



Ministry of Climate Change and Environmental Coordination

STAKEHOLDER MAPPING & ENGAGEMENT STRATEGY

National Adaptation Plan for Pakistan



WATER



AGRICULTURE



URBAN



ECOSYSTEMS



FINANCIAL

“Adapting Today for Sustainable Tomorrow”

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Table of Contents

Executive Summary:	6
List of Abbreviations:.....	7
Acknowledgement:.....	8
1. Mapping and Engagement Strategy	9
Aim:.....	9
Objectives:.....	9
Methodology:	9
1.1 Stakeholder Identification:.....	10
1.1.1 National Workshops:.....	10
1.1.2 Mapping:	10
1.1.3 Main Federal and National Stakeholder Roles:.....	11
1.1.4 Main Provincial Stakeholder Roles:	14
1.2 Stakeholder Power Matrix:	15
1.2.1 High Power - High Interest:	16
1.2.2 High Power - Low Interest:	16
1.2.3 Low Power - High Interest:	17
1.2.4 Low Power - Low Interest:.....	17
1.2.5 Effective Group Involvement:.....	18
1.3 A Strength, Weakness, Opportunity and Threats (SWOT) Analysis:.....	18
1.3.1 Impact Factors:	18
Table 1: SWOT Analysis for National Adaptation Planning Process.....	18
2. Essentials for Stakeholders Engagement:	21
2.1 Coordination Needs:	21
2.2 Designing Engagement Strategy:.....	22
2.3 Engagement Approaches:	22
2.4 Core Group:	22
2.5 Technical Groups Formation:	23
2.5.1 PCCC's Influence:	23
2.5.2 NAP Steering:	23
2.5.2.1 Strategic Guidance:.....	23
2.5.3 Climate Data:.....	23
2.5.3.1 Climate Information System:.....	23
2.5.3.2 Data Collaboration:.....	24
2.5.4 Streamlining NAP:	24
2.5.4.1 Role Alignment:.....	24
2.5.5 Climate Financing:	24

2.5.5.1 Finance Mobilization:	24
2.5.6 NAP Evaluation:	24
2.5.6.1 M&E Expertise Pool:	25
2.6 Climate Coordination:	25
2.6.1 Stakeholder Incentives:	25
2.7 National Stakeholder Engagement:	25
2.7.1 Incentivizing MoPD and MoF:	25
2.7.2 Water Resource Collaboration:	26
2.7.2.1 Policy Partnership:	26
2.7.3 Food Security Engagement:	26
2.7.3.1 Inclusive Food Security:	26
2.7.4 Ecosystem Conservation Partnership:	26
2.7.3.1 Extending Wildlife Preservation:	26
2.7.5 Disaster Readiness Cooperation:	26
2.7.5.1 Strengthening Preparedness:	27
2.7.6 Healthcare Engagement:	27
2.7.6.1 Enhancing Healthcare:	27
2.7.7 Urban Resilience Collaboration:	27
2.7.7.1 Increasing Urban Resilience:	27
2.7.8 Gender Inclusion Initiatives:	27
2.7.8.1 Catalyzing Women Inclusion:	27
2.8 Provincial NAP Stakeholders:	28
2.8.1 Empowering Agriculture & Water:	28
2.8.2 Strengthening Disaster Preparedness:	28
2.8.3 Enhancing Urban Resilience:	28
2.8.4 Conserving Forestry, Wildlife and Ecosystems:	28
2.8.5 Public Health Engagement:	28
2.8.6 Gender Inclusion in Provincial Development:	28
Table 2: Stakeholder Roles and Stakes in NAP process	29
2.9 Establishing a National Coordination Mechanism:	36
2.9.1 Coordination Mechanism:	36
2.9.1.1 Coordination Function:	37
2.9.2 Sectoral Coordination Mechanism:	37
2.9.2.1 Coordination Function:	38
2.9.2.2 Private Sector and Industrial Linkages:	38
2.9.3 Linking National and Sectoral Coordination:	39
Table 3: Sectoral NAP Coordination Mechanisms	39
2.10 Maximizing Stakeholder Influence:	42

2.10.1 NAP Terms.....	42
Table 4: Stakeholder Terms to influence NAP	43
2.10.2 Collective Influence:	50
2.10.2.1 Achieving Collective Influence:	50
2.10.3 Activating High-Power Stakeholders:	50
2.10.3.1 Realignment:	50
2.10.3.2 Inclusive Platforms:	50
2.10.3.3 Community Inputs:	50
2.10.3.4 Equitable Participation:	51
2.10.4 Enabling Low-Power Stakeholders:	51
2.10.4.1 Capacity Building:	51
2.10.4.2 Advocacy:	51
2.10.4.3 Localized Communication:	51
Conclusion:	52
Recommendations:	53
References:	56
Annex-1:	57
Table 1: Sector-wise Key Stakeholders for Vulnerable Sectors	57

Executive Summary:

This task report involves stakeholder mapping and analysis for the NAP process, encompassing various groups at national, provincial, and local levels. The study designs an engagement strategy to increase the impact of high-power, low-interest stakeholders and harness the interest of high-interest, low-power stakeholders.

Methodology includes stakeholder mapping, power matrix, SWOT analysis, and engagement approaches like incentivizing interests and coordination mechanisms. Results show diverse stakeholders with varying roles, interests, and expectations in climate change adaptation, ranging from technical to organizational aspects.

Recommendations emphasize governance, communication, aligning interests, monitoring, and capacity building to enhance stakeholder engagement and climate resilience efforts in Pakistan.

List of Abbreviations:

ADB - Asian Development Bank	MoST - Ministry of Science and Technology
AEDB - Alternative Energy Development Board	MoWP - Ministry of Water and Power
BGR - Bundesanstalt für Geowissenschaften und Rohstoffe (Federal Institute for Geosciences and Natural Resources)	MUET - Mehran University of Engineering and Technology
CABI - Centre for Agriculture and Biosciences International	NAP - National Adaptation Plan
CDA - Capital Development Authority	NARC - National Agricultural Research Centre
CBO - Community Based Organizations	NCSW - National Commission on Women Status
CDO - Community Development Organization	NDMA - National Disaster Management Authority
DMC - Disaster Management Cycle	NDMP - National Disaster Management Plan
EIA - Environmental Impact Assessment	NDRMF - National Disaster Risk Management Fund
EPA - Environmental Protection Agency	NDA - National Designated Authority
EU - European Union	NEECA - National Energy Efficiency and Conservation Authority
FAO - Food and Agriculture Organization	NEQS - National Environmental Quality Standards
FFC - Federal Flood Commission	NFDC - National Fertilizer Development Centre
FSC&RD - Federal Seed Certification & Registration Department	NVL - National Veterinary Laboratory
FWD - Provincial Forestry and Wildlife Departments	Pak-EPA - Pakistan Environmental Protection Agency
FWMC - Federal Water Management Cell	PASSCO - Pakistan Agricultural Storage & Supply Corporation
GCISC - Global Change Impact Studies Centre	PBS - Pakistan Bureau of Statistics
GIS - Geographic Information System	PC - The Planning Commission (under the Ministry of Planning, Development and Reform)
GLOF-I - Glacial Lake Outburst Floods - Phase I	PCRWR - Pakistan Council of Research in Water Resources
GLOF-II - Glacial Lake Outburst Floods - Phase II	PDMA - Provincial Disaster Management Authority
HUD - The Housing and Urban Development	PMD - Pakistan Meteorological Department
IATI - In-Service Agriculture Training Institutes	PCCA - Pakistan Climate Change Authority
IEE - Initial Environmental Examination	PEC - Pakistan Engineering Council
IUCN - International Union for Conservation of Nature	PEPC - Pakistan Environmental Protection Council
JICA - Japan International Cooperation Agency	PHED - Public Health Engineering Department
KPCSW - Khyber Pakhtunkhwa Commission on Status of Women	PPRA - Public Procurement Regulatory Authority
LG&RD - Local Government and Rural Development	PDMAs - Provincial Disaster Management Authorities
LGRDD - Local Government Elections and Rural Development Department	PEPA - Pakistan Environmental Protection Act
P&DD - Provincial Planning and Development Department Department	SBP - State Bank of Pakistan
MOCC - Ministry of Climate Change	SRP - Sustainable Rice Platform
MoC - Ministry of Communications	SCP - Sustainable Consumption and Production
MoCC - Ministry of Climate Change	UN - United Nations
MoE - Ministry of Energy	UNDP - United Nations Development Programme
MoFE&PT - Ministry of Federal Education and Professional Training	UNICEF - United Nations Children's Fund
MoHR - Ministry of Human Rights	UNIDO - United Nations Industrial Development Organization
MoHW - Ministry of Housing and Works	WAPDA - The Pakistan Water and Power Development Authority
MoIB - Ministry of Information and Broadcasting	WASA - Water and Sanitation Agency
MoNFS&R - The Ministry of National Food Security & Research	WASH - Water, Sanitation, and Hygiene
MoNHSR - Ministry of National Health Services and Regulations	WDD - Women Development Department
MoPD&SI - Ministry of Planning, Development and Special Initiative	WMO - World Meteorological Organization
	WWO - Women Welfare Organization

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This collective effort has laid the foundation for a robust and inclusive NAP process that will enable Pakistan to effectively address the challenges posed by climate change, protect our vulnerable communities and ecosystems, and build a sustainable and climate-resilient future.

We look forward to continued collaboration and partnership as we move forward with the implementation of the NAP, turning these strategies into impactful actions that benefit our country and its people.

Thank you for your unwavering commitment and support to a climate-resilient Pakistan.

Waseem Gulzar
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Ministry of Climate Change
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1. Mapping and Engagement Strategy

The first step towards national adaptation planning process is the stakeholder mapping and engagement. It is crucial to analysis of the stakeholder groups with power and interest in advancing the NAP process at the national and local level in Pakistan. The mapping leads to identifying statutory roles and functions as per acts and governance legislation defined by the constitution of Pakistan. The engagement strategy takes into account existing roles of the stakeholders with high power but low interest and design the engagement process in a way which increases the interest and positive impact of their institutional influence for the stakeholders with high interest but low power. The design of the engagement strategy increases the collective impact of the both stakeholder groups.

Aim:

This task aims to develop mapping and analysis of the stakeholder groups with power and interest in NAP process. The scope of the task encompasses to design effective engagement of all relevant stakeholder individuals and groups in government, private sector at national, provincial and local level.

Objectives:

There are two major objectives of the task;

- 1- Do stakeholder mapping and analysis of the stakeholder groups with power and interest in the national adaptation planning process.
- 2- Design an engagement strategy to increase the interest and positive impact of the stakeholders with high power for the stakeholders with high interest to increase the collective influence of both stakeholder groups.

Methodology:

The comprehensive methodology draws on key stages undertaken as follows;

1. **Stakeholder Mapping** –involves identifying and categorizing key government stakeholders responsible for highly vulnerable areas to climate change impacts such as water resources, agriculture and livestock, health, forestry and biodiversity, gender, disaster and urban management sectors.
2. **Stakeholder Analysis** - involves researching and identifying roles of the key stakeholders with power responsible for vulnerable sectors of the economy, analyzing their roles by linking to the core organizational functions, evaluating their interest, influence and integral relationships, providing their valuable insights to further imply their roles, power and interest, and inform the design of the engagement strategy.
3. **Stakeholder Power Matrix** – the matrix analysis determines stakeholder institutional power based on their inherent and auxiliary roles in policy formulation, planning and financing, and implementation in the form of four quadrants grouping them as high interest - high power, low interest - high power, high interest - low power, and low interest – low power.
4. **A strengths, weaknesses, opportunities and threats (SWOT) Analysis** – is based on influence of the stakeholder groups with power and interest in national climate change profile of Pakistan. The SWOT draws on primary information from consultations and secondary literature to determine strengths and weaknesses, and opportunities and threats related to

climate change risks and vulnerabilities context of Pakistan. The analysis relates how the stakeholders internalize strengths and opportunities to potentially overcome weaknesses and minimize threats under climate context of the country.

5. **Designing Engagement Strategy**- a step-wise process describes the strategy to plan and execute the NAP process in Pakistan. It starts with defining clear objectives for stakeholders in the engagement process, outlining the essentials of engagement strategy, such as, aims and functions of government organizations at federal and provincial level, their roles pertinent to their stakes in climate change, and incentives for key national and provincial stakeholders with power in NAP process.
6. **Incentivizing Interests**– a comprehensive analysis presents how to incentivize the interest-based roles of the stakeholders with power at federal and provincial level highlighting their organizational interests, goals, and functional roles to inform a comprehensive coordination mechanism.
7. **Outlining a Coordination Mechanism** – laying a coordination mechanism to ensure an effective two-way communication across federal and provincial government entities, and emphasizing the interest-based roles in planning and implementation of NAP process to inform, establish and strengthen the NAP governance.
8. **Increasing collective influence** –a framework is developed to highlight the key stakeholders at the federal and provincial levels, their interest-based roles and responsibilities. It further develops the terms of reference (ToR) to provide clear responsibilities and roles for the NAP process by inferring individual responsibilities under coordination mechanism at the national and provincial levels.

1.1 Stakeholder Identification:

A comprehensive stakeholder mapping details key players in the NAP process at national and provincial levels. As a source point, three major national events highlight the multiple stakeholder involvement from federal and provinces since the beginning of the NAP project in 2021.

1.1.1 National Workshops:

The Ministry of Climate Change organized the first Inception Workshop to launch the NAP project on March 25, 2021. Forty-seven focal points participated from various government departments in six provinces. It aimed to address climate change vulnerability and adaptation challenges by building the resilience of communities and their livelihoods. A second Consultative Workshop was held on August 18, 2022. The same stakeholders participated in this event, which marked a continuation of efforts to advance the NAP process in Pakistan.

The third Consultative Workshop took place on October 13, 2022 to develop a strategic roadmap for the NAP process and identify eight vulnerable sectors with priority adaptation actions in vulnerable sectors. Sixty-four participants from various government entities attended, representing both national and provincial governments. As a starting point for mapping, an exhaustive list highlights identification of key stakeholders for the vulnerable sectors from the federal and provincial governments in Annex-1.

1.1.2 Mapping:

The stakeholder mapping provides the analysis based on initial identification of the federal and provincial stakeholders. This stakeholder analysis presents all the relevant key government

stakeholders. It focuses on relevance of their prime role, organizational interest and basic functions in policy formulation and the decision-making process.

1.1.3 Main Federal and National Stakeholder Roles:

The roles and functions of these primary stakeholders are elaborated below;

1- The Ministry of Planning, Development and Special Initiatives (MoPD&SI) – the Ministry role is to undertake research studies and state policy development initiatives for the economic growth and the expansion of the public and state infrastructure¹. It also works with Ministry of Finance (MoF) for development of public and state infrastructure.

2- The Ministry of Finance (MoF) - is a financial and public policy development institution of the Government of Pakistan. It develops national budgets and public sector development programme (PSDP)². The yearly PSDPs allocate funds for various development programs under all sectors of the economy in the country

3- The Ministry of Water and Power (MoWR) - deals with the matters relating to development of water resources in the country. The ministry has two divisions water and power, the latter works under the Ministry of Energy. Various federal and provincial agencies work under this ministry such as Pakistan Council of Research in Water Resources, Indus River authority, Water and Power Development Authority, federal and provincial institutions for research studies in water sector, and Pakistan transborder water organization³.

4- Pakistan Council of Research in Water Resources (PCRWR) - is mandated to conduct, organize, coordinate and promote research on all aspects of water, specifically irrigation, drainage, surface and groundwater management, groundwater recharge, watershed management, rainwater harvesting, desertification control, water quality and overall environment⁴.

5- Federal Flood Commission (FFC) - was established for the purpose of integrated flood management at national level. The FFC is mainly responsible for the preparation of National Flood Protection Plans and their implementation through concerned federal line ministries and provincial entities in the country⁵.

6- The Ministry of National Food Security & Research (MoNFS&R) - is mainly responsible for policy formulation, economic coordination and planning agriculture, livestock and fisheries. It also includes procurement of food grains and fertilizers with import price stabilization of agriculture produce, international liaison, and economic studies for framing agricultural policies. Its major national functionaries include, Pakistan Agricultural Research Council, National Agricultural Research Centre, Pakistan Agricultural Storage & Supply Corporation, and Pakistan Central Cotton Committee. Other associated federal organizations are; Federal Water Management Cell, National Veterinary Laboratory, Livestock and Dairy Development Board, Fisheries Development Board, and National Fertilizer Development Centre⁶.

7- Pakistan Agricultural Research Council (PARC) - is the apex national organization working in close collaboration with other federal and provincial institutions in the country to provide science-based solutions to agriculture of Pakistan through its statutory functions.

8- National Agricultural Research Centre (NARC) - is the premier research establishment of the Pakistan Agricultural Research Council (PARC) at the federal level. It also holds office of the country representative of Food and Agriculture Organization of United Nations⁷.

9- Federal Seed Certification & Registration Department (FSC&RD) - provides services for controlling and regulating the quality of seeds of various varieties of crops⁸.

10- Federal Water Management Cell (FWMC) - deals with irrigation water management and agriculture mechanization and helps the Ministry of Water Resources in preparation relevant

policies and strategies, preparation and implementation of development schemes pertaining to water resource development, conservation and efficient utilization through conservation technologies and mass awareness campaign. It also maintains database of available water resources (surface water, groundwater and rainwater) and develop linkages of cropping patterns at national level⁹.

11- Ministry of Climate Change (MoCC) - main role involves forming national policy, plans strategies and programmes pertinent to disaster management including environmental protection, preservation, pollution, ecology, forestry, wildlife, biodiversity, climate change and desertification. The ministry further coordinates, and ensures monitoring and implementation of environmental agreements with other countries, international agencies and forums. In addition, the Ministry involves in the process of policy formulation, coordination and reporting of urban water supply, sewerage and drainage in various communities and settlements¹⁰.

12- The Forestry Wing of Ministry of Climate Change - formulates national policy, plans, strategies and programmes on ecology, forestry, wildlife, biodiversity and desertification. It further coordinates, monitors and implements environmental agreements with other countries, international NGOs i.e. IUCN, WWF, Wetlands International. It coordinates with other departments such as PAK-EPA, GCISC, Islamabad Wildlife Management Board and Zoological Survey of Pakistan¹¹.

13- Global Climate-Change Impact Studies Centre (GCISC) - conducts climate change studies on past and projected future climatic changes in the country, their likely impacts on the key socio-economic sectors; water, food, agriculture, energy, forestry, health, and ecology, and suggests appropriate adaptation and mitigation measures¹².

14- The Ministry of Energy (MoE) - oversees overall domestic hydropower generation, petroleum and energy production by means of alternative energy sources, and energy conservation. The MoE is also responsible for overseeing the nuclear power production and civilian reactor research to meet its industrial energy demands¹³.

15- National Energy Efficiency and Conservation Authority (NEECA) - is an authority under the Ministry of Energy (Power Division) mandated for planning and coordinating all energy conservation activities and actions in different sectors. It formulates energy conservation plans such as National Energy Efficiency and Conservation Action Plan (2023-30). It also maintains a comprehensive data base¹⁴.

16- Alternative Energy Development Board (AEDB) - main function is to develop national strategy, policies and plans for utilization of alternative and renewable energy resources to achieve the targets in consultation with the Private Power Investment Board. It also acts as a forum for evaluating, monitoring and certification of alternative or renewable energy projects and products. It facilitates private investments in power generation in alternative or renewable energy resources¹⁵.

17- Ministry of Communications (MoC) - is central policy making body and administrative authority in roads infrastructure, road transportation, provision of communication link between individuals and businesses, provision of research and training to relevant stake holders and policing on national highways and motorways¹⁶.

18- Pakistan Environmental Protection Agency (Pak-EPA) - enforces the Pakistan Environmental Protection Act (PEPA) 1997 with the basic functions of approving the Environmental Impact Assessment and Initial Environmental Examination. It establishes the National Environmental Quality Standards (NEQS) with approval of Pakistan Environmental Protection Council (PEPC). It also issues certificates for establishment of environment labs¹⁷.

19- Ministry of National Health Services, Regulations and Coordination (MoNHSR&C) - has a main role to maintain and improve general public health. It regulates health sector with the enforcement of drug laws, and develops national and international coordination for the public health sector in all preventive programs¹⁸.

20- The Ministry of Human Rights (MoHR) - is mandated to review human rights situation in country including implementation of laws, policies and measures. The Human Rights Wing coordinates the activities of ministries, divisions and provincial governments. It refers and recommends investigations and inquiries in any incident of violation of human rights. It complies the legislation, regulations and practices to the international human rights agreements, and ensures their monitoring and implementation¹⁹.

21- National Disaster Management Authority (NDMA) - deals with the disaster management at national level through a Disaster Management Cycle (DMC) comprising various stages such as preparedness, mitigation, risk reduction, relief and rehabilitation. The National Disaster Management Plan (NDMP) provides one window operation during a disaster by coordinating all government ministries, respective departments and organizations, INGOs, NGOs, and UN agencies. It also functions as national contact point for Sendai Framework for Disaster Risk Reduction.

22- National Disaster and Risk Management Fund (NDRMF) - is a government-owned not-for-profit company functioning under the Ministry of Planning, Development, and Special Initiatives (MoPD&SI). It provides grant financing for projects to enhance Pakistan's climatic resilience in order to quickly respond to disasters triggered by natural hazards²⁰.

23- Pakistan Meteorological Department (PMD) - operates under World Meteorological Organization (WMO) and provides climatic information throughout Pakistan. It also provides meteorological service in the fields of hydrology, earthquake seismology and geomagnetism. It works very closely with NDMA in disaster-stricken regions²¹. It has 47 observatories in Punjab and Islamabad Capital Territory, 13 observatories in Gilgit - Baltistan and Azad Jammu and Kashmir, 17 observatories in Khyber Pakhtunkhwa, and 18 observatories in Sindh²².

24- Ministry of Housing and Works (MoHW) - formulates, monitors and implements policies, plans and programmes for the operational and sustainable management of public land properties, drainage, roads, bridges, and while ensuring safe and affordable housing²³.

25- National Commission on Status of Women (N.C.S.W.) - has a main role of promoting gender equality and women empowerment by protecting their rights. It examines and review all laws, rules and regulations, policies, programs, and measures taken by federal government for gender equality and women empowerment. It conducts research and develop collaborations with women welfare organizations, INGOs, NGOS and CSOs across Pakistan and associations with regional and international commissions and institutions²⁴.

26- Pakistan Engineering Council (PEC) - regulates the engineering sector with the key statutory function to set international standards of engineering competence and licensing, and oversee engineering institutions including registration, consulting, accreditation and establishing standards for engineering products and services. It provides advisory to the government at the federal and provincial level by participating in commissions, committees and advisory bodies, and conducting technical enquiries and providing remedial measures on mega projects²⁵.

27- Pakistan Bureau of Statistics (PBS) - is responsible for collection, compilation and dissemination of reliable and timely statistical information to the policymakers, planners and researchers by publishing primary and secondary data and reports on economic and social aspects

such as the Compendium on Environment Statistics of Pakistan report provides periodic statistics and secondary data collected from different departments and organizations²⁶.

28- Ministry of Science and Technology (MoST) - formulates Pakistan's science policy. The main function includes planning, coordination and directing of efforts to initiate and launch sustainable scientific research and technological programs as well as projects aimed at economic development. This involves human-resource development, transfer of technology from R&D institutions and universities to industry in areas such as health, technologies, new materials, biotechnology, textiles, and pharmaceuticals²⁷.

29- Ministry of Federal Education and Professional Training (MoFE&PT) – forms and implements education policies, plans, programs and reforms to ensure the accessibility and availability of education to ensure universal literacy by focusing national attention on education such as gender parity and climate change. It enforces rules and laws on all educational institutions²⁸.

30- Ministry of Information and Broadcasting (MoIB) - formulates and implements policies, laws, rules and regulatory framework concerning the print and electronic media and the news agencies. It serves as a bridge between the government, media and the people. It also provides policy guidelines to the state electronic media²⁹.

31- The Food and Agriculture Organization (FAO) - is a specialized agency of the United Nations that leads international efforts to defeat hunger. The FAO goal is to achieve food security³⁰.

32- Centre for Agriculture and Biosciences International (CABI) - in Pakistan was established in 1957, and coordinates CABI activities in Central and Western Asia. The center works to help farmers in the region increase yields, improve the quality of crops and access markets, in a sustainable, environmentally-sensitive way³¹.

33- State Bank of Pakistan (SBP) - has primary role in ensuring stability of the financial sector and promoting individual financial institutions; functioning of payment systems. It regulates the monetary and credit system of Pakistan³².

1.1.4 Main Provincial Stakeholder Roles:

1- The Provincial Disaster Management Authority (PDMA) - specializes in mitigation, preparedness and an organized response to a disaster at the provincial and local level. It oversees search, rescue and evacuation of the affected people, and takes measures to provide immediate relief, early recovery and long-term rehabilitation for the affected communities³³.

2- Agriculture Departments - in all provinces have major roles in legislation, policy formulation and sectoral planning. Their roles include; adaptive research, training and research activities in agriculture, livestock, irrigation, water management, forest and fisheries sectors³⁴. They implement innovative agricultural practices and water management methods, diseases and pest control, soil fertility and conservation, mechanization in land-use, making agriculture sector export oriented, increase productivity of major crops and livestock, and fisheries in provinces of Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan³⁵.

3- Provincial Irrigation Departments – work under Ministry of Water Resources and provide irrigation for agriculture sectors in Punjab, Sindh, Khyber Pakhtunkhwa, Balochistan, Azad Jammu and Kashmir, and Gilgit-Baltistan³⁶. These departments are responsible for operation and maintenance of the irrigation and flood protection system, regulation of flows of River Indus and canal systems, covering inter-provincial and intra-provincial systems³⁷.

4- Provincial Food Departments – in each province ensure provision of quality flour, wheat, rice, and sugar through rationing. They control pricing of these items through supply and demand by ensuring fixed or minimum guaranteed price of these produce³⁸.

5- Pakistan Agricultural Storage & Supply Corporation (PASSCO) - is a government-owned company working at national level in the storage sector of agriculture commodities in the country, under administrative control of Ministry of National Food Security and Research³⁹.

6- Provincial EPAs - have main roles to take measures to promote research and the development of science and technology to prevent pollution, protection of the environment and sustainable development. They also identify the needs for, and initiate legislation in various sectors of the environment⁴⁰.

7- Local Government Elections and Rural Development Departments (LGRDD) - in Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan manage and improve the municipal infrastructure and services. They are responsible for enforcement of municipal laws and regulations, and formulation and promulgation of public policy, guideline for issues of civil rights, and updating laws, rules and regulations for working of the local government departments⁴¹.

8- Provincial Planning and Development Departments (P & DD) - in all provinces have the mandate to formulate policy level inputs and implement provincial and sectoral development policies in the province. They also appraise the development projects of all the provincial departments⁴².

9- The Housing and Urban Development (HUD) and Public Health Engineering Departments (PHED) – Their role is to provide safe drinking water in brackish, barani and areas where ground water is not suitable for drinking. The main function is to execute sewerage and drainage schemes, and construction of sewage treatment plants for pollution free living⁴³. EPA performs this role in Gilgit Baltistan⁴⁴.

10- The Pakistan Water and Power Development Authority (WAPDA) – has the main role to provide efficient and sustainable management of water and power resources in all provinces. It provides planning and execution of projects for generation, transmission and distribution of power; irrigation, water supply and drainage; and prevention of water logging and reclamation of saline land to strengthen the agriculture sector.⁴⁵

11- Water and Sanitation Agency (WASA) – is responsible for planning, designing, development and maintenance of water supply sewerage and draining system in major cities of all provinces. It works under PHED departments⁴⁶.

12- Provincial Forestry and Wildlife Departments - are basically responsible for management, preservation, conservation of forests, wildlife, biodiversity and sustainable habitats in all provinces⁴⁷.

1.2 Stakeholder Power Matrix:

An analysis of the stakeholder power and interest is essential for effective climate change adaptation planning and implementation. For the NAP process a stakeholder power matrix provides the dynamics of stakeholder roles by analyzing and categorizing power and interest. It combines stakeholder roles in groups to assess their collective influence. It helps group stakeholders in four quadrant matrix representing high power - high interest, high power - low interest, low power - high interest, and low power - low interest to contribute and influence the NAP process.

1.2.1 High Power - High Interest:

This group consists of stakeholders having significant authority and resources, with a deep interest in climate change adaptation. Their roles are pivotal in planning and implementing climate adaptation policies and strategies at both the national and provincial levels.

1- Climate Change Council - The group is represented by the Pakistan Climate Change Council that consists of entities like key ministries such as Ministry of Climate Change, Ministry of Water Resource, and Ministry of National Food Security, Ministry of Health, National Disaster Management Authority, national research organizations, environmental protection agencies, and international organizations.

The group has more directly related ministries, government departments and national research institutions such as Pakistan Council of Research in Water Resources, Federal Flood Commission, Federal Water Management Cell, Pakistan Meteorological Department, Pakistan Environmental Protection Agency, Pakistan Water and Power Development Authority, and Alternative Energy Development Board.

2- Strategic Roles - The stakeholder consultation shows that these stakeholders not only have the power to influence decisions but also a high motivation for advancing NAP process due to the critical nature of their roles. The findings from stakeholder consultations highlight that the Ministry of Planning and Development, and Ministry of Finance have higher power to engage stakeholders in the matters of national interest.

3- Interest-based Involvement - Although, these ministries have shown considerable interest in climate change adaptation. However, the role of MoPD needs to be aligned to planning and development in NAP process and adaptation implementation. The PMD role needs to be reassessed and more aligned to regular data generation on local climate change and provision to Ministry of Climate Change. The National and Provincial Disaster Management Authorities hold significant power in managing disasters and are highly interested in climate adaptation to enhance disaster preparedness.

4- Group Role - The role of this group is to ensure effective engagement of all stakeholder groups in NAP process for adaptation implementation at all levels.

1.2.2 High Power - Low Interest:

1- Group Influence - This group has substantial authority and resources but have a relatively lower level of interest in climate adaptation. Ministries like Communication, Housing and Works Science and Technology, Energy, Information and Broadcasting, as well as regulatory bodies like the Pakistan Engineering Council, Pakistan Bureau of Statistics and State Bank of Pakistan fall into this group.

2- Indirect Involvement - The group has the capability to impact the NAP process, but their primary focus is forming policies with national development and infrastructure, and research and data dissemination which may not align closely with climate adaptation.

3- Mandated Roles - As an inference from stakeholder consultation, the Ministry of Energy has substantial power due to its control over energy policies and its primary focus is energy-related issues with higher interest in energy conservation but low interest in broader climate adaptation concerns in non-renewables. Similarly, Ministry of Federal Education and Professional Training has high power in education matters but relatively low interest in climate adaptation as its core responsibility lies in education.

4- Group Role - Hence, the role of this group needs a specific engagement strategy to ensure their mandated roles, participation and support aligned to NAP process.

1.2.3 Low Power - High Interest:

1- Core Climate Group - This group has more of research and development, and implementation roles comprising of Ministry of Climate Change, Ministry of Human Rights, Global Change Impact Studies Centre, National Agricultural Research Centre, Pakistan Agriculture Research Council Federal Seed Certification & Registration Department, Centre for Agriculture and Biosciences International, National Veterinary Laboratory, Pakistan Agricultural Storage & Supply Corporation, Local Government Elections and Rural Development Department, National Commission on Women Status, and International Organizations.

2- Group Influence - This group has a strong interest in climate adaptation but may not have significant power or resources. Consultations show that the Ministry of Climate Change has higher interest to shape climate adaptation policies and strategies at the national level and government departments in provinces, but it does not have power to engage stakeholders across the country. Ministry of Human Rights has great interest in protecting civil and gender rights across the country but has no power to ensure human safety rights from climate impacts. Similarly, National Commission on Women Status is concerned with gender equity in climate change but has no power to influence the policies and their implementation. At national level, the Pakistan Council of Research in Water Resources has mandate to conduct climate research but no power to influence policy or engage stakeholders.

3- Provincial Involvement - Similarly in provinces, the Pakistan Agricultural Storage & Supply Corporation, as well as organizations like Women Development Departments, Women Welfare Organizations, Civil Societies, and national media have limited formal power but are deeply interested in climate adaptation due to their advocacy for vulnerable communities. These stakeholders are enthusiastic about climate adaptation but need support and collaboration with higher-power stakeholders to effectively contribute to the NAP process. For instance, Women Development Department has low influence but has keen interest in gender-responsive adaptation reflecting the interests of marginalized women. Local Government Elections and Rural Development Department has limited power and interest in climate adaptation as its primary responsibilities are electoral and rural development. Public Procurement Regulatory Authority deals mainly with procurement regulations and might have little power or interest in climate adaptation topics.

4- Group Role - All these government entities can play vital role in coordinating with each other to bring vulnerable communities and women, regional climate issues and challenges to stakeholders with power and suggesting way forward to find adaptation resolve.

1.2.4 Low Power - Low Interest:

1- Public Outreach - Provincial agriculture departments, irrigation departments, water and sanitation authorities, development authorities in Islamabad, Lahore, and Karachi, local government and rural development departments, academia and local media are the primary stakeholder in this group. They have limited power and resources and may not be deeply interested in climate change adaptation.

2- Group role - However, they can still play a collective role in disseminating information and raising public awareness, even though their direct influence on policy decisions is minimal.

1.2.5 Effective Group Involvement:

1- Increased Influence - The stakeholder power matrix helps identify power and interest of stakeholder groups that can help ensure effective influence of all stakeholder groups, ensuring that all relevant stakeholders are actively involved in advancing the NAP process. Increasing the collective influence of stakeholders with high power and low interest involves alignment of their roles and responsibilities with the interests and needs of stakeholders with low power and high interest.

2- Realigned Group Roles - Their roles and responsibilities can be reframed to ensure active support to enable the participation of marginalized stakeholders. For instance, the Ministry of Climate Change can implement PCCA for effective NAP governance, Ministry of Planning and Development can do adaptation inclusive planning and development, Ministry of Finance can develop innovative NAP financing through Public Finance Management, Ministry of National Food Security could work closely with national agriculture government entities for implementation of adaptation practices at local levels, and Ministry of Energy could expand its role from developing energy-related policies to align with the interests of most affected vulnerable communities by promoting inclusive energy access.

1.3 A Strength, Weakness, Opportunity and Threats (SWOT) Analysis:

The stakeholder power matrix provides a strategic direction as a planning tool that helps to identify the strengths, weaknesses, opportunities and threats in national climate change climate change context. The climate context is based on the premise that Pakistan is one of the most vulnerable countries to the impacts of climate change, such as intense flooding, drastic change in rainfall patterns, increased temperature, reduced agriculture productivity, increased health risks and climate change induced migration. This situation analysis is based on the literature review of the adverse impacts and beneficial coping efforts and primary information from stakeholder consultations.

1.3.1 Impact Factors:

The SWOT analysis highlights factors that could affect NAP process positively or exacerbate the existing climate situation. Important factors contribute such as stakeholder power matrix groups (the implementing entities and vulnerable sectors and communities) who are affected and interested, and groups who can influence the decision making and policies (government ministries) to reduce vulnerabilities and form comprehensive medium and long-term plans. Similarly, analysis of the stakeholders with power and interest in the climate change context and their effective engagement can serve a baseline for SWOT analysis for advancement of the NAP process in Pakistan. Table-1 presents a comprehensive SWOT analysis of the climate change context as follows;

Table 1: SWOT Analysis for National Adaptation Planning Process

Strengths	Weaknesses
– Pakistan has a National Climate Change Policy 2012 and a Framework for	– Pakistan faces challenges in finance, capacity building and technology

Implementation of NCCP 2013, which serve as baseline policy documents for adaptation and mitigation.	transfer for implementing the NAP process ⁴⁸ .
– Pakistan has enacted the Pakistan Climate Change Act 2017, which establishes a Climate Change Council and a Climate Change Authority to oversee and coordinate climate action.	– Pakistan is awaiting implementation of PCCA and approval of international funding from the Green Climate Fund.
– The Government of Pakistan has submitted a request for GCF funding to develop the NAP.	– Limited progress has been made toward implementation of the actions identified in the NAP process.
– Pakistan has initiated several adaptation actions in key sectors such as water resources, agriculture and livestock, human health, forestry, biodiversity and disaster preparedness.	– Pakistan has limited and unreliable data and information on climate vulnerabilities, risks and costs, especially at the sub-national and local levels.
– Pakistan has a strong network of civil societies and media that can raise awareness and mobilize public support for climate action.	– Pakistan has a complex political and institutional landscape that may hinder effective coordination and collaboration among different stakeholders.
– The government has the mandate and authority to lead and coordinate the NAP process, as well as to implement adaptation policies and actions.	– The government faces resource constraints and institutional barriers to effectively plan and deliver adaptation services for the NAP process.
– The private sector has the potential and interest to invest in adaptation opportunities and innovations, as well as to contribute to the national economy and development.	– The private sector lacks incentives to participate in the NAP process that could mainstream adaptation into their business operations.
– The government organizations (MoHR, NCWS) and CSOs have the experience and expertise to work with vulnerable communities and sectors, as well as to advocate for their rights and needs.	– The government organizations and civil society have limited access and influence on the decision-making processes and platforms for an inclusive NAP process.
– The academia has the knowledge and capacity to research, generate and disseminate scientific information and evidence on climate change impacts, vulnerabilities and adaptation options.	– The academia has weak linkages and collaboration with the government and the private sector, to ensure the relevance and uptake of their research outputs for the NAP process.
– The national and state media has the outreach to influence and raise public awareness on understanding of climate change issues and solutions, as well as to hold accountable the actions and performance of key stakeholders.	– The media has insufficient skills and resources to report accurately and effectively on climate change topics, especially on adaptation.

– The international partners have the access and availability of financial and technical support to assist Pakistan in its NAP process and implementation.	– The international partners have diverse agendas and expectations that may not align with Pakistan’s national priorities and circumstances.
Opportunities	Threats
– Pakistan can leverage its existing policies, strategies and action plans to mainstream adaptation into national development planning.	– Pakistan may face increased frequency and intensity of extreme weather events that could overwhelm its adaptation planning and policies and require continuous updating.
– Pakistan’s has extensive arid and semi-arid areas, mountain ranges and glaciers, and excessive monsoon rainfall in coming years which can be capitalized for enhanced agriculture, water storage and increased forestry, and biodiversity cover and ecosystems preservation.	– Pakistan’s extensive arid and semi-arid areas, frequent exposure to natural hazards, and significant dependence on monsoon rainfall and the glacier-fed Indus Basin make it extremely vulnerable to climate change⁴⁹.
– Pakistan can access international funds and technical assistance that could provide support for the NAP process and adaptation implementation. The role of the Ministry of Overseas Pakistanis and Human Resource Development can be seen as potential collaborator for NAP process financial outreach.	– Pakistan faces technical capacity issues to access international financing halting adaptation in water and agriculture that could cause and flare conflicts and tensions over scarce water resources and food insecurity due to climate change impacts on transboundary rivers.
– Country has more than 65% youth populace⁵⁰ with half comprising females with limited skills and education which can be capitalized to boost economic growth in various sectors of the economy such as agriculture. Employment generation can develop sense of education and awareness.	– The country’s socioeconomic circumstances and persistent gender inequality may increase with gender exclusion from main sectors of the economy, hence slowing economic growth, increased weak governance and HR capacity, with rapidly growing population⁵¹.
– Pakistan can enhance its gender equality and youth engagement by ensuring their participation and representation in the NAP process.	– Pakistan may face social and economic challenges due lack of opportunities, increased climate-induced migration and displacement of vulnerable populations⁵².
– Pakistan can achieve multiple co-benefits by aligning its NAP process with its Sustainable Development Goals (SDGs) objectives.	– Pakistan may face resistance and opposition from some powerful stakeholders who have political interests in unsustainable future.
– The government can leverage its existing policies, strategies and action plans to	– The government may face lack of organizational support, political instability and security risks that could

mainstream adaptation into national development planning and budgeting.	undermine the commitment to the NAP process.
– The NAP process can reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience. And Government can facilitate country-driven action ⁵³ .	– Government may face setbacks to persuade all stakeholders involved due to varying interests therefore lacking effective engagement to follow through the outcomes of the NAP process.
– The private sector can benefit from engaging in the NAP process by identifying new markets, materials, products and services that are resilient to climate change impacts.	– The private sector may face regulatory uncertainty and market volatility that could discourage its involvement in adaptation initiatives.
– The civil society can enhance its role in the NAP process by strengthening its networks and partnerships with other stakeholders, especially at the sub-national and local levels.	– The civil society may face legal restrictions and social pressures that could limit its space and voice in the NAP process.
– The academia can improve its contribution to the NAP process by conducting demand-driven and policy-relevant research that addresses knowledge gaps and informs decision-making.	– The academia may face quality issues and ethical dilemmas that could compromise its credibility and integrity in the NAP process.
– The media can increase its impact in the NAP process by developing professional standards and capacities for climate change reporting, as well as by engaging with diverse sources and audiences.	– The media may face censorship and competition that could constrain its freedom and effectiveness in the NAP process.
– The international partners can support Pakistan’s NAP process by providing flexible and predictable funding, as well as by sharing best practices and lessons learned from other countries.	– The international partners may impose conditionalities and requirements that could affect Pakistan’s ownership and sovereignty over its NAP process.

2. Essentials for Stakeholders Engagement:

An effective engagement strategy for the NAP process aims to align key stakeholder organizational aims, missions, and policy goals, for decision-making to maximize their interest and incentive for positive impact. The alignment of stakeholder roles and interests is necessary to integrate planning and implementation functions of the federal and provincial entities inside the NAP process at different levels.

2.1 Coordination Needs:

This gives rise to the need for a country wide coordination mechanism. The stakeholder coordination mechanism ensures a two-way flow of information, by the flow of policies and frameworks from federal to provincial governments, and feedback inputs reporting flow from local to provincial and provincial to federal governments. This communication is the two-way alignment

of national priorities with local commitments. It also ensures successful governance of the NAP process. To further ensure a successful engagement, developing a stakeholder engagement strategy and its implications for two-way communication are also essential elements of engagement to share results and informed decision-making for future climate needs.

2.2 Designing Engagement Strategy:

A well-designed stakeholder engagement strategy hinges on mapping of the key stakeholders involved in national development planning and implementation. It begins with analyzing the interest-based roles of the stakeholders in national adaptation planning in the context of climate change at federal and provincial levels, while aligning their interests to incentivize their relevant contributions. The strategy sets the stage for planning NAP activities involving stakeholders at all levels. It fosters collaboration to gather crucial information and adaptation data for identifying gaps and constraints. It also assesses capacity needs to enhance awareness and knowledge on climate issues. The forthcoming sections elaborate on the design of this stakeholder engagement strategy, outlining essential steps.

2.3 Engagement Approaches:

Stakeholders have vital interests, which they meet through two approaches: rights-based and incentive-based.

1- The rights-based approach - is used in adaptation planning for vulnerable communities and biodiversity through litigation processes. Studies from various countries show that an effective engagement is linked to transformative change, enhancing climate resilience in various economies, public and private sector, and cities and towns⁵⁴.

2- Incentive-based approach - aligns stakeholders' interests, goals, and expectations, improving their participation and enabling better response to climate change. Tangible incentives for central stakeholders forming policies include agreements, workshops, exposures visits and capacity trainings, and project management units, while those implementing these policies in local governments benefit from learning opportunities like capacity workshops, field visits, trainings and other tangible opportunities⁵⁵.

2.4 Core Group:

The stakeholder mapping analyzes the roles and interests of key federal and provincial stakeholders in national adaptation planning process. In this, the Ministry of Climate Change takes a central role in engaging these stakeholders, with the Pakistan Climate Change Authority (PCCA) and the Pakistan Climate Change Council (PCCC) for steering the NAP process at the national level. The PCCA oversees coordination, policy alignment, resource mobilization, and progress monitoring. It comprises 26 official and 20 non-official members, including federal ministers from various key ministries, including particularly the federal ministers from the Ministry of Planning Development and Special Initiatives, the Ministry of National Food Security and Research, the Ministry of Water and Power, the Ministry of Energy, Ministry of Science and Technology, and the Ministry of Foreign Affairs.

2.5 Technical Groups Formation:

The PCCA designates six specialized technical groups to effectively manage various aspects of the NAP process. These groups are responsible for specific tasks, including steering the NAP process at the national level, addressing climate change science, vulnerability and risk assessment, prioritizing actions with a focus on capacity building, managing climate information systems, integrating the NAP process into national planning and development, securing financing for climate change adaptation, and overseeing monitoring and evaluation efforts. Each technical group operates in alignment with its responsibilities, bringing together the functions of relevant federal and national institutions. This collective effort ensures the successful advancement of the NAP process in Pakistan, facilitating comprehensive and coordinated actions across various domains of adaptation planning.

2.5.1 PCCC's Influence:

The Pakistan Climate Change Authority (PCCA) plays a pivotal crosscutting role in engaging key stakeholders within the Pakistan Climate Change Council (PCCC). The PCCC holds the potential to exert influence on the relevant ministries, such as the Ministry of Planning Development and Special Initiatives, Ministry of National Food Security and Research, Ministry of Water and Power, Ministry of Energy, and Ministry of Science and Technology. This influence can be leveraged to promote and enhance coordination and cooperation among these ministries, fostering a more cohesive approach ensuring a unified effort in steering NAP process at national and provincial level.

2.5.2 NAP Steering:

The roles of the Pakistan Climate Change Authority and Pakistan Climate Change Council are crucial in facilitating the active involvement of the representative ministries in planning and shaping policies related to all vulnerable sectors with a climate change adaptation focus. They can play a pivotal role in crafting effective policy directions and ensuring their implementation.

2.5.2.1 Strategic Guidance:

With strategic guidance and coordination, these entities can ensure that the National Adaptation Plan (NAP) process aligns with national climate policies and effectively tackles Pakistan's climate challenges. By fostering collaboration and assigning responsibilities to all key stakeholders, they can steer the NAP process at the national level, promoting a cohesive and coordinated approach through cohesive technical groups.

2.5.3 Climate Data:

The technical group focusing on Climate Change Science, Vulnerability and Risk Assessment (VRA), and prioritization of actions can harness scientific expertise to assess vulnerabilities and risks, document knowledge, and shape crucial climate change themes at the local level.

2.5.3.1 Climate Information System:

The group can establish a Climate Information System that guides priority-setting for climate adaptation. Research institutions like the Global Change Impact Studies Center (GCISC), Pakistan Meteorological Department (PMD), academia, the National Disaster Management Authority (NDMA), and provincial governments can play pivotal roles in this group.

2.5.3.2 Data Collaboration:

Group efforts can contribute to evaluating climate challenges and building a robust scientific foundation for climate adaptation, including capacity-building initiatives. With significant influence, this group can foster the interests of relevant departments at the provincial level, facilitating effective dissemination and communication of climate data through entities like PMD, NDMA, Ministry of Information and Broadcasting, Ministry of Federal Education and Professional Training, and state media. This collaboration ensures that accurate and up-to-date climate information is readily accessible for informed decision-making on climate adaptation.

2.5.4 Streamlining NAP:

The technical group is responsible for streamlining the NAP process within the planning and development sector which is led by the Ministry of Planning Development and Special Initiatives. This group can collaborate with national partners, including the Ministry of Housing and Works, the Pakistan Environmental Protection Agency, and the Pakistan Engineering Council. Their primary objective is to cohesively integrate climate adaptation considerations into national planning and development processes.

2.5.4.1 Role Alignment:

This group role integration involves aligning various development activities, initiatives, programs, and projects at the national, provincial, and local levels. This can be achieved by aligning the roles of these stakeholders with adaptation interventions that align with their organizational goals and objectives in the medium and long term. The Ministry of Climate Change can effectively integrate adaptation interests into the planning processes of the Ministry of Planning Development, thereby enhancing the overall streamlining of the NAP process.

Additionally, the advisory and auxiliary roles played by the Pakistan Engineering Council and the Pakistan Environmental Protection Agency are crucial, especially in assessing and ensuring the feasibility of construction projects, thus safeguarding the integrity of development planning.

2.5.5 Climate Financing:

The technical Group dedicated to financing Climate Change Adaptation plays a pivotal role in facilitating the flow of climate change adaptation financing and generating opportunities in collaboration with public institutions. Its primary responsibility is to secure and efficiently allocate the financial resources needed for the implementation of climate change adaptation initiatives, ensuring that sufficient funding is available for National Adaptation Plan (NAP) projects.

2.5.5.1 Finance Mobilization:

This group can work closely with institutions such as the Ministry of Finance, Ministry of Planning Development and Special Initiatives, National Disaster Risk Management Fund (NDRMF), Pakistan Climate Change Fund, the Ministry of Foreign Affairs, State Bank of Pakistan, and the banking sector. Similarly, with considerable influence, this group has the power to engage and involve all levels of government, including national, federal, provincial, and local authorities, in the financing and implementation of adaptation interventions throughout the country.

2.5.6 NAP Evaluation:

The Monitoring and Evaluation group plays a critical role in ensuring the effectiveness and progress of the National Adaptation Plan (NAP) through data collection, sectoral analyses, and

evidence-based decision-making. This group establishes a comprehensive framework for monitoring and evaluating climate adaptation efforts, ensuring they stay on course and yield positive results.

2.5.6.1 M&E Expertise Pool:

The group brings together expertise from the Pakistan Climate Change Authority, the Global Change Impact Studies Center (GCISC), and the Pakistan Bureau of Statistics, forming a collaborative effort. Together, they can play a pivotal role in analyzing data, assessing climate change vulnerabilities, and evaluating the success of adaptation interventions, ultimately establishing a functional monitoring and evaluation system.

2.6 Climate Coordination:

Under the Pakistan Climate Change Act (2017), the Ministry of Climate Change has been entrusted with the leadership role of convening all stakeholders at federal, national, provincial, and local government levels to advance adaptation planning in Pakistan. The Ministry has a central cross-cutting role in stakeholder engagement across national, provincial, and local levels. The Ministry serves as a linchpin for coordinating the interests of various stakeholders, making it a pivotal force in national adaptation efforts for all vulnerable sectors by taking into consideration a range of coping strategies that align with the primary interests of relevant ministries and their line provincial and local government departments.

2.6.1 Stakeholder Incentives:

This approach enhances stakeholder incentives collectively by addressing mutual interests among the key stakeholders. The secondary information collected from websites, and policy and research documents of ministries and provincial governments, and stakeholder consultations present and validate these interests. It is important to incentivize all national stakeholders by aligning their roles and interests to NAP process. The following sections elaborate on the engagement strategy of the Ministry of Climate Change with major stakeholders, tailored to their organizational goals and plans, thus incentivizing their core interests.

2.7 National Stakeholder Engagement:

Engaging the Ministry of Planning Development and Special Initiatives (MoPD&SI) alongside the Ministry of Finance (MoF) at the federal level is crucial due to their significant authority and influence. MoPD&SI can provide policy guidance on planning and development, while MoF plays a pivotal role in resource mobilization for climate change programs and projects.

2.7.1 Incentivizing MoPD and MoF:

Both ministries in tandem have active participation in climate change initiatives, including joint missions, stakeholder workshops, and national consultations on the NAP process, demonstrates their commitment. They have appraised projects with adaptation measures and allocated financing for sectoral projects nationwide. Consultation shows that MoPD has a climate change cell and a focus on the climate resilience, particularly in vulnerable sectors, such as water resources, agriculture and livestock, renewable energy, urban resilience, and gender inclusion. It further elaborates that MoPD and MoF interests align with NAP objectives. Incentivizing their

involvement in the NAP process can effectively address these sectors' adaptive capacity and enhance climate change resilience⁵⁶.

2.7.2 Water Resource Collaboration:

The Ministry of Water and Power's primary interest lies in water resource development, including conservation, rainwater harvesting, and flood adaptation, while also managing the vital sectors of agriculture and domestic consumption. Collaborating with the Ministry of Energy, federal and provincial agencies, and institutions such as the Water and Power Development Authority and Pakistan Council of Research in Water Resources can enhance national adaptation planning, focusing on water resource conservation, early warning systems, integrated water resource management and rehabilitation in climate-vulnerable regions.

2.7.2.1 Policy Partnership:

Additionally, partnering with institutions like the National Energy Efficiency and Conservation Authority and the Alternative Energy Development Board can address energy supply and demand needs in agriculture, promote energy conservation, and enhance adaptive capacity in the country.

2.7.3 Food Security Engagement:

The Ministry of National Food Security and Research, along with line ministries and provincial governments, can collectively engage and collaborate with federal and provincial departments and research organizations for national adaptation planning in agriculture.

2.7.3.1 Inclusive Food Security:

It can formulate policies, partner with institutions like PARC and NARC for climate assessments, development of resilient crops, efficient water management, and post-harvest loss reduction. Ministry engagement with organizations like PASSCO, PCCC, FAO, CABI and FWMC, and others with a community focus and gender mainstreaming by recognizing women's role in agriculture enhances food security planning.

2.7.4 Ecosystem Conservation Partnership:

The Ministry of Climate Change formulates national policies and frameworks for climate change impacts, including disaster management, urban water supply, environmental protection, forestry, biodiversity, and drought. It collaborates with federal and provincial entities, such as the Forestry Wing, Provincial Forest Departments, Pakistan Environmental Protection Agency (Pak-EPA), Global Climate-Change Impact Studies Centre and its agencies to create a comprehensive adaptation framework.

2.7.3.1 Extending Wildlife Preservation:

Engagement with organizations like Islamabad Wildlife Management Board and Zoological Survey of Pakistan supports wildlife preservation. International NGOs like IUCN, WWF, and Wetlands International can also be involved for planning and implementation in the NAP process.

2.7.5 Disaster Readiness Cooperation:

The National Disaster Management Authority (NDMA) plays a pivotal crosscutting role in addressing climate change impacts in Pakistan. It focuses on disaster management, early warning systems, and relief efforts, while collaborating with various stakeholders including government

ministries, armed forces, INGOs, NGOs, and UN agencies through the National Disaster Management Plan (NDMP).

2.7.5.1 Strengthening Preparedness:

Strengthening coordination among Ministry of Communications PMD, NDMA, NDRMF, and regional PDMA at provincial and district levels is vital for vulnerability assessments in each sector and respective adaptation planning and preparedness. Stakeholder consultation show that district and Tehsil-level EPAs also contribute by conducting water quality testing, disseminating information, and raising public awareness in disaster-stricken areas. Together, these organizations create climate change data, analyze it, forecast weather and climate events, and develop narratives for climate-affected regions.

2.7.6 Healthcare Engagement:

The engagement of the Ministry of National Health Services, Regulations and Coordination is crucial for adaptation planning due to climate-related health impacts. Recent, erratic weather patterns, increased temperatures, and extreme events like heat waves have severe health consequences on vulnerable communities, including epidemics and disease outbreaks due to displacement from droughts and food insecurity.

2.7.6.1 Enhancing Healthcare:

The Ministry, along with PHEDs, WASAs and EPAs, can engage with local communities to raise awareness, , establish laboratories for water quality testing, implement preventive health measures as coping strategies, and contribute to policy formulation in adaptation planning and implementation, thereby enhancing adaptive capacity.

2.7.7 Urban Resilience Collaboration:

Engaging the Ministry of Housing and Works is vital for shaping policies and plans related to public infrastructure, housing, and urban resilience. The Ministry can collaborate with the Ministry of Science and Technology to gather inputs through scientific research and technology development to build adaptive capacity and enhance urban resilience.

2.7.7.1 Increasing Urban Resilience:

The ministries can engage Pakistan Engineering Council to play advisory role in standardizing practices and engineering solutions, and the Pakistan Bureau of Statistics for data collection and dissemination on urban resilience outcomes to inform adaptation planning and policymaking.

2.7.8 Gender Inclusion Initiatives:

The Ministry of Human Rights plays a crucial role in ensuring women's participation in national adaptation planning and implementation. It can integrate a gender perspective into sectoral laws and policies and align them with international human rights agreements.

2.7.8.1 Catalyzing Women Inclusion:

Additionally, engagement with the National Commission on Status of Women (N.C.S.W.) can promote gender equity, equality, and empowerment, aligning with UN Frameworks. Collaborating with women's organizations, NGOs, and CSOs across Pakistan can infuse research and development into policies, planning, and implementation, contributing to national adaptation and climate resilience efforts.

2.8 Provincial NAP Stakeholders:

2.8.1 Empowering Agriculture & Water:

Engaging provincial Agriculture, Irrigation, and Food Departments is essential for aligning provincial policies in agriculture, livestock, and water sectors with national adaptation efforts. Their roles in indigenous knowledge management, adaptive research, and training can contribute to adaptation planning at various levels. Provincial Pakistan Agriculture Research Councils and Livestock, Fisheries, and Dairy Development Departments across Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan play pivotal roles in ensuring the successful implementation of adaptation initiatives and interventions in agriculture and water sectors.

2.8.2 Strengthening Disaster Preparedness:

The Provincial Disaster Management Authority (PDMA), operating at the provincial and local levels, excels in disaster mitigation, preparedness, and response. Together with PMDs and EPAs can provide valuable local research on climate vulnerabilities and risks, contributing to assessments, planning, and implementing disaster management interventions that enhance preparedness at local levels and adaptive capacity across sectors.

2.8.3 Enhancing Urban Resilience:

Provincial Planning and Development Departments, Local Government Elections and Rural Development Departments, and EPAs in all provinces hold the mandate to shape provincial and sectoral development policies and implement projects. Engaging these departments during adaptation planning and implementation phases is crucial for effective integration of adaptation measures into provincial urban development initiatives.

2.8.4 Conserving Forestry, Wildlife and Ecosystems:

Provincial Forestry and Wildlife Departments can engage to inform data on measures for better adaptation planning at Ministry of Climate Change for better management, preservation, conservation of forests, wildlife and biodiversity cover, and sustainable habitats in all provinces of Pakistan at district, tehsil and union council level.

2.8.5 Public Health Engagement:

The Housing and Urban Development (HUD) and Public Health Engineering Department (PHED), and Water and Sanitation Agency (WASA) can be engaged at all stages of adaptation planning and implementation of coping strategies in providing safe drinking water, water sanitation, sewerage and drainage schemes.

2.8.6 Gender Inclusion in Provincial Development:

The gender inclusion is crossing cutting sector in planning and implementing national adaptation planning across all vulnerable sectors at national, provincial and local levels. In this, provincial Women Development Departments, Population Welfare Department, Social Welfare Departments, Special Education Departments, Directorates of Women Welfare, Empowerment and Development, Institutes of Gender Studies, Human Rights Departments of all provinces can be engaged to accentuate role of women in national adaptation in all sectors of the economy.

Table – 2 explains the key national stakeholders’ key roles, their interests based on climate change needs, and their link to the NAP process.

Table 2: Stakeholder Roles and Stakes in NAP process

1. Water Resources			
National (Federal) Stakeholders:	Roles	Stakes	Link to NAP Process
Ministry of Water and Power	Water resource policy, planning and implementation of water conservation/harvesting and management projects	Water supply and demand, Conservation and harvesting	Adaptation planning and implementing Water conservation and rainwater harvesting
Ministry of Planning, Development and Reform	Development policies, Financial and Technical resources' feasibility planning and implementation of development projects & initiatives	Financial and Technical Feasibility of activities, projects and programs	Include water sector related adaptation coping strategies and programs into PC1 of MOCC on NAP with appropriate budgetary allocation
Ministry of Finance	Financial planning and budgeting of development projects & initiatives by MoPD	Budgetary allocations by finding mutually exclusive projects in various sectors	Works with MoPD&SI to approve NAP budget
Ministry of Energy (Petroleum and Natural Resources)	Energy resources planning and implementation	Energy conservation and developing renewable alternate sources of energy	Planning and implementing all energy conservation & renewable energy (solar/hydro) policies
Ministry of Climate Change	Environment and Climate Change policy, planning and implementation	Climate change vulnerabilities and risks and adaptive capacity	More integrated assessing of emerging climate challenges (GLOF, Rains, Heatwaves and hot days), and planning and implementing by reviewing NAP in Pakistan
Pakistan Council of Research in Water Resources (PCRWR)	Conducting quality water resource research on emerging topics, recommending policy course	Conduct and impart research on planning to ensure ground water level, quality & emerging water resource challenges	Impart research on adaptation planning to ensure water quality & emerging water resource
Federal & Prov. EPAs	Enforcing policies and conducting environmental audits to ensure clean water provision to communities	Ensure and implement environmental quality and preventive programs at local levels	Help Pak EPA in planning and implementation of cross sectoral adaptation measures e.g. environmental ambient air, water quality, WASH and Disaster Information spread in vulnerable areas and for overall public awareness at local levels
Ministry of National Food Security & Research	Water storage, Irrigation and drainage systems policies, planning and coordination	Better irrigation and drainage system (measures and technologies) to ensure efficient utilization of water resources in agriculture sector	Help national adaptation planning in irrigation and upgrading infrastructure resilient to extreme heat/rain/droughts for increasing adaptive capacity of agriculture, livestock and fisheries through

			formulation of adaptation induced policies, and partake in adaptation planning and implementation with concerned state paraphernalia at national, provincial and local levels for better water conservation and management
Alternative Energy Development Board (AEDB), National Energy Efficiency and Conservation Authority (NEECA), Atomic Energy Commission	Work on and promote alternatives sources of renewable energy	Finding and developing renewable sources of energy	Inputs related to adoption of renewable alternate sources of energy, assist the Ministry of Energy in planning and implementation of adaptation measures i.e., solar, hydro and hydel
Provincial and Local Stakeholders:	Roles	Stakes	Link to NAP Process
Engaging Provincial Irrigation Departments: Provincial Pakistan Agriculture Research Councils, Provincial Livestock, Fisheries and Dairy Development Departments in Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan	Water storage, Irrigation and drainage systems policies, planning, coordination and implementation	Better irrigation and drainage system (measures and technologies) to ensure efficient utilization of water resources in agriculture sector	Impart indigenous knowledge management of coping strategies and conventional water storage, drainage and irrigation approaches, adaptive research, training and research activities in irrigation, water management, can help conserve water resource at national, provincial and local levels.
Planning and Development Department (P & DD) Punjab Local Government Elections and Rural Development Department) (LGRDD),	Planning and implementing and allocating budgets for development of programs and projects	Planning and implementing and allocating budgets for development of programs and projects	Help in planning, implementing adaptation measures and programs related to climate resilient WASH infrastructure in urban and rural areas
PHED, WASA, Tehsil Municipal Authorities, CSOs, CBOs ⁵⁷	Water management/governance systems (urban and rural)	Increase Water Resource Efficiency and manage its supply and demand	Help in planning, and inputs to water policy, planning and implementation of coping strategies and conservation measures
Punjab EPD & EPA	WASH	Implementing WASH policies for water quality	Help in planning and implementing WASH policies and programs
2- Agriculture and Livestock (For food security and sustainable food systems)			
National (Federal) Stakeholders:	Roles	Stakes	Link to NAP Process

Ministry of National Food Security and Research	Policy formulation, economic coordination and planning agriculture, livestock and fisheries.	Induce climate change adaptation related to agriculture, livestock, fisheries and food security into policies for better food security as climate change become more emergent phenomena in the country	Steer national discourse for adaptation planning for agriculture, livestock, fisheries and food security through formulation of adaptation induced policies, and partake in adaptation planning and implementation with concerned state paraphernalia at national, provincial and local levels
Pakistan Agriculture Research Council (PARC) and National Agriculture Research Council (NARC).	Conducting research and recommending policy course to agriculture sector	Conduct and impart agriculture research on hybrid climate resilient crops	Impart research through experimentation in agriculture, livestock, fisheries that are most conducive to climate change and help plan and implement relevant sectoral policies and programs at all levels
Pakistan Agricultural Storage and Services Corporation Limited	Food storage and security	Ensuring food security and storage and availability through better planning	Partaking and help the Ministry in planning adaptation measures and input to agricultural and food policy and ensuring its implementation at national and provincial levels
Centre for Agriculture and Biosciences International (CABI)	Help farmers in the region increase yields, improve the quality of crops and access markets	More quality yields of hybrid crops with growing population in the country, central and western Asia	Help planning, improving and implementing adaptation strategies through scientific research and development to create more climate resilient quality yields of hybrid crops
Federal Seed Certification & Registration Department	Provides services for controlling and regulating the quality of seeds of various varieties of crops	Managing and standardization of quality of seeds of food and cash crops	Ensuring and working towards planning and implementation of policies to ensure quality in seeds through research and international certifications
GCSIC, PMD	Generate and analyze climate information and data	Climate change information and data, and contemplation to identify vulnerabilities and threats	Help agriculture sector in climate change assessments, policies, identify coping strategies that help in planning and implementation of climate change interventions for agriculture sector
Ministry of Climate Change	Environment and Climate Change policy, planning and implementation	Climate change vulnerabilities and risks and adaptive capacity	More integrated assessing, planning, implementing and review of NAP in emerging climate challenges (GLOF, Rains, Heatwaves and hot days) in Pakistan

Ministry of Planning, Development and Reform, Ministry of Finance	Development policies, Financial and Technical resources feasibility planning and implementation	Financial and Technical Feasibility of activities, projects and programs, Budgetary allocations	Include adaptation coping strategies and programs into PC1 of MOCC on NAP with appropriate budgetary allocation
Ministry of Water and Power	Water resource policy, planning and conservation	Water supply and demand, Conservation, storage, harvesting, recycling, build GIS database	Planning and implementing adaptation measures through ground water conservation and rainwater harvesting based on GIS database to mitigate drought/desertification in the affected areas
Provincial and Local Stakeholders	Roles	Stakes	Link to NAP Process
Agriculture Department, Irrigation Department Livestock & Dairy Development Department Food Departments, The Food and Agriculture Organization (FAO)	Planning and implementation of provincial policies in agriculture, livestock and water sector	Planning based on interventions and measures taken by them and ensure implementation of more efficient ways to use water and land resources in agriculture sector for better climate resilience of Pakistan	Impart indigenous knowledge management of coping strategies and conventional adaptation approaches, adaptive research, training and research activities in agriculture, livestock, irrigation, water management, and forest and fisheries sectors can help national adaptation planning at national, provincial and local levels. To ensure successful adaptation planning and implementation in agriculture and water sectors.
Pakistan Agriculture Research Council	Research and development in agriculture sector of Pakistan	Regional research and development on climate resilient and better yielding crops	Inform research to policies based on climate adaptation interventions and measures taken by the Ministry
3- Forestry, Biodiversity and other Ecosystems sectors (land & marine ecosystems)			
National (Federal) Stakeholders:	Roles	Stakes	Link to NAP Process
Ministry of Climate Change The Forestry Wing of Ministry of Climate Change	Forming national policy, plans strategies and programmes pertinent to disaster management including environmental protection, preservation, WASH, pollution, ecology, forestry, wildlife, biodiversity, climate change and desertification	Environmental protection, preservation, WASH implementation, pollution, ecology, forestry, wildlife, biodiversity, climate change and desertification	Formulating policies, frameworks, vulnerabilities & risks, and technological needs assessments, coping strategies, plans, interventions and programmes to respond to impacts and adaptation responses such as; urban management; urban water supply, sewerage and drainage; environmental protection, preservation and

			pollution; forestry, wildlife and biodiversity, and ecology preservation; and responses to drought and desertification
Provincial and Local Stakeholders			
Provincial Forest Departments, Wildlife Departs	Responsible for management, preservation, conservation of forests, wildlife, biodiversity and sustainable habitats	Better conservation through adaptation measures and nature-based solutions in forests, wetlands, coastal areas and wildlife preservation from trafficking and extinction	Inform policies, measure and interventions that better help adapt to climate change events such as wildfires, receding coastal areas, marine and wildlife preservation
4- Human Health			
National (Federal) Stakeholders:	Roles	Stakes	Link to NAP Process
Ministry of National Health Services and Regulations	Policies to maintain and improve general public health	Maintaining and improving community health due to erratic weather patterns, increase in temperatures, heat waves and hot days	Induce policies by engaging in adaptation planning and implementation of coping strategies pertinent to health sector in improving public health to changes weather patterns, drastic health effects, causing epidemics and virulent disease-spread
Provincial and Local Stakeholders:			
Public Health Engineering Department (PHED), Water and Sanitation Agency (WASA),	Provide safe drinking water, execute sewerage and drainage schemes	Expansion plans and provision of safe drinking water to all communities in urban and rural areas	To be engaged at all stages of adaptation planning and implementation of coping strategies in providing safe drinking water, water sanitation, sewerage and drainage schemes
5- Disaster Preparedness			
National (Federal) Stakeholders:	Roles	Stakes	Link to NAP Process
National Disaster Management Authority	Plan and implement the National Disaster Management Plan (NDMP)	Increased response to disasters at all levels, Enhance financing to the National Disaster and Risk Management Fund (NDRMF)	Holds a critical crosscutting role in adaptation related responses to impacts of climate change, planning and related implementation to mitigate and/or reduce risk through early warning systems based on information provided by Pakistan Meteorological Department
Pakistan Meteorological Department (PMD)	Provides climatic information and meteorological services	Efficient climate change information and data analysis	Role in providing information and data analysis on issues of climate

	in hydrology, earthquake seismology and geomagnetism	sharing with all concerned such as NDMA and PDMA's	change related risks and vulnerabilities for better disaster management, and planning and assessments of climate change related vulnerabilities and risks assessments
Provincial and Local Stakeholders:			
PMDAs, PMDs	Regional disaster management with adequacy of response, Provide and disseminate regional climatic information on erratic weather patterns, climate analysis for agriculture and disaster management sectors.	Minimum response time to disasters and efficient disaster management to save lives, livestock and human settlements Provision of accurate regional climate change information and data analysis to all concerned especially PDMA's sharing with all concerned such as NDMA and PDMA's	Role in preparing local knowledge on climate change related disasters and calamities, help in planning adaptation based on regional information and assessments of climate change vulnerabilities in devising better coping strategies and disaster management
6- Urban Resilience (For smart & green cities planning and management)			
National (Federal) Stakeholders:	Roles	Stakes	Link to NAP Process
Ministry of Housing and Works	Formulates, monitors and implements policies, plans and programmes for the operational management of public land properties, drainage, roads, bridges, and ensures safe and affordable housing	Ensure and enhance urban planning in all aspects of operational management, properties and public land Enhance state services infrastructure hospitals, schools, and urban planning	Infuse inputs related to increasing urban resilience of all towns and cities during planning and formulating policies, highlight climate change adaptation interventions related to urban resilience and roadmap to accomplish adaptation interventions through planning and implementing adaptation at local levels
Pak-EPAs	Ensure planning and implementing environmental protection (air and water) in urban and rural communities	Increase efforts for clean environment to safeguard local communities from communicable virulent diseases by water and air quality	Inputs for better urban planning keeping in view local climate change events in areas hit by climatic impacts adversely, help inform local coping strategies for policy inputs
M/o Planning, Development and Reforms, and M/o Finance	Development planning	Efficient resources utilization, land, financial and technical feasibilities of housing projects	Help find coping interventions which are cost effective and create climate resilience in urban and rural (towns and cities) communities
Capital Development Authority, Public Works Department	Ensure safe and affordable housing, town planning and extensions	Enhance services for better town planning keeping in view rising temperatures and land use in urban and rural areas	Planning schemes and projects by giving inputs on adaptation planning and implementation with more climate resilient

			infrastructure for durability and longevity
Provincial and Local Stakeholders:			
Provincial EPAs	Ensure environmental safety in urban and rural populated areas	Enhance environmental protection for all communities by ensuring water and air quality	Inputs to Pak EPA on local community knowledge and interventions that could increase adaptive capacity of cities and towns
Housing and Urban Development (HUD), Local Government Elections and Rural Development Department (LGRDD), Provincial Public Work Department	Ensure safe and affordable housing, town planning and drainage/roads infrastructure, and extensions of communities at districts/tehsils levels	Enhance public facilities and efficient utilization of land and space in construction projects, building roads and access to basic public facilities such as hospitals and schools	Help planning schemes and projects by giving inputs on adaptation planning and implementation with more climate resilient infrastructure for durability and longevity
7- Gender			
National (Federal) Stakeholders:	Roles	Stakes	Link to NAP Process
Ministry of Human Rights	Reviews human rights situation, formulates policies and measures and implementation of laws	Violation of human rights, gender discrimination, gender violence	Harmonizing human rights policies, and planning and implementation of measures as ensure legislation, regulations and practices on gender inclusion in NAP
National Commission on Women Status	Examines and review all laws, rules and regulations, policies, programs, and measures for promoting gender equality and women empowerment by protecting their rights	Gender Equality and Women Empowerment	Engagement to ensure gender inclusion in developing country's adaptation agenda by collaborating with women welfare organizations and associations, NGOs and CSOs/CBOs
Provincial and Local Stakeholders:			
Women Development Departments, Population Welfare Department, Social Welfare Departments, Special Education Departments, Directorates of Women Welfare, Empowerment and Development, Institute of Gender Studies	Implementing and helping gender equality by eradicating gender bias and discrimination, accentuating women role in country's development	Gender equality, and minimize gender/domestic violence due to economic and social reasons	Accentuate women role by highlighting their contributions, and stories how women can help in developing national adaptation

Human Rights Department			
Sindh: Zindagi Women development society, Minorities Affairs Department KPK: The Khyber Pakhtunkhwa Commission on Status of Women (KPCSW), Balochistan Health Department, social welfare, Minorities affairs dept. AJK: Women Welfare Organization – WWO	Helping local women, empowering women economically and technically	Empowering women economically	Economically empowered women are better agents of adaptation and resilience to climate change

2.9 Establishing a National Coordination Mechanism:

Identifying stakeholder roles and stakes in NAP process necessitates the need for a coordination mechanism for the NAP process. The proposed coordination mechanism uses a robust institutional governance system comprising elements like a National Focal Point NAP Process, Sectoral Climate Adaptation Cells (SCACs), National Working Group for cross-cutting national adaptation needs, and Civil Society Organizations Forum⁵⁸. This mechanism further uses vertical⁵⁹ integration of mandated roles of all stakeholders, to enhance planning, implementation, and monitoring. It ensures effective coordination at all levels i.e., national, provincial, and local. The proposed institutional coordination plan⁶⁰ for fostering two-way communication among key stakeholders in the NAP process will be executed as follows;

2.9.1 Coordination Mechanism:

The coordination mechanism emphasizes the importance of responsible stakeholders and their roles with a two-way communication model. This communication flow covers various stages, including climate change issues, needs assessments, legislation for governance, policy formulation, implementation at various government levels, monitoring and evaluation, data feedback loops, and proposal submissions for technical and financial assistance. The mechanism involves several stages:

1. National Coordination:

The Climate Change Advisor to the Prime Minister of Pakistan works closely with the Prime Minister, who leads the National Disaster Management Committee (NDMC). The NDMC includes federal agencies such as the National Agriculture Research Centre, National Disaster Management Authority, Pakistan Bureau of Statistics, Space and Upper Atmosphere Commission, and Water and Power Development Authority.

2. Inter-Ministerial and Inter-Departmental Coordination:

The Ministry of Climate Change leads in coordinating with various other ministries, including Finance, Water Resources, Energy, Agriculture, Health, Science and Technology, Communications, Education, Human Rights, Housing, and Information and Broadcasting.

3. Inter-Departmental Coordination:

Similarly, the ministerial units on climate change also serve the purpose of sectoral data gathering and sharing. In this, the role of Climate Change Cells in various national entities deliver ministerial commitments which are linked to reporting commitments and coordination with international schemes and opportunities such as GSP plus to inform the aspects of development on climate change by relevant ministries. Such roles can be centralized and engaged to pool climate information related to data or financing. Setting up an inter-ministerial and inter-departmental coordination can benefit the NAP process from such arrangement.

4. Coordination with Meteorological Department:

The Pakistan Meteorological Department (PMD) plays central role in climate information and communication, and connects with provincial PMDs, Provincial Disaster Management Authorities (PDMAs), and district-level disaster management authorities.

5. Engagement of Academic Institutions:

Academic institutions contribute research, development, and capacity-building inputs to specific aspects of the NAP process.

6. Engagement of National and Local NGOs and CSOs:

National and local non-governmental organizations (NGOs) and civil society organizations (CSOs) provide perspectives and engagement on gender, communities, and minority groups.

7. Involvement of International Development Organizations and Groups:

International development organizations and groups, including UN agencies, financial institutions, and international donors, play a significant role in capacity-building and financial support for the NAP process at national, federal, provincial, and local levels.

2.9.1.1 Coordination Function:

This national coordination mechanism ensures that climate adaptation efforts are well-planned, implemented, monitored, and evaluated, to ensure its effective communication, collaboration, and coordination among key stakeholders at all levels of government. It also facilitates access to international support and resources for successful NAP implementation in Pakistan.

2.9.2 Sectoral Coordination Mechanism:

The sectoral coordination mechanism in provinces outlines the stakeholders, their roles and interests, the type of coordination mechanism to be employed, and the specific coordination methods to be used within each sector;

1. Water Resources:

- The proposed coordination methods involve a country-led coordination mechanism including various ministries, agencies, and councils for water policy, planning, conservation, energy, climate change adaptation, finance, budgeting, research, and quality control, with specific mechanisms like the National Water Council, National Water Information Center, and coordination meetings for adaptation measures.
- At the provincial/local level, it employs a federal to provincial/district coordination mechanism with water boards and joint research initiatives.

2. Agriculture and Livestock:

- The proposed coordination methods involve a country-led coordination mechanism at the federal level, involving the National Agriculture Coordination Committee, technical working groups, and policy review meetings.

- At the provincial/local level, it employs a federal to provincial/district coordination mechanism with agricultural boards and joint research initiatives.
- 3. Forestry, Biodiversity, and Ecosystems:**
 - The proposed coordination methods involve a country-led coordination mechanism with the National Biodiversity Coordination Committee, working groups, and policy review for federal coordination.
 - For provincial/local coordination, it adopts a federal to provincial/district mechanism with conservation boards, local engagement, and joint initiatives.
- 4. Human Health:**
 - The proposed coordination methods involve a country-led coordination mechanism, including a National Health Emergency Committee and coordination with the meteorological department.
 - Provincial/local coordination involves provincial health committees, community health programs, and joint projects for safe water supply.
- 5. Disaster Preparedness:**
 - The proposed coordination methods involve a country-led coordination mechanism with the National Disaster Coordination Center and regular climate data sharing.
 - At the provincial and local level, it employs a federal to provincial/district mechanism with regional coordination offices and joint training exercises.
- 6. Urban Resilience:**
 - The proposed coordination methods involve a country-led coordination mechanism at the federal level, including a National Urban Resilience Task Force and coordination meetings.
 - At the provincial and local level, it employs a federal to provincial/district mechanism with urban planning boards, community engagement, and joint initiatives for infrastructure upgrades.
- 7. Gender:**
 - The proposed coordination methods involve a country-led coordination mechanism at the federal level, including the National Gender Equality Council and coordination for gender-inclusive policies.
 - Provincial and local coordination employs a federal to provincial/district mechanism with gender equality committees, women's empowerment programs, and joint initiatives for gender-inclusive policies.

2.9.2.1 Coordination Function:

The sectoral coordination mechanisms facilitate the successful implementation of the NAP process at all level of governments which is a gender-inclusive, while maximizing its impact. It facilitates effective feedback loops for collaborations, information sharing, and inputs for monitoring and evaluation and policy alignment across sectors and between federal, provincial and local levels.

2.9.2.2 Private Sector and Industrial Linkages:

The role of international organizations such as International Labor Organization can help in gathering and sharing yearly data on conservation of water, reducing carbon print, increase in solar energy use, which are based on reporting from private sector such as industries. The monitoring and validation of information can be discussed and benchmarked for the authenticity of such private source information. As information is shared with international organizations therefore the correctness and standardization are ensured.

2.9.3 Linking National and Sectoral Coordination:

This multi-level approach based on national and sectoral coordination mechanisms facilitates the successful implementation of the NAP process. The national and sectoral coordination mechanisms explained in table - 3, give a sector wise key stakeholders' involvement at federal and provincial levels with their functional roles and interests in NAP process. It highlights the type of coordination such as country-led coordination, and federal to provincial and district level coordination to ensure two-way communication and information sharing in variety of modes of communication such as platforms like tasks forces and committees, and tools like reports and meetings.

Table 3: Sectoral NAP Coordination Mechanisms

Sector	Stakeholder Level	Type of Coordination Mechanism	Stakeholders	Roles and Interests	Coordination Mechanism
Water Resources	Federal	Country-led Coordination Mechanism	- Ministry of Water and Power - Ministry of Planning Development, and Reform - Ministry of Finance - Ministry of Energy (Petroleum and Natural Resources) - Ministry of Climate Change - Pakistan Council of Research in Water Resources (PCRWR) - Federal & Provincial EPAs - Ministry of National Food Security & Research - Alternative Energy Development Board (AEDB) - National Energy Efficiency and Conservation Authority (NEECA) - Atomic Energy Commission	Water policy, planning, conservation, energy, climate change adaptation, finance, budgeting, research, and quality control	- National Water Council for policy coordination - National Water Information Center for data sharing - Coordination meetings and reports on adaptation measures
	Provincial / Local	Federal to Provincial/District Coordination Mechanism	- Provincial Irrigation Departments - Provincial Pakistan Agriculture Research Councils - Provincial Livestock, Fisheries and Dairy Development Departments - Planning and Development Department (P & DD) - Punjab Local Government Elections and Rural Development Department (LGRDD) - PHED, WASA, Tehsil Municipal Authorities, CSOs, CBOs - Punjab EPD & EPA	Water storage, irrigation, drainage, policy, planning, governance, management, and infrastructure at the provincial and local levels.	- Provincial Water Boards for coordination - Joint task forces for infrastructure projects - Regular coordination meetings at provincial and local levels
Agriculture and Livestock	Federal	Country-led Coordination Mechanism	- Ministry of National Food Security and Research - Pakistan Agriculture Research Council (PARC) and National Agriculture Research Council (NARC) - Pakistan Agricultural Storage and	Policy formulation, economic coordination, research, food	- National Agriculture Coordination Committee

			Services Corporation Limited - Centre for Agriculture and Biosciences International (CABI) - Federal Seed Certification & Registration Department - GCSIC, PMD - Ministry of Climate Change - Ministry of Planning, Development and Reform, and Ministry of Finance - Ministry of Water and Power	security, agriculture, livestock, fisheries, food storage, and quality control	- Technical working groups for research - Regular policy review meetings
	Provinci al / Local	Federal to Provincial/Distr ict Coordination Mechanism	- Agriculture Department - Irrigation Department - Livestock & Dairy Development Department - Food Departments - The Food and Agriculture Organization (FAO)	Provincial policies, agriculture research, sustainable agricultural practices, and disaster managemen t.	- Provincial Agricultural Boards - Local extension services for farmers - Joint research initiatives and training programs
Forestry, Biodivers ity, and Ecosyste ms	Federal	Country-led Coordination Mechanism	- Ministry of Climate Change - The Forestry Wing of Ministry of Climate Change	Disaster managemen t, environmen tal protection, preservation , ecology, biodiversity, climate change, and desertificati on	- National Biodiversity Coordination Committee - Joint working groups for ecosystem preservation - Regular review of policies and interventions
	Provinci al / Local	Federal to Provincial/Distr ict Coordination Mechanism	- Provincial Forest Departments - Wildlife Departments	Conservatio n, preservation , biodiversity protection, and disaster managemen t at the provincial level.	- Provincial Wildlife Conservation Boards - Local community engagement for conservation - Joint initiatives for wildfire prevention
Human Health	Federal	Country-led Coordination Mechanism	- Ministry of National Health Services and Regulations	Public health policies, adapting to erratic weather	- National Health Emergency Committee - Coordination with Meteorological

				patterns, community health	Department for early warnings - Regular health policy review meetings
	Provincial / Local	Federal to Provincial/District Coordination Mechanism	- Housing and Urban Development (HUD) - Public Health Engineering Department (PHED) - Water and Sanitation Agency (WASA)	Safe drinking water, sewerage, and drainage schemes, public health in urban and rural areas.	- Provincial Health Committees - Local community health awareness programs - Joint projects for safe water supply
Disaster Preparedness	Federal	Country-led Coordination Mechanism	- National Disaster Management Authority - Pakistan Meteorological Department (PMD)	Disaster planning, early warning systems, climate information, and data analysis	- National Disaster Coordination Center - Regular climate data sharing - Coordination for disaster response plans
	Provincial / Local	Federal to Provincial/District Coordination Mechanism	- Provincial Disaster Management Authorities (PMDAs) - Provincial Meteorological Departments (PMDs)	Regional disaster management, disaster response, climate data analysis, and early warning at the provincial level.	- Regional Disaster Coordination Offices - Local early warning systems - Joint training exercises
Urban Resilience	Federal	Country-led Coordination Mechanism	- Ministry of Housing and Works - Pak-EPAs - M/o Planning, Development and Reforms, and M/o Finance - Capital Development Authority - Public Works Department	Urban planning, environmental protection, infrastructure development, and financial feasibility	- National Urban Resilience Task Force - Coordination meetings for infrastructure projects - Regular policy alignment discussions

	Provincial / Local	Federal to Provincial/District Coordination Mechanism	- Provincial EPAs - Local Government Elections and Rural Development Department (LGRDD) - Provincial Public Work Department	Urban planning, infrastructure development, and environmental protection at the provincial and local levels.	- Provincial Urban Planning Boards - Local community engagement for resilience - Joint initiatives for infrastructure upgrades
Gender	Federal	Country-led Coordination Mechanism	- Ministry of Human Rights - National Commission on Women Status	Gender equality, women's empowerment, human rights, and legislation	- National Gender Equality Council - Coordination for gender-inclusive policies - Regular progress reviews
	Provincial / Local	Federal to Provincial/District Coordination Mechanism	- Women Development Departments - Population Welfare Department - Social Welfare Departments - Special Education Departments - Directorates of Women Welfare, Empowerment, and Development - Institute of Gender Studies - Human Rights Department	Gender equality, women's empowerment, human rights, and local community engagement	- Provincial Gender Equality Committees - Local women's empowerment programs - Joint initiatives for gender-inclusive policies

2.10 Maximizing Stakeholder Influence:

A comprehensive coordination mechanism is crucial to ensure effective governance of NAP Process. This mechanism provides guidance to stakeholders in their interest-based roles under specific terms of reference (ToRs), which will guide the NAP process. A basic guidance plan for the NAP terms completes the NAP cycle at the national level. In this the Ministry of Climate Change will lead the way, overseeing country-led, federal-to-provincial and local coordination, and international engagement. Federal and provincial entities will play pivotal roles in integrating climate adaptation into policies, budgeting, and infrastructure resilience.

2.10.1 NAP Terms

To ensure the stakeholders operate and deliver within defined ToRs, creating a structured framework for their responsibilities is essential step, while fostering coordination, and ensuring climate adaptation efforts are well-coordinated and responsive to local needs.

The table - 4 summarizes the key stakeholders at the federal and provincial levels, their interest-based roles and responsibilities, and specific terms of reference designed for the NAP process.

Table 4: Stakeholder Terms to influence NAP

Stakeholder	Role and Responsibilities	Terms of Reference (ToR)
National Level		
National Governance Committee	- Coordination among national stakeholders - Policy alignment with national climate policies - Resource mobilization - Monitoring and reporting NAP progress - Decision-making on adaptation actions and resources - Capacity building - Communication and outreach	- Convene representatives from relevant ministries, academia, civil society, and private sector, with the Ministry of Climate Change leading - Quarterly meetings with additional sessions as needed - Regular reports on NAP progress submitted to the Ministry of Climate Change
Ministry of Climate Change (MOCC)	- Strategic guidance and leadership - Overall coordination and oversight - Communication facilitation - Resource mobilization - Monitoring and evaluation - Engagement with international climate forums	- Provide strategic guidance and leadership - Overall coordination and oversight - Coordinate and facilitate communication among stakeholders - Mobilize resources - Monitor and evaluate progress - Engage internationally
Ministry of Planning, Development and Special Initiatives	- Alignment with national development goals - Inter-ministerial coordination - Progress monitoring - Development finance integration - Capacity building - Public and stakeholder engagement	- Ensure alignment with national goals - Coordinate for mainstreaming adaptation - Monitor progress - Integrate financing - Build capacity - Promote public engagement
Ministry of Finance	- Budgetary allocations - Coordination with relevant ministries - Funds monitoring - Resource mobilization - Efficient resource allocation	- Develop and oversee budget allocations - Coordinate for adequate funding - Monitor funds - Explore international climate finance - Allocate resources efficiently
Ministry of Communication	- Infrastructure and transport resilience - Disaster risk reduction - Early warning systems - Disaster response coordination	- Identify vulnerable infrastructure - Enhance infrastructure resilience - Disaster risk reduction - Early warning systems - Disaster coordination
Ministry of Science and Technology	- Climate data and research - Technology transfer and innovation - Scientific input	- Establish climate data repository - Conduct climate research - Provide scientific input - Facilitate technology transfer - Promote innovation - Collaborate for technology support

Ministry of Water and Power	- Water resource and energy management - Climate-resilient projects - Integrated planning	- Develop climate-resilient policies - Implement water and energy projects - Coordinate with relevant ministries
Ministry of National Food Security & Research (MoNFS&R)	Develop policies for climate-resilient agriculture and food security.	Promote climate-smart agricultural practices, facilitate research on climate-resilient crops, and coordinate with relevant stakeholders.
Ministry of National Health Services and Regulations (MoNHSR)	Address health impacts of climate change. Ensure public health preparedness for climate-related health risks.	Develop health sector adaptation strategies and policies. - Coordinate with health agencies, and monitor health impacts of climate change.
Ministry of Energy (MoE)	Develop and implement energy-related policies and strategies for climate change adaptation.	Provide technical expertise, collaborate with stakeholders, and integrate climate adaptation into energy policies.
Ministry of Federal Education and Professional Training (MoFE&PT)	Oversee educational and professional training programs related to climate change adaptation.	Develop curricula on climate change adaptation, promote climate education, and engage educational institutions in adaptation initiatives.
Ministry of Human Rights (MoHR)	Safeguard human rights in climate change adaptation efforts.	Advocate for vulnerable communities' rights, monitor adaptation program's human rights impacts, and ensure inclusive adaptation policies.
National Commission on Women Status (NCSW)	Promote gender equality in climate change policies. - Promote gender-responsive climate adaptation policies.	Ensure gender-inclusive policies in climate adaptation strategies. Advocate for women's participation in adaptation initiatives, assess gender impacts, and ensure gender equality in adaptation programs.
Ministry of Housing and Works (MoHW)	Manage infrastructure development and urban planning for climate-resilient cities.	Integrate climate adaptation considerations into urban development plans, assess infrastructure vulnerability, and promote resilient housing.
Ministry of Information and Broadcasting (MoIB)	Communicate climate change adaptation information to the public.	Raise awareness, disseminate climate information, and engage in climate-related public outreach efforts.

National Disaster Management Authority (NDMA)	- Disaster management and reduction - Disaster risk integration - Early warning systems - Disaster expertise	- Integrate adaptation into disaster plans - Enhance early warnings - Provide expertise - Coordinate with provincial authorities
National Disaster Risk Management Fund (NDRMF)	Manage funds for disaster risk reduction and climate adaptation.	Fund climate-resilient projects, support risk reduction measures, and evaluate project outcomes.
Pakistan Council of Research in Water Resources (PCRWR)	Conduct water resource research.	Support water resource management and conservation initiatives.
Federal Flood Commission (FFC)	Coordinate flood management and mitigation efforts.	Develop flood risk reduction strategies, monitor flood patterns, and implement flood control measures.
Federal Water Management Cell (FWMC)	Manage water resources and support climate-resilient water management.	Develop water resource policies, coordinate water management, and support water conservation efforts.
Pakistan Meteorological Department (PMD)	Provide climate data and forecasts for adaptation planning.	Collect and disseminate climate information, collaborate on early warning systems, and support adaptation research.
Global Change Impact Studies Centre (GCISC)	Conduct research on climate change impacts.	Provide climate data analysis, assess vulnerabilities, and support adaptation planning.
Pakistan Council of Research in Water Resources (PCRWR)	Conduct water resource research. - Conduct research on water resources and quality for climate adaptation.	Support water resource management and conservation initiatives. - Monitor water availability, develop adaptation strategies, and support sustainable water management.
Pakistan Environmental Protection Agency (Pak-EPA)	Enforce environmental regulations and oversee climate adaptation.	Monitor environmental impacts of adaptation projects, enforce climate-related regulations, and engage in public awareness campaigns.
Pakistan Water and Power Development Authority (WAPDA)	Manage water and power resources for climate resilience.	Ensure water resource availability, support hydropower projects, and implement climate-resilient energy strategies.

Alternative Energy Development Board (AEDB)	Promote renewable energy sources and energy efficiency for climate adaptation.	Develop renewable energy policies, support clean energy projects, and encourage energy-efficient practices.
National Agricultural Research Centre (NARC)	Conduct research on climate-resilient agriculture.	Support research initiatives for climate-resilient agriculture.
Federal Seed Certification & Registration Department (FSC&RD)	Ensure the quality of seeds for climate-resilient crops.	Certify climate-adaptive seed varieties, promote their use, and monitor seed quality.
Pakistan Agricultural Storage & Supply Corporation (PASSCO)	Ensure food storage and supply chain resilience.	Develop climate-resilient storage facilities, monitor food stocks, and facilitate emergency food supply.
Centre for Agriculture and Biosciences International (CABI)	Conduct research on climate-resilient agriculture.	Provide technical expertise, share research findings, and collaborate on climate-smart agricultural initiatives.
National Veterinary Laboratory (NVL)	Ensure animal health and food safety in climate change adaptation.	Monitor disease outbreaks, develop adaptive livestock practices, and safeguard food supplies.
Pakistan Environmental Protection Agency (Pak-EPA)	Enforce environmental regulations and oversee climate adaptation.	Monitor environmental impacts of adaptation projects, enforce climate-related regulations, and engage in public awareness campaigns.
Pakistan Engineering Council (PEC)	Promote engineering practices for climate resilience.	Develop engineering standards for climate adaptation, promote eco-friendly construction, and support infrastructure resilience.
Pakistan Bureau of Statistics (PBS)	Collect and analyze climate data for policy development.	Provide climate statistics, support data-driven adaptation strategies, and facilitate research on climate impacts.
State Bank of Pakistan (SBP)	Ensure financial sector resilience to climate change.	Develop climate risk assessment tools, promote climate finance, and facilitate green banking practices.

International Organizations	Provide expertise, funding, and technical support for climate adaptation.	Collaborate with government agencies, align projects with national priorities, and share best practices.
Provincial Level		
Provincial NAP Coordination Committees (PNCCs)	- Coordination within provinces - Integration with development plans - Local engagement - Data collection - Project review - Resource allocation - Capacity building - Reporting	- Representatives from provincial departments, academia, local governments, and civil society, with the Department of Environment leading - Monthly meetings with additional sessions as needed - Regular reports on provincial NAP progress submitted to the National NAP Governance Committee
Provincial Environmental Protection Agencies (EPAs)	- Climate adaptation integration - Emissions and pollution regulation - Cross-sectoral collaboration	- Integrate adaptation into provincial policies - Regulate emissions - Collaborate with other departments
Provincial Agriculture Department	- Climate-resilient agricultural policies - Sustainable farming promotion - Climate information provision	- Develop and implement climate-resilient policies - Promote sustainable farming - Provide climate information
Provincial Disaster Management Authority (PDMA)	- Provincial disaster management - Coordinate disaster preparedness and response at the provincial level. - Integration of adaptation - Early warning systems - Disaster risk reduction	- Integrate adaptation into disaster plans - Develop provincial disaster plans, monitor climate risks, and lead disaster response efforts. - Establish early warnings - Coordinate with other departments
Provincial Planning and Development Department (P&D)	- Climate adaptation into provincial plans - Infrastructure project allocation - Progress monitoring	- Incorporate adaptation into development plans - Allocate resources - Monitor progress
Provincial Agriculture Research Institutes	- Research on climate-resilient agriculture - Collaboration with the agriculture department - Research dissemination - Effectiveness monitoring	- Collaborate for climate-smart agriculture - Disseminate research findings - Monitor adaptation effectiveness
Provincial Disaster Management Authority (PDMA)	Manage provincial disaster response.	Coordinate disaster preparedness and response.

Housing and Urban Development (HUD)	Manage urban development and housing for climate-resilient cities.	Integrate climate adaptation into urban planning, assess infrastructure vulnerabilities, and promote resilient housing.
Public Health Engineering Department (PHED)	Provide safe water and sanitation services for climate-resilient public health.	Ensure safe drinking water supply, manage sewerage systems, and promote hygiene practices.
Public Procurement Regulatory Authority (PPRA)	Regulate public procurement processes for climate-resilient projects.	Ensure climate considerations in procurement, promote eco-friendly practices, and monitor adherence to climate standards.
Provincial Forestry and Wildlife Departments (FWD)	Conserve forests and wildlife for climate adaptation.	Develop provincial conservation strategies, engage local communities in conservation efforts, and enforce wildlife protection laws.
In-Service Agriculture Training Institutes (IATI)	Provide agricultural training and extension services for climate-resilient farming.	Train farmers in climate-smart practices, disseminate climate-resilient agricultural techniques, and support local agriculture.
Local Government and Rural Development (LG&RD)	Manage local governance and rural development with climate adaptation in mind.	Integrate climate adaptation into local development plans, engage communities in adaptation efforts, and support rural development programs.
Local Government Elections and Rural Development Department (LGRDD)	Administer local government elections and rural development.	Ensure climate considerations in local governance, promote community engagement in adaptation, and support rural development initiatives.
Water and Sanitation Agency (WASA)	Provide water and sanitation services for climate-resilient communities.	Ensure safe water supply, manage wastewater systems, and promote hygiene practices in urban and rural areas.
Water, Sanitation, and Hygiene (WASH)	Promote clean water, sanitation, and hygiene practices for climate adaptation.	Develop and implement WASH programs, raise awareness about climate-resilient practices, and support community-led initiatives.

Women Development Department (WDD)	Promote women's development and empowerment with a focus on climate resilience.	Ensure women's participation in climate adaptation initiatives, address gender-specific vulnerabilities, and promote gender equality in adaptation programs.
Women Welfare Organization (WVO)	Support women's welfare and empowerment in climate adaptation.	Provide services to empower women in adapting to climate change, engage women in adaptation projects, and advocate for gender-inclusive policies.
Academia	Conduct research, provide education, and offer technical expertise on climate change adaptation.	Collaborate with government agencies, engage in climate research, and support capacity building in climate adaptation.
Civil Societies (CDOs and CBOs)	Advocate for vulnerable communities, facilitate community-based adaptation, and monitor climate adaptation projects.	Engage communities in adaptation planning, raise awareness about climate risks, and support grassroots adaptation initiatives.
State Media	Disseminate climate change information, raise public awareness, and promote government climate policies.	Collaborate with government agencies in climate communication, inform the public about climate risks, and support climate-related public outreach efforts.

2.10.2 Collective Influence:

Incorporating interest-based roles and the terms of reference for key stakeholders reveal a path to bolster the collective influence of vulnerable groups with no power, such as marginalized communities, women and children facing climate vulnerabilities. The ToRs highlight the extensive coordination and collaboration with high-power stakeholders such as government ministries and international organization which are vital support to enhance marginalized group efforts.

2.10.2.1 Achieving Collective Influence:

A multifaceted strategy encompassing capacity-building, education, participation, advocacy, communication, localized initiatives, and collaboration with high-power stakeholders is essential to amplify the collective influence of low-power stakeholders who are deeply committed to climate adaptation and the NAP process. Implementing localized adaptation initiatives, as described in ToRs of various provincial-level stakeholders, can serve as baseline for empowering low-power stakeholders to showcase their capabilities. This approach aligns with diverse ToRs for stakeholders, ensuring a comprehensive and inclusive approach to climate adaptation, strengthening the collective influence of the group and fostering more effective and inclusive climate change adaptation efforts.

2.10.3 Activating High-Power Stakeholders:

To boost the collective influence of high-power stakeholders with low interest in the NAP process, strategic alignment of their roles with the needs of high interest stakeholders is a key element. High-power stakeholders, such as government ministries and institutions, should first recognize the vital importance of climate change adaptation, to reframe their roles, as outlined in the terms of reference to actively support marginalized stakeholders.

2.10.3.1 Realignment:

The terms infer that ministries responsible for planning and finance could broaden their scope to not only develop policies but also promote and coordinate adaptation into national goals, funding, and international finance exploration. This realignment channels their power to benefit those most affected by climate change. High-power stakeholders can utilize their resources and expertise to facilitate capacity-building initiatives for low-power stakeholders, including local communities and women's organizations.

2.10.3.2 Inclusive Platforms:

Ministries overseeing education and technology can play a role in promoting climate education through media, seminars, and educational partnerships, empowering low-power stakeholders with knowledge, skills and local science-based solutions to engage in the NAP process. Moreover, high-power stakeholders should create inclusive platforms for dialogue and decision-making.

2.10.3.3 Community Inputs:

Ministries overseeing infrastructure and housing can prioritize climate resilience and community input, broadening their roles. Additionally, high-power stakeholders can effectively advocate for the rights of vulnerable communities.

2.10.3.4 Equitable Participation:

Ministries focusing on human rights and women's status can actively champion the rights of those impacted by climate change. This realignment ensures that the concerns of low-power stakeholders are heard and protected, promoting a more equitable and impactful NAP process in Pakistan.

2.10.4 Enabling Low-Power Stakeholders:

Increasing the collective influence of low-power stakeholders with high interest in climate change adaptation requires strategic actions by high-power stakeholders aligned with the terms of reference. The key to success is promoting local language in NAP for the marginalized communities to enhance engagement.

2.10.4.1 Capacity Building:

Capacity-building initiatives, as per academic institution ToRs, should focus on training and knowledge dissemination to empower low-power stakeholders. Civil society organizations, as outlined in ToRs, can conduct awareness and education campaigns targeting vulnerable communities, educating them about climate adaptation and their role in the NAP process.

2.10.4.2 Advocacy:

To foster participation, various stakeholders, including local governments, academic institutions, and civil society organizations, must create platforms for open dialogue, incorporating inputs from low-power stakeholders into decision-making processes. Advocacy, as described in ToRs of civil society organizations, academia, and local governments, can support stakeholders in forming networks and coalitions to amplify their collective voice in advocating for climate adaptation at local governance levels.

2.10.4.3 Localized Communication:

Effective communication, as emphasized in state media ToRs equipped with climate data and information, is essential to empower local-level stakeholders to make informed decisions and engage effectively in adaptation planning.

Conclusion:

1. Study Analysis:

- The study provides a stakeholder analysis and design of the engagement strategy for the stakeholders with approaches to engage various powerful stakeholders. It provides a comprehensive coordination mechanism framework highlighting country led and federal to provincial and local coordination and communication. It outlines terms of reference to increase the collective influence of the stakeholder groups with varying power at federal, provincial and local levels.
- The overall analysis in the report is based on information analysis from the secondary sources mentioned with sources.
- The report presents stakeholder mapping and profiling within the premise of four core themes; (i) analysis of clear roles, interests and their link to NAP, (ii) the analysis of the power matrix to increase impact of the NAP process, (iii) a SWOT analysis through highlighting strengths, weaknesses and opportunities and threats to minimize risks such as lack of coordination or disenfranchisement, and (iv) designing of the stakeholder engagement plan based on using engagement approaches such as incentivizing interest based roles. Each section analyzes detailed information on the methods, analysis and findings.

2. Power Matrix Analysis:

- The findings and conclusions draw on identifying and categorizing key stakeholders including government bodies responsible for governance across vulnerable sectors, aligning key stakeholders with power categorically at federal and provincial level responsible for relevant vulnerable sectors i.e., water resources, agriculture and livestock, health, forestry, disaster management, gender inclusion, biodiversity and land and marine ecosystems, and urban resilience.
- Stakeholders' key roles and functions, climate change related stakes and interests, and the linkage of their interest-based roles to NAP process through forming coordination mechanisms, have been explored. Their influence has been analyzed through power matrix with respect to power dynamics, by highlighting strengths, weakness, opportunities and threats to do a situational analysis.
- Study reveals how the stakeholders with power have roles and interests that could be linked to the NAP process based on analysis of nature of their challenges and expectations.
- It identifies their powerful governance roles linked to technical aspects of governance and their core functions such as data availability, quality, and analysis; while others are more interested in the political and governance, and social aspects of their roles such as coordination, participation and ownership in the NAP process in order of relevance to influence its planning and implementation.
- Power matrix groups stakeholders with high power-high interest, high power-low interest, low power-high interest and low power-low interest.

3. SWOT Analysis:

- The strengths such as existing governance paraphernalia and legalese, weaknesses such as weak coordination and cooperation, and conflict of interests, opportunities such as potential to capitalize on climate change adverse impacts through reforming processes and capacity building and availing local and international financial access, and threats such as climate change vulnerability will be worsened in coming years, hence proposing a comprehensive

SWOT analysis to capture opportunities and minimize threats by building strengths and removing weaknesses.

4. Engagement Approach:

- The study proposes a comprehensive framework to capture the stakeholders' interests by incentivizing approaches i.e., aligning interests of the stakeholders with power to cohesively work on climate change adaptation and pursue collective goals together.

5. Coordination Mechanism:

- It captures interest-based roles of the stakeholders in country-led and federal to provincial coordination mechanisms by transforming the incentivized interests through outlining clear terms of reference which are an outcome of the incentivized interests and their linkage to NAP.

6. Collective Influence Analysis:

- The terms of reference further ensure two-way communication in coordination mechanisms by highlighting the urgency of climate change adaptation related roles expected from all the stakeholders involved, and by explicating collective influence of the groups with high power low interest and low-power high interest.

Recommendations:

By drawing on overall findings and conclusion in this report, specific recommendations are presented for improving stakeholder engagement for the NAP process. These recommendations aim to enhance stakeholder engagement, power dynamics, and overall effectiveness in the climate change adaptation process in Pakistan.

They underscore the importance of governance, communication, aligning and incentivizing interests, monitoring and evaluation, capacity building, learning and knowledge sharing, participation and inclusiveness, fostering cooperation and climate finance access in pursuit of collective climate resilience goals. The recommendations also provide a way-forward for developing stakeholder engagement strategy and developing road map for NAP process in Pakistan.

1. Governance:

- Establish a clear governance structure for the NAP process, with defined roles, responsibilities, and authorities of different stakeholders with varying powers and interests.
- Act on the findings of the SWOT analysis. Leverage existing governance strengths, address weaknesses, capitalize on opportunities, and mitigate threats to strengthen the NAP process.
- Recognize the urgency of climate change adaptation and emphasize the need for proactive involvement from all stakeholders. Encourage them to prioritize climate-related responsibilities in their roles and functions.
- Clearly define the roles and responsibilities of stakeholders within the coordination mechanisms, as outlined in the terms of reference.
- Ensure that each stakeholder understands their specific contributions to the NAP process, enhancing accountability and effectiveness.
- Ensure coordination and collaboration among stakeholders at different levels and sectors, as well as alignment and coherence with existing policies and frameworks related to climate change adaptation.

- Create a steering committee or a coordination unit to oversee and guide the NAP process, as well as a technical working group or a thematic group to provide technical support and expertise.
 - Strengthen coordination and cooperation among stakeholders, particularly those with varying levels of power and interest.
 - Facilitate regular meetings, information sharing, and collaboration to ensure a unified approach to climate adaptation.
- 2. Communication:**
- Develop a comprehensive communication strategy for the NAP process, with clear objectives, messages, audiences, channels, and resources.
 - Establish two-way communication channels within the coordination mechanisms to facilitate dialogue between high-power, low-interest stakeholders, and low-power, high-interest stakeholders. Ensure that all voices are heard and valued.
 - Consider the different preferences, needs, and capacities of different stakeholders for communication and engagement modes.
 - Use various communication tools and methods, such as email, phone calls, meetings, workshops, webinars, newsletters, social media, etc., to disseminate information, solicit feedback, and promote dialogue among stakeholders.
- 3. Monitoring and Evaluation:**
- Implement a robust monitoring and evaluation system to track the progress and impact of the engagement strategy and NAP roadmap. Regularly assess the effectiveness of the strategy and make necessary adjustments to ensure transparency and accountability in the NAP process.
 - Provide timely, accurate, and relevant information to stakeholders.
 - Involve stakeholders in decision-making processes. Ask to report on progress and outcomes of the NAP process.
 - Use indicators and criteria to measure the effectiveness and impact of stakeholder engagement for the NAP process.
 - Embrace adaptive management principles in the NAP process. Be open to adjusting strategies, roles, and approaches based on changing circumstances, emerging challenges, and stakeholder feedback.
- 4. Incentivizing Interests:**
- Develop and implement a strategy that aligns the interests of stakeholders with power to work cohesively on climate change adaptation.
 - Provide incentives or benefits to motivate these stakeholders to actively contribute.
 - Acknowledge and address the diverse perspectives, interests, and expectations of different stakeholders.
 - Create a conducive environment for constructive dialogue and collaboration.
 - Manage conflicts and disagreements constructively.
 - Recognize and appreciate the contributions and achievements of different stakeholders.
 - Build long-term relationships among stakeholders.
- 5. Capacity Building:**
- Invest in capacity-building programs for stakeholders with lower power and interest. Empower them with the knowledge and resources needed to actively participate in the NAP process and increase their influence.
- 6. Learning and Knowledge Sharing:**

- Promote learning and knowledge sharing among stakeholders for the NAP process.
- Identify and address the knowledge gaps and needs of different stakeholders.
- Facilitate access to relevant data, information, and resources; by creating platforms and opportunities for exchange of experiences, best practices, lessons learned, challenges, and solutions.
- Enhance the capacity and skills of different stakeholders.
- Foster innovation and creativity among stakeholders.

7. Participation and inclusiveness:

- Enhance participation and inclusiveness of different stakeholders for the NAP process.
- Identify and engage a wide range of stakeholders from different levels, sectors, regions, genders, ages, etc.
- Ensure representation and voice of marginalized and vulnerable groups.
- Adopt participatory approaches and methods that enable active involvement of different stakeholders.
- Provide adequate support and incentives for stakeholder participation.
- Ensure that stakeholder participation leads to meaningful influence on the NAP process.

8. Climate Finance Access:

- Explore opportunities to access local and international climate finance to support climate adaptation initiatives. This can help overcome financial constraints through innovative financing such as public-private partnerships and products to enhance the effectiveness of adaptation efforts.

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- ⁶⁰ The methodology for engagement strategy is prepared in line with Walker Institute – Institutional Engagement Plan.

Annex-1:

Table 1: Sector-wise Key Stakeholders for Vulnerable Sectors

S.No.	Vulnerable Sectors	National and Provincial Key Stakeholders
1	Water Resources	National (Federal) Stakeholders: Ministry of Water and Power, Ministry of Planning, Development and Reform, Ministry of Petroleum and Natural Resources, Ministry of Climate Change, Pakistan Council of Research in Water Resources (PCRWR), Federal & Prov. EPAs, Ministry of National Food Security & Research, Pakistan Agriculture Research Council (PARC), and National Agriculture Research Council (NARC). Provincial/Local Stakeholders: Punjab Punjab Planning and Development Department (P & DD), Punjab Local Government Elections and Rural Development Department (LGRDD), Punjab EPD & EPA, Punjab Industries and Commerce Department, Water and Sanitation Agency (WASA), and Punjab Agriculture Department. Punjab Industries and Commerce Department Sindh Directorate general water management, Sindh irrigation and drainage authority, Irrigation department, Planning and Development Department (P & DD), Sindh Local Government Elections and Rural Development Department (LGRDD), Sindh Planning and Development Department, Sindh Industries and Commerce Department, and Sindh EPA. KPK KPK Planning and Development Department (P & DD), KPK Local Government Elections and Rural Development Department (LGRDD), Public Health and Engineering Department (PHED), KP_EPA, Agriculture Department-KPK, Water and Sanitation Agency (WASA) KP, KP Wildlife Department. Balochistan Balochistan Irrigation dept.-Balochistan integrated water resource management project, Planning and Development Department (P & DD), Baluchistan Local Government Elections and Rural Development Department (LGRDD), Forestry Department Balochistan, PHED-Quetta, EPA-Balochistan, PCRWR AJK Planning & Development dept. GB Water and Power Department, Local Government & Rural Development (LG & RD)
2	Agriculture and Livestock (For food)	National (Federal) Stakeholders:

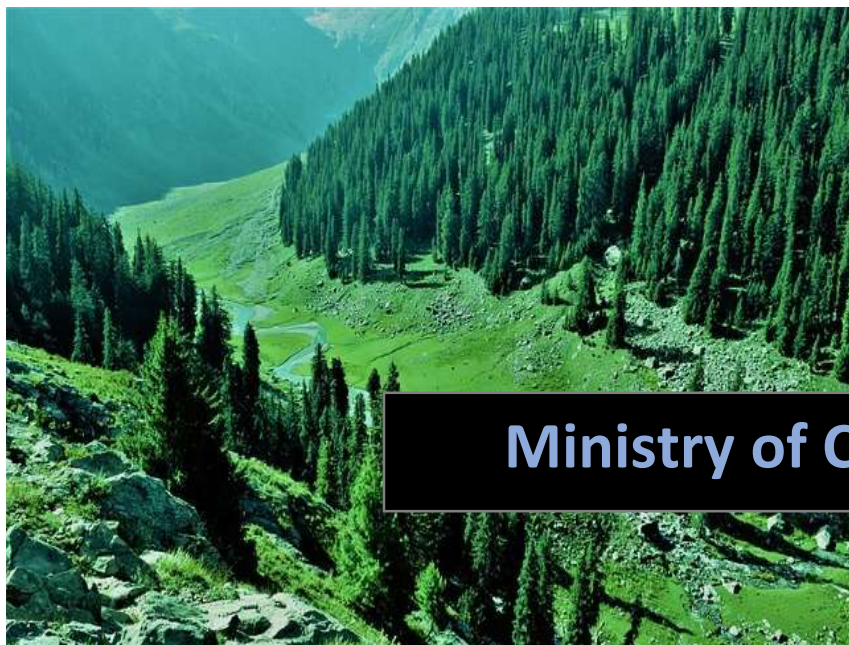
	security and food sustainable systems)	Ministry of Climate Change, Ministry of Water and Power, Climate Change Centers, Ministry of Water and Power, Ministry of National Food Security and Research, Pakistan Agricultural Storage and Services Corporation Limited, Centre for Agriculture and Biosciences International (CABI), and Federal Seed Certification & Registration Department, National Energy Efficiency and Conservation Authority (NEECA), Alternative Energy Development Board (AEDB), NDMA, PDMA, GCSIC, Ministry of Communication, and Atomic Energy Commission. Provincial/Local Stakeholders: Punjab Agriculture Department, Irrigation dept., Livestock & Dairy Development Department Pakistan Agriculture Research Council, LG & RDD, In-Service Agriculture Training Institutes (IATI), Water Management training and Research Institute (WMT &RI), Agricultural Universities, WWF, Public Procurement Regulatory Authority (PPRA), Sustainable Rice Platform (SRP), Pakistan Rice Growers/ exporters Association. Planning & Development Board Sindh Agriculture Department, Irrigation dept., On-farm water management, Sindh irrigation agriculture system, Agriculture, Supply & Prices Department, Livestock & Fisheries Department, Agricultural Universities, In-Service Agriculture Training Institutes, Public Procurement Regulatory Authority (PPRA), Food Department KPK KPK Agriculture Department, Irrigation dept. Agri-certification dept., PARC Arid Zone Research Centre, Food dept., Agricultural Universities, Public Procurement Regulatory Authority Balochistan Agriculture Department, Agriculture Research Institute, Agricultural Research & Development Center (BARDC), Crop reporting services, Food dept. Public Procurement Regulatory Authority, Balochistan Agricultural college, Agriculture engineering, On-farm water management, Irrigation dept., Register Cooperative dept. Local government and rural development Dept. Livestock and dairy development dept., Directorate of Animal Health , Directorate of Farm & Feed Resources, Directorate of Research & Supplies, Food and Agriculture Organization of the United Nation (UN), World Health Organization, World Organization for Animal Health AJK Agriculture Department, Food Department GB Irrigation and Water Management Department, Agriculture, Livestock & Fisheries Dept, Food Department
3	Forestry, Biodiversity and other Ecosystems sectors (land & marine ecosystems)	National (Federal) Stakeholders: Ministry of Climate Change (Provincial Forest Departments), Water - Ministry of Water Resources (Federal Flood Commission, Indus River System, Provincial Irrigation Departments, Pakistan Council of Research in Water Resources – (PCRWR) Provincial/Local Stakeholders:

		Punjab Forestry, Wildlife and Fisheries Dept. Sindh Govt. of Sindh, Forest, & Wildlife Department, Environment, Climate Change & Coastal Development Department, Pakistan Navi, Maritime Security Agency, Karachi Port Trust, National institute of Oceanography (NIO), Forest Departments of Govt. of Sindh, Fisheries Dept. Prov. P&DDs, Prov. P&DDs, Prov. EPA, Cleaner Production Centers. KPK Department of Environment, Climate Change Forestry, Environment and Wildlife Department (FEW), Tourism dept. Balochistan Forestry and wildlife dept., conservator of forests north and south, Balochistan Environmental Protection Agency (BEPA) Irrigation Department, Local Government and Rural Development Department (LG&RD), industries and commerce dept. Communication Works, Physical Planning and Housing Department, fisheries dept. forest and wildlife dept. Marine fisheries, Inland fisheries AJK Forest Department, Tourism Department, Industries & Commerce Department GB Forest, Wildlife & Environment Department, GB-EPA, Tourism, Sports & Culture Department
4	Human Health	National (Federal) Stakeholders: Ministry of National Health Services and Regulations Provincial/Local Stakeholders: Punjab Health dept., WASA, Public Health and Engineering Departments. Rescue 1122 Sindh Health Department, Rehabilitation Department, Public Health Engineering & Rural Development Department, WASA KPK Department of Health, Population welfare dept., Public health engineering dept. WASA Balochistan⁶¹ Health Dept. Directorate general of health services, nursing and nutrition Bolan medical college, Institute of public health, Drug control authority, Health foundation, District health organizations. Social Welfare Department, WASA AJK Health Department GB

		Health Department
5	Disaster Preparedness	National (Federal) Stakeholders: National Disaster Management Authority, Pakistan Meteorological Department (PMD) Provincial Stakeholders: Punjab PMDs at district level Provincial Disaster Management Authorities, District Disaster Management Authority, Provincial Climate Change Research Centre, Local Government and Community Development Sindh PDMA, Human Settlement Department, Local Government, Housing & Town Planning Department, PMD KPK PDMA, PMD, Relief Rehabilitation & Settlement Department, Transport dept. Balochistan Balochistan provincial disaster management authority, Provincial disaster management commission, District Disaster Management Authority Balochistan, PMD Quetta AJK State Disaster Management Authority, Services & General Administration, Transport Authority, Information Department, PMDs Muzaffarabad, Mirpur, Kotli, GB Gilgit-Baltistan Disaster Management Authority, Gilgit-Baltistan Rural Support Programme
6	Urban Resilience (For smart & green cities planning and management)	National (Federal) Stakeholders: Pak-EPAs, Capital Development Authority, M/o Planning, Development and Reforms, MOCC, M/o of Housing and Works Provincial/Local Stakeholders: Provincial Environment Protection Departments-EPAs, Public Communications and Works Departments, Provincial Local Government Departments, Provincial housing and town planning departments, Housing, Urban Development and Public Health Engineering Dept., CADD, LGRDD, and Cantonment Boards. Sindh Public Health Engineering & Rural Development Department, Local Government, Housing & Town Planning Department, KPK Department of Planning & Development, Department of Housing, Balochistan Urban Planning and development dept, Directorate of Works, Quetta Development Authority, Population welfare, Energy dept., transport dept,

		science and information technology dept. Services and general administration dept, AJK Local Government, Electricity Department, Population welfare dept. GB Local Government & Rural Development (LG & RD) Planning & Development Department, Public Works Department, Gilgit Development Authority, Skardu Development Authority, Northern Areas Transport Corporation (NATCO)
7	Gender	National (Federal) Stakeholders: Ministry of Human Rights, National Commission on Women Status Provincial/Local Stakeholders: Punjab Women Development Department, Directorate of women development, Office of the ombudsperson protection against harassment of women at workplace, SBBWC and shelter homes (division level) Population Welfare Department, Human Rights and Minorities Affairs, Social Welfare, Special Education Sindh Women development Department. Zindagi Women development society, Institute of Gender Studies Jamshoro, Social Welfare Department, Human Rights Department, Minorities Affairs Department KPK: Directorate of social welfare and Women Empowerment, Women Empowerment department, The Khyber Pakhtunkhwa Commission on Status of Women (KPCSW), Social welfare dept. Balochistan Women Development Department, Directorate of Women Development Department, Health Department, social welfare, Minorities affairs dept. AJK Women Welfare Organization –WWO, GB Department of Social Welfare, Population Welfare, Women

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Ministry of Climate Change