SAP II is through domestic resources, which has largely remained protected. Health expenditure varies between 5-9% of the total provincial government spending. This is unlikely to increase in the foreseeable future. ESSI system accounts for less than 1% of all health care financing in the country. Cost recovery in public facilities from user charges at all levels amount to about 2% of total government spending on health. *Zakat* funds amount to 0.5-1% of the country's health expenditures. Private household expenditure on health accounts for two thirds of the total health expenditure.

A number of developing country governments have started to experiment with splitting financing and provision of health services by contracting out packages of services for defined populations to NGOs or other private parties. While administratively demanding, and probably not feasible on a large scale in Pakistan in the near future (but feasible at the margin), this type of organization and management reform is very promising. It could enable the provincial and district governments to obtain better value for money, as compared with expanding the present model of in-house provision.

Lack of access to health risk-pooling mechanisms by most households is a major problem in Pakistan. The Government should play an active role in fostering the development of health insurance institutions and try to steer such development in socially beneficial ways. Two specific types of reform that could be considered by the Government are:

*Expansion of social health insurance by incorporating government employees to the ESSI system.* At present, government employees are entitled to free medical care from government hospitals. The subsides involved in such arrangement are non-transparent. Incorporating government employees to the ESSI system instead would make the cost to the Government of providing medical coverage to its employees explicit, and would help to build social insurance as an institution.

*Piloting of Community Financing Schemes.* For households outside the formal sector, e.g. in the rural areas, the Government may consider piloting Health Community Financing Schemes. Such schemes may be able to capture most of the out-of-pocket expenditure that rural households already incur on health services/goods, and which is often squandered on fees to untrained health care providers or ineffective (or worse) over-the-counter drugs. Community Financing Schemes would then channel these resources into more efficient and effective services for the same households, while also pooling risks.

# NOTE FROM THE COUNCIL ON HEALTH RESEARCH FOR DEVELOPMENT (COHRED)

The Council on Health Research for Development (COHRED) is a nongovernmental organisation, created in 1993 to promote and support the concept of Essential National Health Research (ENHR). ENHR is a strategy for organizing and managing health research, founded on the conviction that effective health research can be a powerful means of promoting health and development based on equity. For a number of years, COHRED has worked closely with health institutions and other bodies in some 40 developing countries, including Pakistan, to advocate for and promote the ENHR strategy.

For many people, perhaps, the term "health research" conjures up an image of white-coated scientists working at a laboratory bench on problems of little direct relevance to ordinary people's lives. It may be seen as something of a "luxury" which can only be afforded by rich countries. But such an image tells only a small part of the story. Health research covers a wide spectrum of activities, which can include such apparently simple tasks as counting the number of malarial mosquitoes in a community or observing how food is prepared in village homes. And <u>essential national</u> health research is particularly relevant for developing countries, since it provides an important engine to help drive national development by focusing research on the priority health problems of the country.

This week's seminar on health research priorities in Pakistan is an important step in the organization of health research in the country. Left to the influence of market forces and scientific curiosity alone, investments in health research tend to target the diseases of the affluent or so-called "glamorous" conditions, resulting in under-investment in research that can benefit the poorest in society. The setting of national priorities, based on hard evidence of need, can go a long way towards ensuring that investments produce concrete returns for all, and move society forward on the development path. It also puts the country in a stronger position in its negotiations with development partners in the North, since these partners are less likely to be able to impose their agendas in a country with a clear agenda of its own.

As a small, independent nongovernmental organization, COHRED works with developing countries, to support them in organizing a health research system that responds to their particular needs. COHRED's participation in Pakistan's national seminar this week is an example of the organization's commitment to "put countries first" and to stimulate partnerships at all levels – including country level – between all the parties involved in, or affected by health research, from politicians, to academics, to the man and woman on the street.

The aims of this week's research priority-setting exercise are to improve the use of limited resources and generate more funding for research on problems of the poor. The ultimate success or failure of this effort will depend on what happens next: Will the priorities set this week be implemented? Do they, in fact, address the question of equity? Will the interest of the various stakeholders in the research agenda be maintained? Creating an effective health research system that can improve equity will not happen overnight. It will demand commitment by all the actors involved. COHRED will remain ready to provide support whenever appropriate and to make available the expertise of its collaborators from around the world in this difficult, but very worthwhile task.

## SERVICE ORIENTED RESEARCH IN MENTAL HEALTH Prof. Malik H. Mubbashar

National Coordinator for Mental Health Research and Director WHO collaborating Centre for Mental Health, Research and Training, Institute of Psychiatry, Rawalpindi General Hospital, Rawalpindi.

It is only over the last fifty years that a number of developing countries have achieved nationhood, however this independence has not always been reflected in the policies formulated. Health policies have particularly suffered on this count, being formulated on the basis of data from developed countries.

This resulted in programs of dubious usefulness, inequitable distribution of resources and lopsided infrastructural development, however for the last 02 decades it is being increasingly realized that indigenous research and evaluation should be integrated in the process of formulating national regional policies and priorities.

This realization however is confronted with a number of constraints, including shortage of trained manpower, lack of technical and funding resources, lack of culturally valid measures, limited avenues of disseminating results and most importantly lack of operationally useful public mental health research because of the attitudes of professionals engaged in research.

Inspite of these constraints a number of developing countries have developed mental health policies and programs for providing mental health services to their populations. It is now for the mental health professionals, to realize that instead of harping on the constraints it is upto them to carry out evaluation of the existing models of services and develop models of care integrating evaluation as part of their planning and implementation process, by utilization of existing resources and maximizing these researches by collaboration with other social sectors like education, social services, police, criminal justice system and within the health sector. Since it is unlikely that majority of the health professionals working in developing countries would be able to devote themselves to research and evaluation full time. It follows that most of the work would relate to the clinical settings they work in ranging from validation of existing instruments, development of diagnostic measures, program reviews and program trials.

- 1. Research is cornerstone of economic prosperity.
- 2. Research is the engine which drives national progress.
- 3. SALVATION of Mankind lies in Medical Research.
- 4. Research breads moral literacy.

It can be useful to carryout educational research to evaluate manpower development programs for example training courses for primary care physicians and health workers or to raise the awareness of fellow professional about the prevalence of mental disorders in general health care settings. It will at times be useful to move out of clinical settings altogether and carry out community surveys, which can be useful in planning of services, evaluating the impact of services on community development, utilization of services offered, satisfaction of the providers and users of services, identifying Needs and Demands for mental health care for general population and special groups like school children, women elderly, drug abusers.

In addition to biological research, research and evaluation is therefore essentially concerned with collection and interpretation of information in the domains of Need, Demand and Service – inputs, process, outcome and impact, be it at the level of policy and planning, program development and implementation or project. It is equally important however that this information be presented in an understandable form for the intended target population.

- 5. Research is a systematic way of learning from experience.
- 6. Research institulizes wisdom.
- 7. Our future lies in institutionalizing Research
- 8. Money spent on research pays dividends in national progress.
- 9. Research shall be plinth for health service system.

Evaluation can be systematic way of learning from experience and using the lessons learnt to improve both current and future actions if it is made an ongoing process, involving all the stake holders, focusing on both the quantitative and qualitative aspects, addressing the questions of Availability, Efficacy, Efficiency, Effectiveness and Equity.

Mental and neurological disorders are widespread in all populations and cultures and continue to be a sources of distress, impaired productivity and diminished quality of life of significant number of people. According to WHO and World Bank studies, mental and neurological disorders are responsible for a quarter of global of burden of diseases. Rate of increase of mental health and neurological problems in third world coupled with demographic trends towards population increase, outstrips very seriously the capacity of national health systems to cope with such a burden. Numerous opportunities for prevention of mental illness and neurological disorders are not taken although it can be shown that as much as 50% of all the mental health and neurological disorders can be prevented.

It is felt that any future planning of psychiatric services in this country will have to realize the sharp realities and limitations of socio-cultural factors and should attempt to utilize them advantageously. In this context, it need hardly be emphasized that the family structure in our society can provide a therapeutic aid and maximum assistance, understanding the resources of the family can thus be used in caring for the mentally ill. Modern methods of treatment can be successfully utilized involving a dynamic and community oriented psychiatric service, which need not be too expensive. It was felt that the services will inevitably have to move out into the community as often and as such as possible to achieve our aim and to prevent the ill person from breaking off from his environment and to allow him to retain his relevance to the community for as long as possible."