



THEMATIC WORKING GROUP REPORT

CAPACITY BUILDING



Prepared under the project 'Islamic Republic of Pakistan: Preparation of Third National Communication (TNC) under the UNFCCC'

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ABOUT WWF-PAKISTAN

The World Wide Fund for Nature - Pakistan (WWF-Pakistan) is one of the largest nature conservation organizations, working in Pakistan since 1970 with the vision to work towards the protection of the natural resources and sustainable resource use regime across the entire ecosystem. WWF-Pakistan is part of the global WWF Network, which has a presence in over 100 countries and thus has access to an enormous pool of environmental expertise and knowledge. With its Head Office in Lahore, 6 Regional Offices, and more than 30 project site offices across Pakistan, WWF-Pakistan is working on environmental conservation with more than 1000 employees spread throughout the country.

Since its inception in 1970, WWF-Pakistan has been involved in creating awareness about environmental issues in six major areas – which include freshwater, wildlife, oceans, forests, climate and energy, and foods and markets – amongst individuals and groups from all social tiers associated with each practice. The organization continuously strives to establish an effective communication pathway in the social hierarchy by gauging each stakeholder's existing grasp on the subject, devising appropriate content for the interested parties, and expressing it in the most comprehensible manner.

MISSION STATEMENT

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

- Conserving the world's biological diversity;
- Ensuring that the use of renewable natural resources is sustainable; and,
- Promoting the reduction of pollution and wasteful consumption.

EXECUTIVE SUMMARY

The Third National Communication will succeed the Second National Communication, submitted by Pakistan in 2019. The Communication will enable Pakistan to fulfill its requirement under Articles 4.1 and 12 of the United Nations Framework Convention on Climate Change (UNFCCC) to prepare and submit its national communication. Furthermore, it will entail how the country has been implementing the Convention, whilst also highlighting critical issues, constraints, and capacity requirements for climate mitigation and adaptation.

WWF-Pakistan has been declared as the 'Team Lead' for the Thematic Working Group (TWG) on 'Capacity Building'. Capacity building plays a crucial role in enhancing the knowledge, skills, and abilities of individuals and institutions to effectively address climate change challenges. Therefore, in order to ensure that the country is well-equipped to tackle impending climate change issues, and vulnerabilities, it is essential to periodically assess the ongoing and planned capacity-building activities and identify the needs for future initiatives. For this, a national-level survey was undertaken, targeting the stakeholders from key sectors outlined in the Nationally Determined Contributions (NDCs) 2021 of Pakistan, under climate change mitigation and adaptation.

The results from the current assessment on climate change related capacity building activities indicate that many organisations (within the priority sectors) are keeping a proactive approach. However, the frequency of such activities remains low and deficient to support the daunting scope of meeting on-ground needs. Challenges predominantly revolve around limited financial resources, inadequate technology access, and a shortage of skilled trainers.

Markedly, suggestions to bolster these efforts emphasize the urgency to devise sector-specific plans for targeted training, expanding the pool of skilled personnel horizontally and vertically across sectors, integrating climate change into policies, and fostering collaborative partnerships to overcome financial obstacles. An essential facet involves cultivating mass awareness, spanning technical and non-technical skills (including communication, negotiations, and grant writing) that supports creating sectoral interlinkages with climate change and encourages investment for mitigation and adaptation interventions. Moreover, it necessitates capitalizing on regional and international networks for knowledge exchange and infrastructural development (e.g. technology transfer), as per the needs of target sectors.

Overall, aligning capacity building activities with the on-ground needs (identified in this report) and bridging the gaps, through leveraging blended resource-providing options and the creation of robust partnerships is vital for enhancing the climate change mitigation and adaptation efforts in Pakistan, as stipulated under the UNFCCC.

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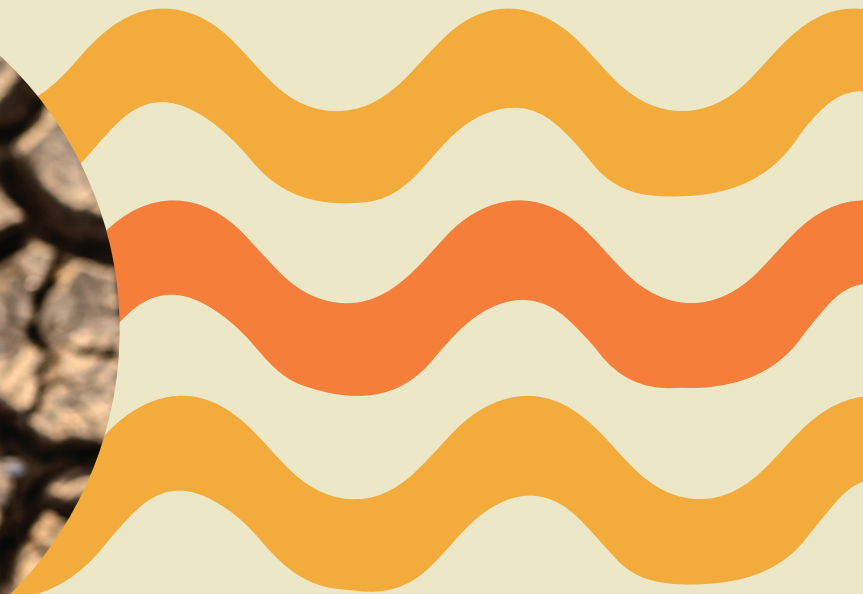
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LIST OF ACRONYMS

| | |
|----------------------|---|
| AFOLU | Agriculture, Forestry, and Other Land Use |
| BUR-I | Biennial Updated Report-I |
| EPA | Environmental Protection Agency |
| GHG | Greenhouse Gases |
| HSE | Health Safety & Environment |
| KOICA | Korea International Cooperation Agency |
| KP | Khyber Pakhtunkhwa |
| MoCC & EC | Ministry of Climate Change and Environmental Coordination |
| NDCs | Nationally Determined Contributions |
| R&D | Research & Development |
| SMEDA | Small and Medium Enterprise Development Authority |
| TWG | Thematic Working Group |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| WWF-Pakistan | World Wide Fund for nature – Pakistan |

SURVEY



1. INTRODUCTION

BACKGROUND

The UNFCCC¹ states that “capacity building is fundamental to achieving the goals of the Convention, and the Paris Agreement (Article 11).” It further observes that many developing countries continue to require capacity building support at individual, institutional, and systemic levels. Literature² suggests that despite the enactment of existing policies, implementation and enforcement remain low “primarily because of capacity, and resource constraints.”

At present, in order to carry out the climate change-related mitigation and adaptation activities prioritized within Pakistan’s national plans, policies, and commitments, including the National Climate Change Policy (NCCP) 2021, and the updated Pak-NDCs 2021 to the Paris Agreement, it is critical to assess the current status of the capacities of organizations operating in the identified priority sectors, and whether the ongoing capacity development activities are sufficient to fulfill the needs of climate change assessment and implementing organizations. The current report outlines the future needs for capacity building as retrieved from the national-level survey responses and review of the literature. Based on the desk review and survey results a strategy to address the capacity needs and identified challenges in ongoing capacity development efforts is needed.

2. METHODOLOGY

The current study was carried out through a two-stage assessment process:

1. Desk review of policies, programs, and ongoing activities related to capacity building for climate change mitigation and adaptation at the national level.
2. National-level survey targeting the key sectors outlined in the NDCs 2021 of Pakistan under climate change mitigation and adaptation. Figure 1 illustrates the sector-wise breakdown of the respondents.



KEY OBJECTIVES OF THE SURVEY

1. **Collection of information:** To gather data on the current capacity building activities being implemented or planned at the national level in Pakistan including, identifying target sectors and stakeholders, ongoing initiatives, and the progress made in enhancing capacity.
2. **Assessment needs:** To assess the capacity building needs of various sectors and stakeholders involved in climate action (mitigation and adaptation) in Pakistan. This will aid in understanding the existing gaps and challenges, and identify priority areas for future capacity development, specific skills requirements, and institutional support necessary for effective implementation.
3. **Development of program and strategy:** Based on the information gathered and needs assessed, the survey will contribute as a baseline to the development of a program and strategy for future capacity-building activities in Pakistan; as is required under the TNC.

¹UNFCCC (2023)

²World Bank (2022)

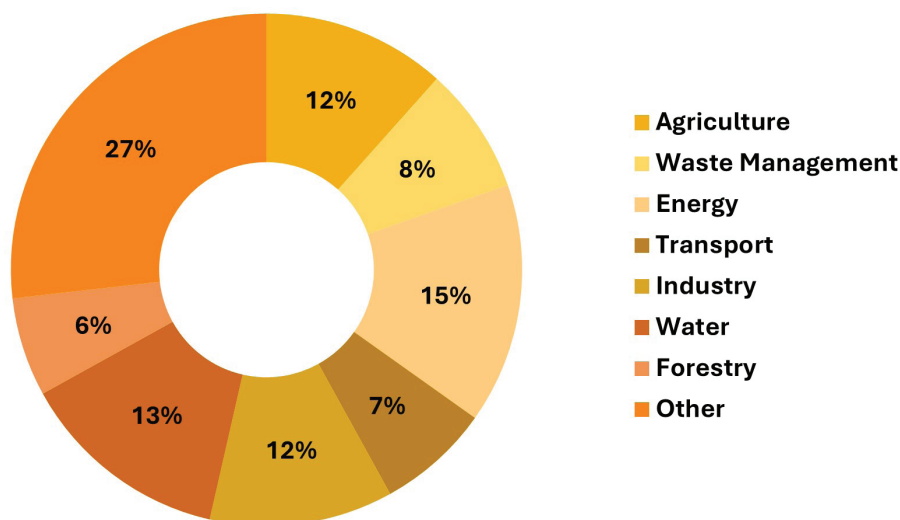


Figure 1: Sector-wise breakdown of Survey Respondents

3. PLANNED AND ON-GOING CAPACITY BUILDING ACTIVITIES FOR NATIONAL-LEVEL CLIMATE CHANGE MITIGATION AND ADAPTATION

The National Climate Change Policy of Pakistan 2021³ notes that there is a dearth of human resources (climate change experts), and institutional capacity in the country to deal with “comprehensive climate change science, modeling, management, adaptation, mitigation, and policy issues.” It reiterates the need for capacity enhancement through:

- the establishment of linkages among national institutions in the South Asian region to facilitate climate change-related knowledge-sharing and capacity building programs;
- an increase in the number of climate change professionals by providing young people with opportunities for higher education from internationally reputable institutes;
- development of climate-related curriculum for immersion in the local education system;
- knowledge-based management and networking with strategic climate change organizations for up-to-date information;
- exploration and provision of training to enhance capacity for preparing and implementing of projects and programs for climate change mitigation and adaptation, vulnerability assessment, GHG accounting, etc.

Similarly, the Framework for Implementation of Climate Change Policy (2014-2030)⁴ delineates the need for capacity development in the following mitigation and adaptation-linked sectors: water, agriculture, livestock and forestry, disaster preparedness, vulnerable ecosystems (e.g., coastal areas), energy, transport, industries, and urban planning.

The Second National Communication⁵ resounds the lack of human and institutional capacity in the country for climate change mitigation and adaptation, as mentioned in the NCCP 2021 as well. It further outlines the capacity needs under mitigation and adaptation priorities. It, however, did not comprehensively record the status of capacity building activities.

As a precursor to the achievement of the commitments made, the NDCs 2021 observes that “Pakistan will require finance, technology transfer, and capacity building in line with Article 4 of the United Nations Framework Convention on Climate Change (UNFCCC) and Articles 9, 10 and 11 of the Paris Agreement to fully implement the climate actions contained in these NDCs.” A few of the areas identified within the NDCs relating to capacity building are displayed in Figure 2.

³ National Climate Change Policy of Pakistan (2021)

⁴ Framework for Implementation of Climate Change Policy (2014-2030)

⁵ Second National Communication of Pakistan (2018)



Figure 2: Areas identified in NDCs related to capacity building

In the context of capacity building at the policy, operational, and reform levels (nationally and sub-nationally) it further refers to Pakistan's commitment to the Agenda 2030⁶ Sustainable Development Goal 13-B which calls for "promotion of mechanisms to raise capacity for planning and management, and undertake human and institutional capacity development on climate change issues."

Besides the ambition shown within policies, plans, and international commitment by the government vis à vis capacity development for climate change-related activities, there are a number of initiatives being undertaken by non-governmental entities. In order to encapsulate the planned and ongoing interventions in addressing the capacity needs of organizations on the ground, the results from the national-level survey (attached in Appendix) are as follows:

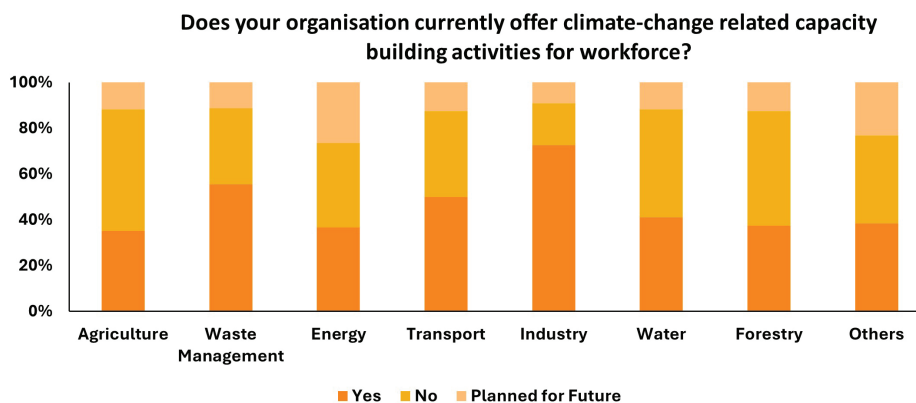


Figure 3: Climate change-related capacity building activities offered to the workforce

A majority of the surveyed organisations indicated offering climate change-related capacity building activities for their workforce; this included both external and in-house activities.

This suggests that many organizations are already taking steps to build the capacity of their workforce. Figure 3 illustrates the survey responses in detail. For example, under the Agriculture sector 53 per cent of the organisations said that they are currently offering climate change-related capacity building activities, 35 per cent are not offering it and 12 per cent have planned it for future. However, despite the ongoing efforts the number of such activities per year is small, with most of the sectoral organisations offering between one to ten capacity building activities per year (Figure 4); implying that there is still room for growth and pace.

⁶ UN (2023). *The Sustainable Development Goals in Pakistan*

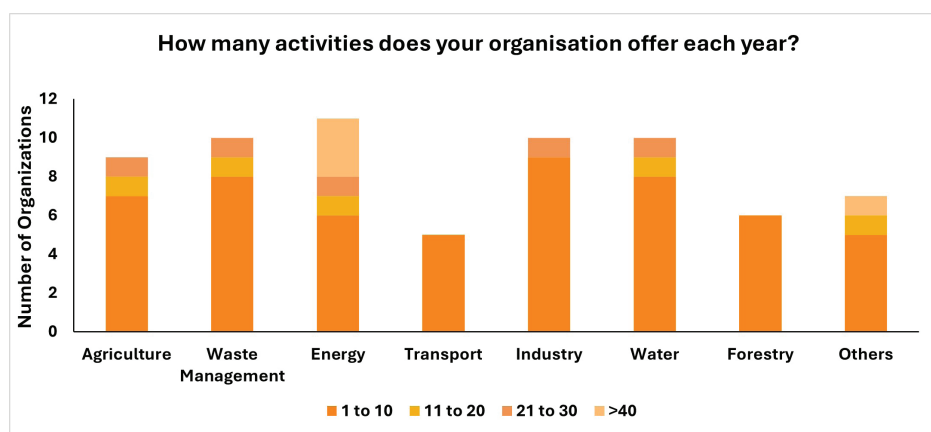


Figure 4: Number of capacity building activities being offered per year

CURRENT PROGRESS RELATED TO CAPACITY BUILDING ACTIVITIES

As per the updated information in the Biennial Update Report-1 (2022)⁷ capacity building support received for mitigation and adaptation is as follows:

- Mitigation:** Local training for promotion and awareness regarding renewable energy sources.
- Adaptation:** KOICA has established a Pak-Korea capacity building center for agriculture and livestock technology in PMAS Arid Agriculture for R&D purposes.

Table 1 provides information about capacity building projects and activities, as collected under the national-level survey. The following themes were identified from the sectoral responses:

| | |
|------------------------------|--|
| Agriculture | Sustainable practices to mitigate greenhouse gas emissions while ensuring food security and resilience of farming systems. |
| Water | The management, distribution, conservation, and purification of water resources, addressing challenges such as access to clean water, sustainable usage, infrastructure development, and water availability and quality. |
| Energy | Production through the generation, distribution, and utilization of diverse energy sources and increased emphasis on sustainability and the transition to renewable resources (including household, industry and transport). |
| Health, Safety & Environment | Safeguarding human well-being, ensuring workplace safety, and preserving the natural environment by implementing regulations, protocols, and measures to minimize risks and promote sustainable practices across various industries. |
| Sustainability & Plastics | Reducing plastic pollution, promoting recycling, innovating biodegradable alternatives, and adopting circular economy principles to minimize environmental impact. |

⁷ Pakistan Biennial Update Report 1 (2022)

| | |
|-------------------------------------|---|
| Disaster Management | Proactive planning, response, and recovery efforts aimed at minimizing the impact of natural or man-made disasters on communities, infrastructure, and the environment through preparedness, mitigation, and coordinated emergency response strategies. |
| Climate Change & Finance | Mobilization and management of funds aimed at addressing climate-related challenges, supporting mitigation efforts, facilitating adaptation measures, and promoting sustainable development. |
| Greenhouse Gases | The systematic measurement, monitoring, and reporting of emissions from human activities to understand and manage their impact on the environment and climate change. |

Overall, the projects aim to enhance climate resilience, promote efficient utilization of water and fertilizers, popularize biofertilizers, and more. It includes initiatives like workshops, seminars, training, and educational programs conducted by different organizations and companies. These initiatives aim to spread awareness about energy conservation, renewable energy, sustainability, and environmental impact assessment. Some of the notable projects discussed in the table are the Renewable Energy projects, Energy Conservation Drive across Habib Bank Limited Network, Waste Reduction, Carbon Footprint Reduction by WWF, and the Sustainability Summit by Greenwich + KRC. Additionally, it highlights the efforts of organizations like Yunus Textile Mills, Nishat Apparel, and Siemens to implement sustainability practices in their operations and reduce their carbon footprint. It is evident from this glimpse into the diverse initiatives taken, that climate mitigation and adaptation is increasingly being mainstreamed amongst key sectoral operations.

Table 1: Climate change-related capacity building activities offered or planned by organisations surveyed (at the national, regional or international levels)

| Focal Area: Agriculture | | | |
|---|--|---|---------------------------|
| Capacity Building Activity (e.g., Workshop, Training) | Theme | Host Organization | Year of Completion |
| Research projects | Energy/ Agriculture/water/climate change | Fatima Jinnah Women University (FJWU) | Ongoing |
| Training to farmers, nurserymen, etc. | Climate resilience through horticulture intervention | Agriculture Extension KP | 2023-24 |
| Training on courtyard farming in KP | i. Climate resilience ii. Domestic water utilization iii. Organic farming iv. Efficient utilization of water and fertilizers | Agriculture Extension KP | 2023-28 |
| Biofertilizer application training | Popularization of biofertilizers to reduce emissions | Agriculture Extension KP | 2023-26 |
| Honey beekeeping management in the climate change era (A total of 8 trainings were conducted) | Agriculture/Beneficial Insects | Agriculture Research Institute (ARI) Tarnab, Peshawar | 2021-23 |
| Training for nursery men on healthy plant production (more than 10 trainings have been conducted) | Agriculture/Horticulture/ Entomology | Newly-merged Districts & ARI Tarnab and ARI Swat | 2021-23 |
| Eco-friendly management of pests in different fruits (5 trainings in different localities) | | | |
| Soil health improvement using soil microorganisms for climate-smart agriculture workshop | Agriculture/Soil Science | Directorate of Soil & Plant Nutrition | 2023 |
| Crop yield estimations Training under changing climate using google earth engine | Climate Change and Crop Fields | On Farm Water Management, Agriculture Research, SWC, and Academia | 2023 |
| Women's agriculture work resilience workshop | Agriculture | Women Engage for a Common Future | 2022 |

| Focal Area: Energy | | | |
|--|--|---|--------------|
| Net zero energy building workshop | Sustainable Infrastructure | Shehri | 2017 |
| Solar energy | Energy Conservation & Efficiency Trainings & Seminars | Darya Lab | 2023 |
| Net metering | | | |
| Climate change | | | |
| Reenergizing | | | |
| E-bikes | | | |
| Renewables | | | |
| Energy conservation drive across HBL network | Internal (Organizational) | Habib Bank Limited (HBL) Green Operations | 2022-23 |
| Workshop on Carbon footprint determination in Oil & Gas Industry | GHG emissions | Oil & Gas Development Company Limited (OGDCL) | 2022-23 |
| Energy audit training | Carbon Footprint | OGDCL | 2022-23 |
| Internal training related to GHG reduction and energy conservation | Energy Management | Packages Group | 2023 |
| Energy efficiency climate & public procurement sector workshop | Energy Management | National Ozone Unit | 2023 |
| Training on baseline energy audits | Energy Efficiency | SMEDA | Ongoing |
| SMEDA-UNIDO energy desk Initiative | Renewable Energy and Energy Efficiency | SMEDA | Ongoing |
| Sustainability initiatives | Water, Energy, Emission, Chemical, Waste Water, Waste | Yunus Textile Mills Limited | 2021 |
| WWF-Pakistan's Green Office Program | Energy Efficiency, Waste Reduction, Water Conservation, Carbon Footprint Reduction | WWF-Pakistan | 2012 onwards |
| Training on solar PV | Innovation in PV cells, efficiency | National University of Sciences & Technology (NUST) | 2023 |
| Solar schools project | Giving solar panels to needy children | REON Energy | 2020 onwards |

| Focal Area: Water | | | |
|---|---|---|---------------------|
| Research projects | Energy/ Agriculture/water/climate change | FJWU | Ongoing |
| Courtyard farming in KP | i. Climate resilience ii. Domestic water utilization iii. Organic farming | Agriculture Extension KP | 2023-26 |
| Training workshops, field days, site visits (11 events with 190 professionals/students and 24 farmers/community) | Rainwater harvesting Irrigation management Solar water pumping Integrated Watershed | Climate & Energy Water Resource Institute-National Agriculture Research Center (CEWRI-NARC) in collaboration with national, and international organizations NGOs & lined departments | 2018 |
| Training workshops, field days, site visits (13 events with 303 professionals/students and 71 farmers/community) | Rainwater Harvesting, Irrigation management Solar water pumping Integrated Watershed | CEWRI-NARC | 2019 |
| Training workshops, field days, site visits (11 events with 190 professionals/students and 24 farmers/community) | | | 2020 |
| Training workshops, field days, site visits (16 events with 236 professionals/students and 315 farmers/community) | | | 2021 |
| Hydrological modelling of ungauged basins under climate change | Hydrological Assessment under Climate Change | KP Irrigation Department | 2022 |
| WWF-Pak Alliance for Water Stewardship | Employee Water Awareness Campaigns, Water Stewardship Training, Water-Saving Behavior | WWF-Pak | 2021 |
| Training on integrated rainwater harvesting techniques & mitigate urban flooding | Rainwater Harvesting Techniques | Pakistan Council of Research in Water Resources (PCRWR) | 2023 |
| Training on water quality monitoring & SDG 6 (6.1) | WASH | PCRWR | Planned for 2023 |
| Training by WWF-Pakistan (Green Office) | Resource Conservation (Electricity & Water) | JSBL | Every Year |
| Focal Area: Climate Change & Finance | | | |
| Training sessions | Climate finance | Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) | 2023 |

| | | | |
|---|--|--|----------|
| International conference on Environment & Climate Change | Climate change impacts and finances | World Bank | 2022 |
| Climate awareness session | Schools Sensitization | Planning & Development (P&DD) + Education Departments | 2023 |
| Climate change sensitization | Line Department | EPA+P&DD | 2023 |
| Capacity building training on climate change for the community in KP | Climate change policy and action plan | EPA Peshawar | 2021-22 |
| Establishing green climate clubs in schools | Youth awareness of climate change and global warming | | 2022-23 |
| Training | Enhancing building capacity of master trainers for climate change etc. | Pakistan Institute of Management (Karachi) | 2022 |
| Strengthening the national GHG inventory/management | Work on data and other parameters related to climate change | Global Change Impact Study Center/UNEP | 2023 |
| CDBRM training | Climate Change & CDBRM | CCC/P&DD, ADB | 2018-19 |
| Consultative workshop with farmers of domestic water users on Climate Change | Climate Change and its Impact on Water Resources | International Water Management Institute (IWMI)/On Farm Water Management Okara | 2023 |
| Awareness and capacity building of farmers and domestic users on Climate Change | Climate Change and its Impact on Water Resources | | 2023 |
| Flood early warning system modeling and simulation under Climate Change | Climate Change and Floods | IWMI/Public Health Engineering Department/KP Irrigation | 2023 |
| Groundwater monitoring training | Climate Change and Ground Water | PCRWR | 2023 |
| Crop yield estimations under Changing Climate using GEE | Climate Change and Crop Fields | OFWM, Agriculture Research, SWC and Academia | 2023 |
| Focal Area: Disaster Management | | | |
| CDBRM training | CDBRM | CCC/P&DDR, Asian Development Bank | 2018-19 |
| Severe weather forecasting training | Impact-based Forecast | UK-Met Office (UK-Aid) | 2019-22 |
| Monsoon forum 2022, 2023 seminars | Seasonal Prediction | NUST | 2022, 23 |
| Environment Impact Assessment/Cleaner Development Mechanism | Environment Impact Assessment | Asian Disaster Preparedness Center | 2023 |

| Focal Area: Sustainability & Plastics | | | |
|---|---|-------------------------------------|----------------------|
| Capacity building on SDGs and MEAs | 17 SDGs and multilateral environment agreements | EPA Peshawar | 2023 |
| Sustainability summit | Social, economic, and environmental dimensions | Greenwich + KRC | 2023-24 |
| Policy advocacy | HLPF, APFSD COP 28 | Greenwich + KRC | 2018 onwards |
| Seminars and publications | Eco-friendly city and transport | Shehri | 2017-18 |
| Sustainable green finance | Internal Organizational | HBL SEMS Unit | 2022 onwards |
| HBL's Green Taxonomy (HGT) | Internal Organizational | | 2022 onwards |
| Green team training sessions (in-house) | Employee Engagement, Circular Economy Practices, In-House Sustainability Metrics, Diversity and Inclusion in Sustainability | Nishat Apparel | 2023 onwards |
| Plastic-free Nishat campaign (in-house) | Awareness and Education, Plastic Audit, Single-Use Plastic Reduction, Reusable Options, Plastic Recycling | | 2022 onwards |
| Training workshops | Sustainability Base Camp | Siemens | 2022 |
| Green Karachi sessions | Clifton, Airport, Nazimabad, Malir, | The Humanity era | 2020 onwards |
| Focal Area: Pollution | | | |
| Workshops | Air quality | PAQI | Each year since 2018 |
| Awareness of sound management of hazardous & chemical waste | National Hazardous Waste Management Company | MoCC & EC | 2023 |
| Focal Area: Health Safety & Environment | | | |
| State of environment report Punjab | State of Environment, Punjab | Environmental Protection Department | 2023 |
| Development of national action plan for artisanal gold mining | Environmental and health impacts + technological upgradation | MoCC & EC/ GB EPA | 2023 |
| Impacts & aspects of hazardous waste sessions | Health & Safety, Environment | Zephyr Waste Solutions | 2020 |
| Focal Area: GHGs | | | |
| National GHG inventory development | GHG emissions | GCISC | 2023 |
| Training city administration on GHG inventory development | City GHG inventory | GCISC/MoCC | 2023 |

| | | | |
|--|--|--|--------------|
| Workshop on Carbon footprint determination in Oil & Gas industry | GHG emissions | OGDCL | 2022-23 |
| Miscellaneous | | | |
| Youth awareness campaigns | Government + civil society | Greenwich + KRC | 2021 onwards |
| Consultative workshops | Implementation of Principal NDCs | UNDP/GBEPA | 2022 |
| Sessions on making local groups more inclusive | Unlocking the fiscal economic service delivery | Lahore University of Management Sciences/ Institute of Development | 2023 |
| Study/publication | Transport issues of six cities of Sindh | Shehri | 2018 |
| Awareness seminars/ plantation walks | Green chemistry principles | FJWU | Ongoing |

4. NEEDS FOR FUTURE CAPACITY BUILDING ACTIVITIES

A critical component of the survey that was undertaken included gathering information regarding the need for future capacity building activities, and the gaps identified in the delivery or implementation of current interventions by organisations.

From the survey responses, visibly, there was a dearth of organisations that have carried out comprehensive capacity needs assessments at the organisational level.

Figure 5 illustrates that the majority of the sectors indicated that they had not undertaken a capacity needs assessment related to climate change, resounding the need for prioritization of capacity needs assessments related to climate change. Under the energy sector, 38 per cent organisations said that they carried out capacity needs assessment while 62 per cent answered “No” to the said question. Similarly, “under the waste management sector”, only 15 per cent organisations had undertaken the capacity needs assessment related to climate change while 85 per cent answered “No” to the said question.

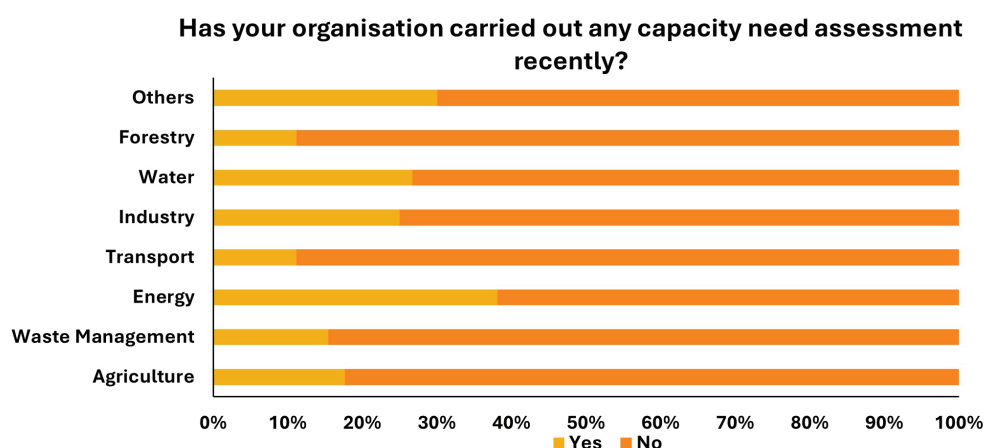


Figure 5: Capacity needs assessments undertaken by surveyed organisations

Despite the lack of well-rounded assessments, 81 per cent of the surveyed organisations specified that the current capacity-building activities within their organisations were insufficient to meet the on-ground needs. Meanwhile, only 19 per cent of respondents indicated their satisfaction with the current activities (Figure 6). This therefore entails that greater efforts are required to enhance the capacity of organizations working on climate change mitigation and adaptation in Pakistan.

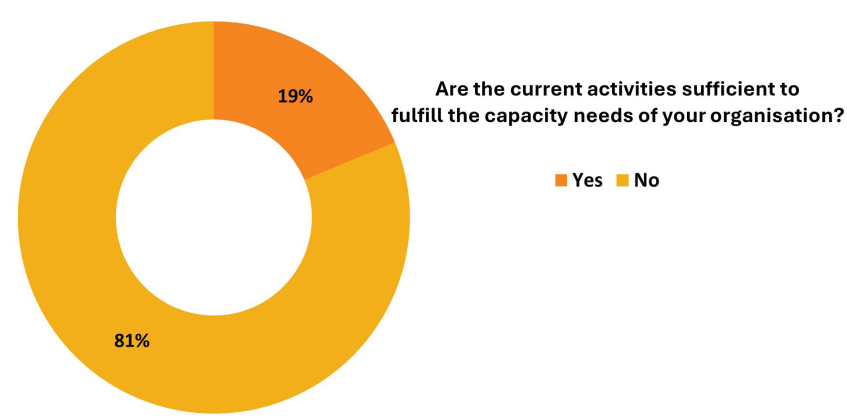


Figure 6: Potential of current activities to fulfil capacity needs

The sectoral survey results highlight a multitude of challenges (Figure 7), from financial constraints and technological limitations (identified as the most commonly faced challenges, by 25 per cent and 16 per cent of respondents, respectively) to inadequacies in human resources and mismatches between capacity building activities and on-ground needs. Addressing these obstacles demands a holistic approach, integrating collaborative efforts, strengthening leadership and dedication, and aligning training activities with a coherent national narrative on climate change, thereby emphasizing the pivotal role of relevant institutes in facilitating effective capacity-building endeavors.

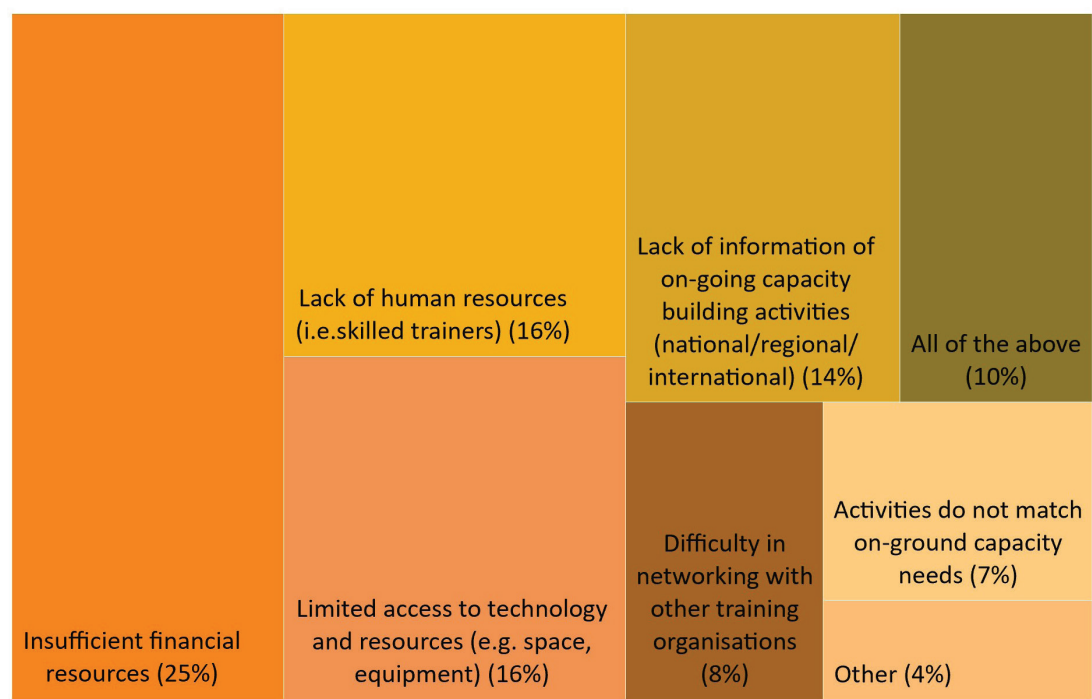


Figure 7: Main challenges in fulfillment of climate change-related capacity needs

SUPPORT REQUIRED RELATED TO CAPACITY BUILDING ACTIVITIES IN PAKISTAN

As per the updated information in the Biennial Update Report-1 (2022)⁸, the following sectors were outlined for capacity building support needed for climate change Mitigation Actions and Adaptation Actions:

Table 2: Sectoral capacity building needs as per Pakistan's BUR-1

| Mitigation | Adaptation |
|---|---|
| <p>Agriculture:</p> <ul style="list-style-type: none"> (i) Capacity building in solar water pumping solution for enhancing agriculture productivity. (ii) Training in climate-smart agriculture interventions for Green Climate and customizing clean climate-smart technologies in agriculture to offset GHGs. (iii) Training for plant breeders to develop varieties. <p>Energy:</p> <ul style="list-style-type: none"> (i) Capacity building of the stakeholders for preparing renewable power procurement plans. (ii) Capacity building of the financing sector for the financing models for renewable power, IPPs, and industries. <p>Industries:</p> <ul style="list-style-type: none"> (i) Capacity building of the manufacturing sector for localizing technology. (ii) Capacity building of provincial and municipal departments and undertaking mitigation projects. (iii) Improvement in curricula of universities, especially engineering. (iv) Development of local demonstration organizations on mitigation actions. | <p>Agriculture:</p> <ul style="list-style-type: none"> (i) Capacity building in the adoption of dry/aerobic rice production technology. (ii) Capacity building in satellite-based crop monitoring and yield estimation. (iii) Capacity building in developing permanent raised beds of the various farming systems in Pakistan. (iv) Training in developing drought-tolerant and heat-resistant crop varieties. (v) Training in promoting community-based range improvement interventions. (vi) Farmers training on the use of balanced fertilization and farmer training on crop residue management. (vii) Conduct training for agronomists for DSR technology and integrated plant nutrition management system. |

The national survey further evaluated the capacity building support required by the public and private sector survey respondents under the mitigation and adaptation categories respectively. Figures 8 and 9 illustrate the different levels of support mentioned under the Agriculture, Forestry & Other Land Use, Water Management, Waste Management, Energy, Transport, and Disaster Risk Reduction sectors. The details have been tabulated in Appendix 2.

⁸ Pakistan Biennial Update Report 1 (2022)

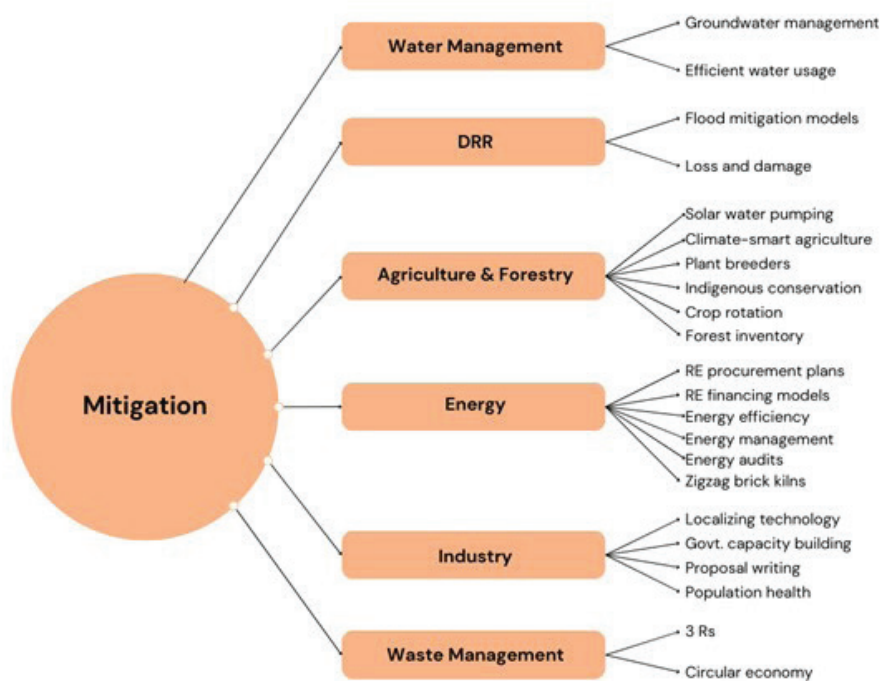


Figure 8: Capacity needs identified by survey respondents under mitigation

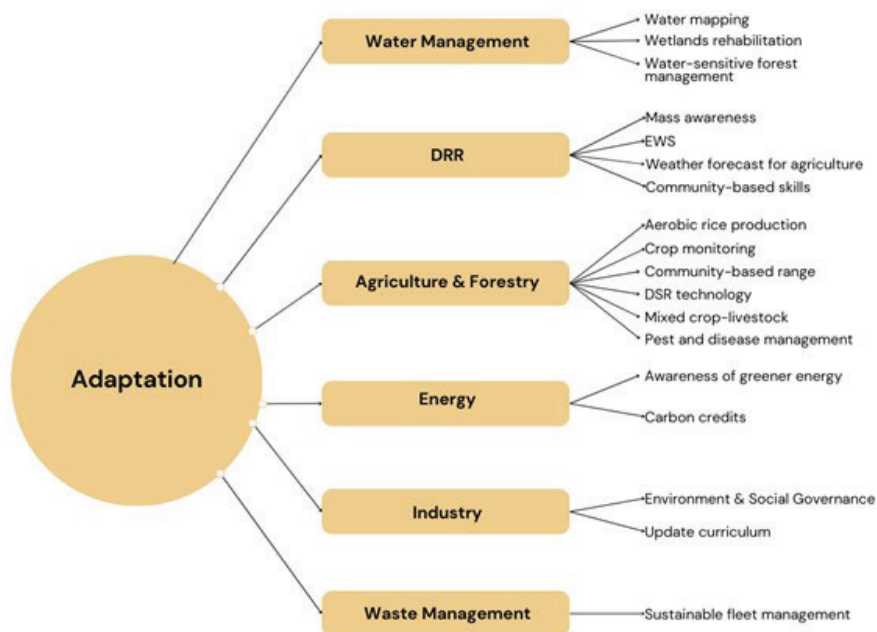


Figure 9: Capacity needs identified by survey respondents under adaptation

5. PROGRAMME AND STRATEGY FOR THE FUTURE IMPLEMENTATION OF CLIMATE-RELATED CAPACITY BUILDING NEEDS IN PAKISTAN

The survey identifies that although work is underway in terms of capacity building of organisational personnel, the pace is slow and many priority areas necessitate enhancement of efforts, within all sectors.

Figure 10 provides information on the recommendations to improve existing capacity-building efforts, as identified by the surveyed organisations. The most commonly identified recommendations were “Regular Training of the Trainers Activities” (18 per cent), closely followed by “Alignment of Activities with the Organizational Needs” and “Creation of A Coordinated Platform (at national, regional, and international levels)” (17 per cent each), and “Development of Institutional Capacities and Standards” (15 per cent). Other commonly identified recommendations included “Access to Adequate Funding and Resources (e.g. technologies)”, identified by 13 per cent of respondents. Whereas, 18 per cent of the respondents suggested that all the mentioned recommendations were equally important to overcome the existing challenges.

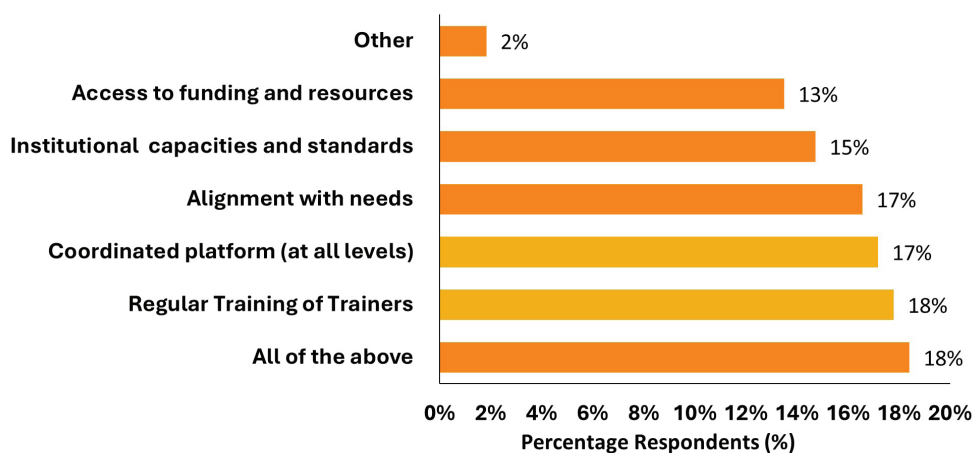


Figure 10: Recommendations to improve existing capacity building efforts

Additional comments, suggested under ‘others’ include the institutionalization of climate change across public and private institutions, a permanent climate change-related focal person in all departments, sensitization/awareness raising (within the institute) regarding the importance of climate change and finding co-benefits, and involvement of national experts in international projects, for greater exposure.

Thus, on the basis of these recommendations, it is imperative that sector-wise plans are developed to streamline training and skill-building activities that are audience specific. This also includes expanding the number and scope of trained personnel (experts) that can disseminate knowledge and skills, both horizontally and vertically within sectors, integrate climate change into the policy and programmatic areas, and inculcate human and technical resources as required to implement the interventions. Furthermore, there is a need to tap into collaborative partnerships not only in terms of carrying out activities but also in raising financial capital to overcome roadblocks related to financial resources.

The text boxes below outline the major thematic areas for adaptation and mitigation within the sectors identified by the sectoral stakeholders consulted:



Agriculture and Forestry

Within the agriculture sector, there is an evident need for training and expertise in sustainable and climate-resilient practices. This includes; interventions for climate-smart agriculture, the addition of solar water pumping for enhanced productivity, and pest and disease management in the context of climate change, alongside developing new plant varieties and conserving indigenous species to adapt to changing environmental conditions. Additionally, the need for skill building linked to the utility of technology and techniques for renewable energy adoption, efficient water management, sustainable farming, and satellite-based crop monitoring and modeling.

The forestry sector calls for better training opportunities in forest inventory, biomass calculation, and responsible forest management practices, aligning with sustainable environmental objectives.

Besides this there is an emphasis on capacity building tailored to specific regions and climatic conditions, considering the diversity in the agro-ecological regions of the country.



Water Management

The capacity needs within the water management sector focus on groundwater management (that is also inter-linked to land use planning), efficient water usage, and storage ranging from agriculture, industries, to the community level.

These needs encompass various aspects including but not limited to efficient irrigation, water-sensitive forest management, wetland rehabilitation, and water mapping/modeling at the local level all of which entails comprehensive training. An interesting point raised during consultation was the need for relevant environmental and social training exposures in the context of hydropower projects and climate change, emphasizing a need to focus on holistic approach, that inter-links sectors.



Industry and Corporates

The capacity-building needs for corporates and the industrial sector are focused on enhancing the sector's ability to localize technology, strengthening provincial and municipal departments for effective climate mitigation projects, and improving academia-industrial linkages including university curricula, particularly in engineering, to align with sustainability goals and required climate action. Additionally, there is a need for training in cleaner development mechanisms, fundraising, and investor engagement for green/sustainability-linked projects, along with a focus on integrating climate change into policies and practices. Moreover, introducing industry-specific standards and protocols parallel to strengthening the capacity of personnel.



Energy

The capacity building needs in the context of sustainable energy are focused on shifting and promoting renewable energy infrastructure development and providing training in energy efficiency and emissions reduction, particularly in relation to Scope 3 emissions. These capacity building efforts stem to other energy-intensive sectors as well including agriculture, power generation, industry, and transport towards cleaner and more environmentally responsible energy practices while reducing its carbon footprint through enhanced efficiency and emissions management.



Waste Management

The capacity building needs in waste management and sustainability entail training for utilizing recyclable waste in industrial processes and transforming existing waste management systems into a circular economy model. Additionally, sensitization of the waste management sector on its linkage to climate change has also been identified as a priority area for sensitization.

Additionally, there is a demand for training in sustainable fleet management to reduce the environmental footprint associated with transportation and logistics in waste/recycling collection.

In addition to the sectoral needs identified, there is a focus on mass awareness and education amongst all relevant stakeholders to transition towards low-carbon pathways and policy development/implementation through innovative and sustainable practices. This also includes dissemination of non-technical skills, besides the technical ones, such as communication on climate change, related negotiations, understanding green market mechanisms, grant and proposal writing, and fundraising for attracting investments for climate change mitigation and adaptation interventions. However, this mainstreaming of climate change considerations within the target sectors requires the allocation of dedicated resources (including financial and infrastructural). A critical point of action is the emphasis on tapping into regional and international networks for knowledge sharing, technical assistance, and infrastructural development. Figure 11 summarises these key takeaways.

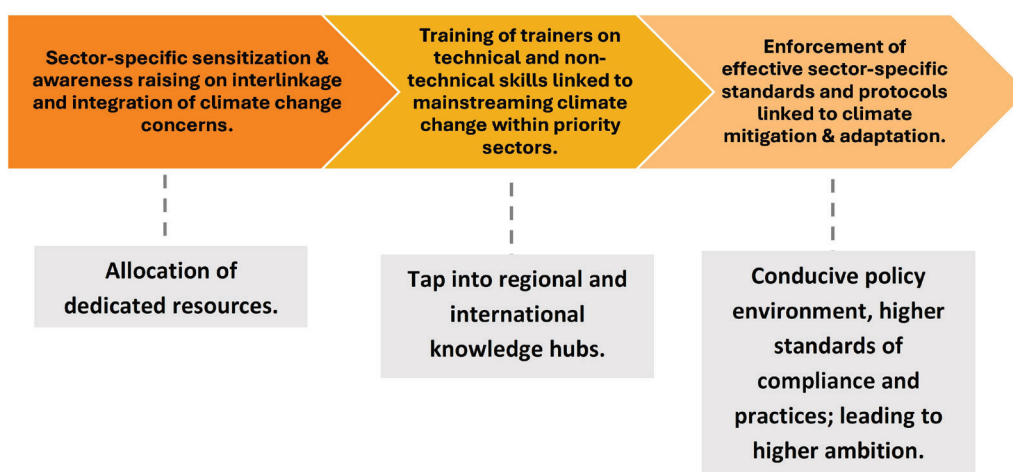


Figure 11: Key Takeaways for capacity enhancement on climate change concerns in Pakistan

APPENDICES



APPENDIX 1: CLIMATE CHANGE-RELATED CAPACITY BUILDING ACTIVITIES IN PAKISTAN (SURVEY)

| General Information | |
|---------------------|--|
| Name of Institute | |
| Name of Respondent | |
| Function/Position | |
| Email of Respondent | |

1. Which sector does your organisation belong to?

- ☐ Agriculture
 ☐ Waste management
 ☐ Energy
 ☐ Transport
☐ Industry
 ☐ Water
 ☐ Forestry
☐ Other, please specify _____

2. Does your organization currently offer climate-change-related capacity building activities (internally/externally) for the workforce?

- ☐ Yes
 ☐ No
 ☐ Planned for future

3. If yes, how many such activities does your organisation offer, each year?

- ☐ 1-10
 ☐ 11-20
 ☐ 21-30
 ☐ >40

4. Please provide a brief description of climate-change related capacity building activities offered or planned by your organisation below (at national, regional or international level):

| Capacity Building Activity (e.g. Workshop, Training) | Focal Areas | Host Organization | Year of Completion (2018 onwards) |
|---|-------------|-------------------|--------------------------------------|
| | | | |
| | | | |
| | | | |

5. Has your organization carried out any capacity needs assessment recently?

- ☐ Yes ☐ No

6. Are the current activities sufficient to fulfill the capacity needs of your organization?

- ☐ Yes ☐ No

7. If not, what are the main challenges?

- ☐ Insufficient financial resources ☐ Lack of human resources (i.e. skilled trainers) ☐ Limited access to technology and resources (e.g. space, equipment) ☐ Activities do not match on-ground capacity needs
- ☐ Lack of information on on-going capacity building activities (national/regional/international) ☐ Difficulty in networking with other training organizations ☐ All of the above ☐ Other, please specify _____

8. How can existing capacity building efforts be improved?

- ☐ Alignment of activities with the organisational needs ☐ Development of institutional capacities and standards ☐ Creation of a coordinated platform (at national, regional and international levels) ☐ Access to adequate funding and resources (e.g. technologies)
- ☐ Regular Training of Trainers activities ☐ All of the above ☐ Other, please specify _____

9. In the future, what are the additional capacity building efforts that are needed to fulfill the capacity needs of your organisation?

| Theme | Future Capacity Building Support Needed |
|------------|---|
| Mitigation | e.g. Training on energy efficiency and conservation, etc. |
| Adaptation | e.g. Training on climate-smart infrastructure/agriculture, etc. |

APPENDIX 2: FUTURE CAPACITY NEEDS IDENTIFIED BY SURVEY RESPONDENTS

| Mitigation | Adaptation |
|--|---|
| Agriculture | |
| <ul style="list-style-type: none"> ▪ Capacity building in solar water pumping solution for enhancing agriculture productivity. ▪ Training in climate-smart agriculture interventions for Green Climate and customizing clean climate-smart technologies in agriculture to offset GHGs. ▪ Training for plant breeders to develop varieties. ▪ Training on pests and disease management in climate change scenario. ▪ Training on conservation of indigenous plant/beneficial insect species. ▪ Training on the improvement of crops with respect to climate change. | <ul style="list-style-type: none"> ▪ Capacity building in the adoption of dry/aerobic rice production technology. ▪ Capacity building in satellite-based crop monitoring and yield estimation. ▪ Capacity building in developing permanent raised beds of the various farming systems in Pakistan. ▪ Training in developing drought-tolerant and heat-resistant crop varieties. ▪ Training in promoting community-based range improvement interventions. ▪ Farmers training on using balanced fertilization and farmer training on crop residue management. ▪ Conduct training for agronomists for DSR technology and integrated plant nutrition management system. ▪ Climate Change has direct impacts on the agriculture sector, so there is a great need for training regarding the adaptation of Climate Change factors in agriculture. ▪ Training on climate-smart agriculture. ▪ Shifting agriculture-related consumption to solar/green energy ▪ Training on sustainable cropping patterns and appropriate cultivation techniques for flood and drought-prone areas in Balochistan. ▪ Training on water management for climate-smart agriculture. ▪ Training on livelihood adaptation to climate change in agriculture. ▪ Adoption of suitable crop varieties for climate adaptation in agriculture. ▪ Training on high-value crop cultivation and their post-harvest management. ▪ Training on mixed crop livestock in a rangeland-based system. ▪ Training on water-efficient usage for agricultural crops. |

| Mitigation | | Adaptation | |
|--|--|---|--|
| | | Energy | |
| <ul style="list-style-type: none"> ▪ Capacity building of the stakeholders for preparing renewable power procurement plans. ▪ Capacity building of the financing sector for the financing models for renewable power, IPPs, industries. ▪ Energy efficiency- waste management. ▪ Shifting to solar energy. ▪ Training related to green energy efficient projects that are most environmentally friendly. ▪ Renewable energy. ▪ Training(s) on energy efficiency ▪ Energy efficiency fundamentals. ▪ Building energy management systems ▪ Renewable energy integration. ▪ Energy economics and financing. ▪ Sustainable energy project development. ▪ Energy efficiency and conservation ▪ Awareness & behavioural change: conducting energy audits and promoting sustainable behavior in the workplace. ▪ Enhanced technical skills & knowledge to identify energy-saving opportunities, implement energy-efficient practices, and utilize advanced technologies effectively. ▪ Training on clean energy ▪ Training on zigzag brick kilns technology. | | <ul style="list-style-type: none"> ▪ Shifting agriculture-related consumption to solar/green energy. ▪ Renewable energy infrastructure development. ▪ Training on energy efficiency and scope 3 related emissions reduction. | |

| Mitigation | | Adaptation | |
|--|--|---|--|
| | | Industry | |
| <ol style="list-style-type: none"> I. Capacity building of the manufacturing sector for localizing technology). II. Capacity building of provincial and municipal departments and undertaking mitigation projects. III. Improvement in curricula of universities, especially engineering. IV. Development of local demonstration organizations on mitigation actions. V. Training on clean energy VI. Training on fundraising/proposal writing/investors attractions investing in developing green energy projects. VII. Population health and climate change policies and practices of mitigation. Source apportionment of GHGs. | | <ol style="list-style-type: none"> I. Training related to construction management in the context of climate change including both adaptive and mitigative approaches like flood mitigation, and energy efficient projects that are most environmentally friendly II. Any other relevant environmental/social training exposures in the field of hydropower projects and climate change. | |

| Mitigation | Adaptation |
|--|--|
| Waste Management | |
| <ul style="list-style-type: none"> ▪ Training on the use of recyclable waste in industry. ▪ Transformation of current Waste Management System to Circular Economy. ▪ Training on the contribution of the waste management sector to climate change. | <ul style="list-style-type: none"> ▪ Training on the use of recyclable waste in industry. ▪ Shifting agriculture-related consumption to solar/green energy. ▪ Dispersal of waste. ▪ How to control the usage of resources that affect climate. Lack of resources. Set a new normal as per the existing needs. ▪ Training on better use of resources and infrastructure present in Pakistan, which can improve the climate's negative impact. ▪ Training on Sustainable Fleet Management. |

| Mitigation | Adaptation |
|--|---|
| Water Management | |
| <ul style="list-style-type: none"> ▪ Integration of climate change adaptation in land use planning. ▪ Adaptation of groundwater management, communication/awareness of adaptation practices. ▪ Executing activities related to water storage, and water harvesting at the community level. ▪ Training on water efficient usage for agricultural crops. | <ul style="list-style-type: none"> ▪ Water-sensitive Forest management. ▪ Rehabilitation of wetlands. ▪ Water mapping modeling for the province. ▪ Training on water management including drinking, irrigation, flood, etc. ▪ Any other relevant environmental/social training exposures in the field of hydropower projects and climate change. |

| Mitigation | Adaptation |
|---|---|
| Disaster Preparedness | |
| <ul style="list-style-type: none"> ▪ Training on finding co-benefits between pollution control and climate mitigation (and updating environmental standards accordingly). ▪ Training on climate-related simulation models based on which mitigation measures can be prepared. | <ul style="list-style-type: none"> ▪ Disaster Preparedness. ▪ Flood modeling for KPK. ▪ Mass awareness and education are basic training for all stakeholders. ▪ Training on Early-response and disaster preparedness and mitigation. ▪ Training in meteorology and weather forecasting for agriculture. ▪ The policies/frameworks development in the field of resettlement and social development sector. ▪ Any other relevant environmental/social training exposures in the field of hydropower projects and climate change. ▪ Training related to livelihoods diversification/community-based skills management related to Disaster Risk Reduction (DRR) and Early Warning Systems in flooding situations. |

| Mitigation | Adaptation |
|--|--|
| Transport | |
| I. Training related to the transport sector i.e., Road transport. | I. Training related to logistics management to reduce energy/fuel costs and emissions. |
| II. Training related to the transport sector i.e., Road transport. | |

| Mitigation | Adaptation |
|---|---|
| Forestry | |
| I. Training about forest inventory, biomass calculation, forest wastage, and other relevant fields. | I. Training on climate-smart pest and disease management. |
| | II. Climate-smart horticulture |

| Mitigation | Adaptation |
|--|--|
| GHGs | |
| I. GHG emission control. | I. Training on Early-response and disaster preparedness and mitigation. |
| II. Mitigation and adaptation linkages, development of local technologies. | II. Any other relevant environmental/social training exposures in the field of hydropower projects and climate change. |
| III. Financial and technical assistance are required at the village level to address the issue. | |
| IV. Training on mitigation of Greenhouse Gas emissions. | |
| V. Population health and climate change policies and practices of mitigation. Source apportionment of GHGs. | |
| VI. Population health and climate change policies and practices of mitigation. Source apportionment of GHGs. | |
| VII. Training related to the transport sector i.e., Road transport. | |
| VIII. GHG emission control. | |
| IX. Training on environmental hazards of GHG in urban areas. | |

| Mitigation | Adaptation |
|---|---|
| <p data-bbox="715 230 906 264">Miscellaneous</p> <ul style="list-style-type: none"> ▪ Mass awareness and education is basic training for all stakeholders ▪ Training of women. ▪ Resource allocations for various sectors. ▪ Training on renewable policies, emissions reduction strategies, and carbon pricing mechanisms. ▪ Training on the development of international collaboration for knowledge sharing. ▪ Technical assistance, conducting feasibility studies, and fostering innovation in clean energy and sustainable practices ▪ Training on sustainable practices and measures to deal with regional climatic hazards such as floods, GLOF, etc. | <ul style="list-style-type: none"> ▪ Mass awareness and education are basic training for all stakeholders. ▪ Training, capacity building & separate section, infrastructural development in all sectors/departments dealing with climate change. ▪ Baseline study of Climate Change impacts on different sectors like agriculture, water, forestry & biodiversity, etc. ▪ GIS/Remote Sensing training in the monitoring of the Climate Change impacts on all the sectors, their modeling, and their utilization in the development planning process. ▪ Training and exposure visits related to carbon markets, and carbon credits (both off-grid and on-grid). ▪ Training on renewable policies, emissions reduction strategies, and carbon pricing mechanisms. ▪ Training on the development of international collaboration for knowledge sharing. ▪ Technical assistance, conducting feasibility studies, and fostering innovation in clean energy and sustainable practices. ▪ Training on the use of appropriate technologies and innovations for climate adaptation. ▪ Training on enhancing communication, negotiations, and participatory decision-making skills to engage government agencies, civil society organizations, communities, and the private sector. ▪ Enhancing knowledge and skills to reduce Greenhouse Gas emissions. ▪ Mitigation strategies for corporates. ▪ Strengthen the capacity of individuals, communities, organizations, and governments to take effective measures. ▪ Transitioning to low-carbon pathways. |



Why we are here:

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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