ESPA Stakeholder Mapping, Research Gaps and Prioritized Actions in Bangladesh

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List of Abbreviations

AAB	:	Action Aid Bangladesh
ADB	:	Asian Development Bank
BCAS	:	Bangladesh Centre for Advanced Studies
BCCT	:	Bangladesh Climate Change Trust
BELA	:	Bangladesh Environmental Lawyer Association
BWDB	:	Bangladesh Water Development Board
CARIAA	:	Collaborative Adaptation Research Initiative in Africa and Asia
CDMP	:	Comprehensive Disaster Management Program
CODEK	:	Community Development Centre
CREL	:	Climate-Resilient Ecosystems and Livelihoods
DFID	:	Department for International Development
DPHE	:	Department of Public Health Engineering
DRR	:	Disaster Risk Reduction
ES/S	:	Ecosystem/Services
ESPA	:	Ecosystem Services for Poverty Alleviation
FAO	;	Food and Agriculture Organization
FGD	:	Focused Group Discussion
IDS	:	Institute of Development Studies (Sussex)
IPAC	:	Integrated Protected Area Co-Management
IWM	:	Institute of Water Modeling
JAICA	;	Japan International Cooperation Agency
KII	:	Key Informant Interview
LGED	:	Local Government Engineering Department
LGI	:	Local Government Institutes
LGRD	:	Local Government Division
MACH	:	Management of Aquatic Ecosystem Through Community Husbandry
NGO	:	Non Government Organizations
NRM	;	Natural Resource Management
NTFP	:	Non-Timber Forest Products
PI	:	Principal Investigator
RDRS	:	Rangpur and Dinajpur Rural Service
RMO	:	Resource Management Organization
SA	:	South Asian
SCW	:	Stakeholders Consultation Workshop
SEAL	:	Sundarbans Environmental and Livelihoods Security
SSN	:	Social Safety Nets
UNDP	:	United Nations Development Programme
UNO	;	Upazilla Nirbahi Officer

UP	:	Union Parishad
USAID	:	United States Agency for International Development
WFP	:	World Food Programme

Executive Summary

Bangladesh is considered as a high priority Ecosystem Services for Poverty Alleviation (ESPA) research country. There are six ESPA projects with multi-institutes and transnational partners, who are producing knowledge and evidence from different ecosystems for making development impacts. The ESPA Directorate has commissioned a small grant to BCAS in early 2015 to undertake a stakeholder mapping, research gap analysis and prioritization of ESPA actions in Bangladesh.

The main objective of the study has been to explore the scope and level of integration and greater application of ESPA research and evidence in Bangladesh for making greater research and development impacts in the country. The study concentrated on five key questions which included: identification of ESPA research issues, enhancing understanding about ESPA, knowledge products and evidence, prioritize actions; identify knowledge intermediaries and their role and finally, linking ESPA research of Bangladesh to South Asian "Science-Policy and People" initiative.

The study followed a participatory and interactive approach to critically analyze the situation (state of knowledge demands and supply), stakeholder's alignment, consequences, conflicts and areas of collaboration as well as to prioritize actions for ESPA partners and actors. The study undertook desk-based review, consultations and survey with Principal Investigators (PI) of ESPA projects, Key Informant Interviews (KII), stakeholder mapping in selected ecosystems (particularly where poverty is high) and national stakeholders' consultation workshop (SCW).

The key findings of the study have been presented in seven main sections. These main findings include: State of ecosystems and poverty dynamics in Bangladesh; Demands of ESPA research; supply side of ESPA (research outputs and knowledge products); Stakeholder typology, interests and engagement; barriers and knowledge gaps; ESPA research priorities, actions and linking Bangladesh ESPA with a new initiative of South Asian Science-Policy and People Platform.

Bangladesh has been very rich in natural resources. Traditionally, people, particularly the poor and marginal sections of the society, used to access ecosystem services (ESS) and benefits for their livelihood. But access to and benefits from ESS has declined recently in Bangladesh due to many socio-economic, institutional, market, and environmental factors including climate change, which has posed new threats to poverty alleviation, natural resource management

(NRM) and ecological sustainability. Bangladesh is an over populated country, but made some progress in poverty reduction in recent years (31% people live in poverty). But again, extremely poor live in ecologically critical areas and slums without basic facilities and ecosystem services. Experts' opinion suggests that both income poverty and human poverty is high in the ecologically degraded areas.

The study has identified the current and emerging demands for ESPA research. The key demands of research, reflected in ESPA projects, include: vulnerability and poverty, population, urbanization, ecosystem degradation, governance, power relation, distributive benefits and justice, human wellbeing, urban green, and water security for the poor. The relevant non-ESPA project research demands included: climate resilience building in ecosystem, livelihood and human systems; gendered vulnerabilities and responsiveness, economic development for poverty alleviation, strengthening local government and community organizations. The emerging demands for research included: in-depth assessment of ESS in the contexts of climate change and institutional mismanagement, causes of failure of community approach of NRM; linkage of ESS with macro-economic and eco-zero (low carbon, no-unemployment and poverty alleviation).

The ESPA projects are generating research outputs and knowledge products for different target audience at local, national and global levels. These include scientific papers, model outputs, policy briefs, information packs, newsletters, case studies, stories, web based information as well as popular communication materials. They are also organizing workshops, seminars, dialogues, advocacy campaigns, exchange, outreach and communication to influence policy actors, development process and community. Non-ESPA projects are producing knowledge outputs in different forms. It is felt that ESPA projects should have a guideline for making the products more result oriented towards greater development impacts through conservation, resilience building, well-being and poverty alleviation.

ESS for poverty alleviation is intrinsically tied up to position, authority, role and engagement of different stakeholders at local, regional and national levels. A range of stakeholders were identified and their interests, role and engagement in collaborative, competitive and conflicting manners etc. were analyzed in coastal, riverine delta, wetland and urban contexts. The study further analyzed the power relation and governance structure and finally identified barriers and capacity needs of the stakeholders for empowering the weak segments for positive and productive relation. Steps for capacity building and tools for advocacy and use of ESPA

project's knowledge by the development partners and knowledge intermediaries for changing policies, practices and behaviours have been suggested.

The study further identified priority actions to address knowledge gaps and enhance integration and application of ESPA research outputs. The key actions are: quality knowledge generation, building knowledge hub for common use, collection and use of good cases and practices, integrated framework for knowledge generation and outreach, horizontal learning approach; translation of scientific knowledge into local knowledge, capacity building of the impact partners; training of primary stakeholders and wider partnership for influencing policy and action; effective linkage with government actors/LGIs and public awareness through mass media and campaign.

Chapter-1: Introduction with Background

Ecosystem Services for Poverty Alleviation (ESPA) is a UK based international research programme, funded as a global public good and designed to produce world-class research and evidence to promote the sustainable management and use of ecosystem services for poverty alleviation. According to its *Communication Strategy*[1] ESPA faces the challenges "to ensure it can deliver robust, innovative and ground breaking scientific research and a body of new knowledge. It is equally important for the programme to ensure that the findings from ESPA research can be used to inform policy decisions and further research development, as well as to ensure that it provides practical lessons for alleviating poverty across the globe."

Bangladesh is featuring ESPA research and evidence for both knowledge and development impacts. ESPA has supported six projects (*Annex-A* provides the list and status of the projects*)* in Bangladesh so far, of which three projects are completed and rest of the three have been continuing. This scoping study was independent of any completed or ongoing projects. However, the study established an organic link to those six ESPA supported projects.

Aforementioned research projects perhaps exist in isolation and there is need for and scope of integration and application of ESPA research knowledge and evidence. Bangladesh being one of the most vulnerable countries to climate change, government and other development actors including NGOs are active in climate change adaptation and building resilience to both ecosystems and communities. Government, non-state agencies and development partners are working in the areas of natural resource management, enhancement of ecosystem services and poverty alleviation. Nevertheless, in many cases, the efforts are isolated. Coordinated efforts are required at all level from policy and programme to implementation. Hence, there is ample scope of enhancing the integration and application of ESPA research knowledge and evidence for making greater development impacts in the country and ultimately contribute to well-being of the people and speed up poverty alleviation efforts in Bangladesh.

Moreover, along with linking knowledge evidence generated by above-mentioned research projects, this study creates new opportunity to 'push' the information about local stakeholders and their needs to ESPA and 'pull' necessary knowledge, support and ecosystem services for the local community and 'think tanks'. Ultimately, the research initiatives contribute to attain ESPA's three vital strategies*: Impact*, *Knowledge*, and *Communication*. Communication is also

[1]http://www.espa.ac.uk/files/espa/ESPA-Communications-Strategy.pdf. Accessed on January 9, 2015.

essential to enrich the ‘pool of global ESPA knowledge, which will eventually become global public goods that can then feedback into the cycle as an enabling condition.’

This scoping study has tried to identify additional knowledge gaps (demand and supply), engage the stakeholders significantly to enhance the overall impacts of ESPA and develop strategy and action plan for stakeholder engagement for further research, use and uptake of knowledge and evidence for making greater development impacts in the country and in the region. Through addressing the following five indicative questions this scoping study has tried to address the objectives stated above:

- Identify the potential ESPA research issues (demand) that can contribute to ESPA goals
- Mapping stakeholders that need to know about ESPA research and impacts
- Enhance understanding about ESPA projects, programmes and evidence relevant to meeting the needs (supply of research and knowledge) and the type of evidence, information, tools
- Realize what needs to be done to respond to the demand for ESPA evidence in Bangladesh in a cost effective, timely and integrated way?
- Identify the knowledge intermediaries who might act to facilitate the process?
- Initiate a process in Bangladesh that fit with and relate to a potential South Asian initiative of science-policy and people?

Chapter-2: Methodology

To explore the answers to the five indicative questions, a methodology combining both desk study and primary information collection was devised. The four components of the methodology, which has generated this report, are illustrated below in *Table 1*.

***Table 1*: Building Blocks of the Scoping Study Report**

Desk-Based Review:	***Survey and KIIs:***	***Stakeholder Mapping***	***Stakeholder Consultation Workshop(SCW)***
a) ESPA projet documents b) Select non-ESPA projet documents C) Relevant literature and media report	a) PIs of ESPA research projects b) Local/international key informants	Consultations and FGDs at a) eco-biological regions, and b) ESPA related projects' areas	Opinion gathered from government departments' representatives, ESPA supported projects and impact partners, universities, UN and donor agencies, national and INGOs, ESPA directorate
↓	↓	↓	↓

STAKEHOLDERS MAPPING REPORT DEVELOPED

A. **Desk-based Review:** Desk-based study was carried out for reviewing the outputs and outcomes of ESPA supported six projects (three completed and three active) in Bangladesh. This review process, to some extent, helped to understand the range of actors and stakeholders as well as their interest, stakes, relationship and activities in the areas of research, knowledge generation, evidence collection, advocacy and influence in the ESPA focused areas. This desk-based review also included six relevant non-ESPA projects and recent media reports (see *Annex-B for complete list).*

B. **Key Informants Interviews (KII)** were conducted to know the demand and supply sides of ESPA research and gaining deeper understanding and insight for better use of knowledge and evidence. Key informants were divided in two categories: 1. Principal Investigators (PI), researchers and persons related to impact partners of ESPA supported projects and 2. non-ESPA experts and practitioners relevant to ecosystems services, poverty alleviation and natural resource conservation. Apart from reviewing the available project documents; opinion, suggestions and insights of PIs on projects' targets, impact partners, and probable priorities and impact targets was collected through circulating a questionnaire. Twenty five key informants (*see Annex-C)* include local/international PIs, local/international stakeholders

from both supply and demand sides, local NGOs/CBOs, international NGOs, government officials and academicians representing primary, secondary and tertiary level stakeholders. Customized tools (e.g., questioners, format and guidelines) were used for KIIs. Mostly qualitative interpretation of the collected information from stakeholders mapping and KIIs are being presented in this report.

C. **Stakeholder Mapping** was done through review, consultation, KIIs and Focus Group Discussions (FGD), and consultation workshop for this scoping study. The stakeholders and their role and responsibilities in the areas of natural resource management, ecosystems services, poverty alleviation, livelihood, climate change adaptation, community resilience building, human well-being, rights and entitlement, and empowerment of poor were identified; the interest and relationship were analyzed for greater engagement in research, advocacy and action. Gaps in research and evidence for advocacy to influence policy as well as action points for effective cooperation in co-production of knowledge and advocacy among different stakeholders (secondary, tertiary and primary) were identified and investigated for up-taking ESPA research and action for greater development impacts. Appropriate participatory methods and tools were used to understand and visualize the key linkages, interest and influence. Both formal and informal linkages among the key actors and stakeholders along with their functions, potentials, barriers and cooperation were examined. Stakeholder analysis techniques used for this purpose are: influence-interest grid (Mitchell, 1997); Power-impact grid (UK-DfID, 2003) and Stakeholder Circle (Bourne, 2007). Stakeholder mapping exercise was conducted in coastal and delta regions, northeastern *haor*[2] and urban ecosystems.

   Cross-functional stakeholders included NGOs, CSOs; government, donor and research agencies; potential knowledge intermediaries. This mapping process involved identifying, analyzing, mapping, prioritizing stakeholders according to their level of engagement, legitimacy, interest, and influence. Information was collected through exploratory and sharing meetings with potential stakeholders using interviews and focus group discussions (FGD).

[2] '[A] wetland ecosystem in the north-eastern part of Bangladesh which is physically a bowl or saucer shaped shallow depression, also known as a back swamp'.

D. **Stakeholder Consultation Workshop (SCW)** for consensus building on priorities, impact-targets and ways to achieve those and ownership of this process was organized with key stakeholders in Dhaka on March 30, 2015. More importantly, the SCW engaged participants *(please see Annex-D)*, particularly representing ESPA project, and respective stakeholders for consensus building on common priorities, impact-targets and ways to achieve development impact. Ultimately the study team got different perspectives of the stakeholders, validate the findings as well as to get the interest, role and responsibilities to put forward ESPA cause in Bangladesh. At this stage, ESPA's knowledge and communication strategies, and impact strategy was taken into account to achieve their intended impacts.

Chapter-3: State of Ecosystem Services and Poverty Dynamics

Bangladesh is a small country in South Asia with high population density and widespread poverty (although recently poverty ratio has gone down to 26% in 2014). It has rich natural resources base with diverse ecosystem services (ESS), but the resources and ESS have been degraded by many socio-economic, institutional and environmental factors including climate change impacts. People, mainly the poor in the rural setting and peri-urban used to access ESS for their food, nutrition, fuel, fodder, medicines, employment and income, livelihood support and disaster risk reduction. The access to and benefits from natural resources and ESS for the poor have declined in the recent years, which again affected the livelihood strategies and well being of the millions and thus it has deepened poverty situation in the degraded ecosystems. The country is facing many environment-development challenges. Climate change impacts are posing new threats to poverty alleviation, NRM and ecological sustainability. Higher numbers of poor people are living in the climate affected and ecologically degraded zones. Livelihoods, food security and poverty situation are aggravating in these regions.

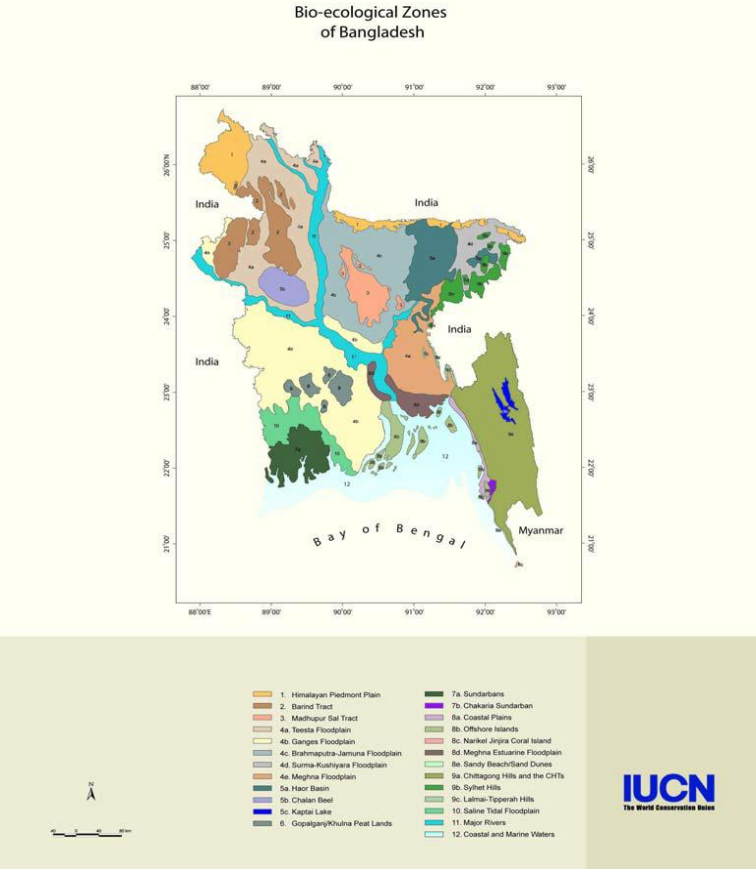
3.1 Major Ecosystems in Bangladesh and the State of ESS

Formed as the largest delta in the world from deposition of sediments carried by the rivers flowing from the Himalayas, Bangladesh has diverse areas of ecosystems. These are Coastal ecosystems with mangroves; Inland Rivers and streams, Wetlands and *beel* (inland seasonal water body), Upland forests and Hills; agro-ecosystems and urban ecosystems. The Sundarbans, located in the Southwest coastal ecosystems of the country, is the largest mangrove forest in the world, based on a complex and unique ecosystem of species of flora and faunas. Though it comprises 4% of Bangladesh, the system provides human security from forestry and protection against natural disasters. Communities living in and around the Sundarbans receives services such as water and aquatic resources relating to fisheries, food, vegetations, herbs, medicines, wood for fuel, home building materials, soil nutrients for unique crops varieties and so forth through which millions sustain their lives and livelihoods. The permanent inland rivers and streams form 4% of Bangladesh as well on which millions are dependent for aquatic ecosystems resources, transportation, and water regulations and management. The wetlands, which are also part of aquatic ecosystem and forms 30% of Bangladesh, cover estuaries, swamps, water reservoirs, ponds, various forms of lakes such as *haors*, *baors* and *beel*s, and flood plains that are seasonally flooded. The wetlands provide water for crop cultivation and aquaculture, food, vegetations, grazing lands, fibre, medicines.

They also provide nutrients through seasonal floods, filling the levels of groundwater supply and help water purification through natural process. The agro-ecosystems that consists of at 54% of the country is the largest system on which majority of Bangladeshis are directly dependent through agricultural sector. Despite major improvements and increased production of crops varieties, Bangladesh still faces challenges of ensuring food security due to continued growth of population every year. Upland and lowland forestry ecosystems consist of 12% of Bangladesh. This ecosystem provides forestation, food, cash crops, spices and herbs, vegetation, wood, soil nutrients, medicines (Nishat et al 2002, BBS 2005, Chaudhury 2008, IUCN 2010).

The country is experiencing rapid urbanization (6% per year) in unplanned way. About 27% population lives in cities in Bangladesh (BBS, 2012). The ESS is poor in the cities. The cities in Bangladesh do not have adequate forests, water bodies, hills, and open spaces with greeneries. Rather, the unplanned and rapid urbanization has destructed the natural resources and ESS in the country. Climate change (in the form of temperature rise and heat stress, erratic rainfall and floods, landslides, salinity and cyclones) is again affecting urban ecosystems and ESS. In the major cities including (Dhaka, Chittagong and Khulna), thousands of poor are living in the city slums in sub-human conditions without much basic amenities (water and sanitation, housing, electricity, health services) and ESS like fresh air and open spaces with greeneries. The peri-urban ecosystems (wetland, agri-land and forest) are destructed by unplanned industrial growth, infrastructure development and housing construction. This process (led by power-elite groups) very often displace the poor and marginal people, who finally end up in city slums, or live on the embankments.

Map of Bangladesh with Bio-ecological Zones



Chaudhury (2008) has identified the key ESS and tried to find linkage between ecosystem services and poverty alleviation in Bangladesh. These services primarily include provisioning and regulating services. Additionally, it has also been important to identify the drivers of change that alter services. Drivers identified fall into two categories: direct and natural, and indirect and social. Keeping services and drivers in mind, she attempts to analyze and make linkages to the impact of drivers changes services that affect poverty, which in her analysis is defined through the concept of 'well-being'. This includes security, basic material for a good life, health, good social relations, and freedom of choice and action to influence decisions about services and well-being. The unplanned development, urbanization and utilization of resources, impacts of Climate Change including sea-level rise, salinity intrusion, temperature rise, increasing droughts and floods and so on, along with human actions such as illicit felling causing deforestation, rapid growth of shrimp farming, rapid encroachment of lands, increased pollutions and wastes, unplanned fishing, overutilization of soil for cash crops, poor management of water structures, embankments in the upstream outside the national borders, as well as governance, regulations and management of ecosystem services, and lack of opportunities for alternative livelihoods have contributed to serious impact on the ecosystem and the related services in Bangladesh (Islam 2010, Rahman et al 2010, Byomkesh et al 2010, Dewan et al 2010, Howe et al 2013). It is felt that Bangladesh's environmental and ecological balance is under severe threat due to population pressures, over-exploitation of natural resources, deforestation, degradation, habitat loss, pollution, indiscriminate killing, hunting and poaching of wild animals. Bangladesh government has formulated a National Sustainable Development Strategies (NSDS) prior to Rio+20, which emphasized that like water and air, the forest acts as a sustaining source of life and helping to create rains and fresh water catchments. Laws have been enacted by Bangladesh to protect the biodiversity and natural resources that needs to be enforced properly. Lack of awareness and education and extreme poverty make enforcement more difficult. The government is taking steps to improve the situation (MoEF, 2012).

3.2 Population, Development and Poverty Dynamics

Bangladesh has huge population of over 160 million (BBS, 2014) with about 90% Muslims and the rest are Hindus, Buddhist, Christians and ethnic groups who are animists. The density of population is very high and it has over 1000 people per sq km now. The population growth rate has declined to 1.3% per year in 2010. But it was high in the middle of the last century, which was above 2.5% annually in the 1960s. The then East Bengal (currently Bangladesh) had only

30 million in 1901, which rose 44 million in 1951 and 130 million in 2001 respectively. The annual population growth rate has declined, but the absolute number of the population is growing. The total population is expected to rise to 220 million by 2050 and after that it may stabilize with zero growth. Bangladesh has gained much success in poverty reduction in the recent decades. The incidence of poverty has declined in 1990s and in early 2000s. The head count index of poverty measured by upper poverty line declined to 40% in 2005 from 56.6% of 1991 (ERD, 2009). Currently, this has come down to 31% (BBS, 2014). All the human development index including life expectancy at birth, infant mortality, adult literacy rate and population having access to drinking water and improved sanitation etc., have shown improvement (GED, 2010). But again Bangladesh has regional disparity. Economic development and poverty alleviation gave comparatively good results in Chittagoang and Dhaka divisions, while coastal divisions like Khulan and Barisal and drought prone north-western Rajshahi division have large number of people living in poverty. About 52% people live below poverty line in Barisal division followed by 51% in Rajshahi and 46% in Khulna divisions (ERD, 2009). The districts under Khulna, Barisal and Rajshahi are again affected by various natural disasters like cyclone, tidal surge, salinity, water logging, flood, erosion and drought. Many poor live in the ecologically degraded and critical areas like coastal zone, upland drought prone area, riverine *Charland,* off-shore islands, *haor* basin and in the hilly areas. A great number of extremely poor are living in the city slums. Dr. Binayak Sen, a leading economist in the country (from KII) feels that slum poverty in cities is an expansion of the climate poverty as affected by severe climate change impacts and ecological degradation. Both income poverty and social poverty is aggravating due to loss of ESS in the ecologically degraded areas like coastal, upland, hills and *haor* basin. Poverty ratio would be 5-10% higher in the climate affected areas than that of national average of 31%. Many of them are extremely poor, who depended traditionally mostly on human capital and ESS for their livelihoods.

Chapter-4: Demand for ESPA Research: What are the Emerging Issues? Who Tells What are Needed?

4.1 Who Tells

One of the key purposes of this scoping study is to identify the demand for ESPA research in Bangladesh. Observations and insights of PIs and key informants (KI) (*please see AnnexesA and C)* were pulled together to determine the demand-side of future ESPA research. In addition, opinions were also gathered from the SCW (*for participants' representation, please see Annex D)*, primary stakeholders at selected ecological zones (Sundarbans mangrove forest in South-western coastal belt and *Haor areas)*; of which some of the stakeholders were directly linked to *'Impacts of Community Management of Forests and Floodplains'* project supported by ESPA, and secondary literature (non-ESPA project documents, government publications and newspapers).

4.2 What are Being Addressed

Before moving to relevant actors' understanding and opinions about the future research demands where ESPA can contribute to, it may be useful to revisit briefly(*Table-2*) what local demands ongoing (and completed) research projects have identified and/or are addressing and how those correspond to ESPA's *Knowledge Framework* and ensure the interaction of *Framework's* essential components—'well-being of the poor', 'ESS', and **'**social, economic and political enablers of change' in each project. For limited comparison, information about two non-ESPA projects and how they are meeting the local demands can be found in *Annex E.*

Table 2: How Ongoing/Completed ESPA Projects 'Uploading' the Local Demand

ESPA Projects	Local Demand Identified/Addressed
Coastal Ecosystems, Governance and poverty	- Vulnerability and poverty of the population. - Population growth, urbanization, ecosystem degradation and climate change on health, education, social capital.
Whole Decision Network Analysis for Coastal Ecosystems	- Governance, power and knowledge - Decision taking for sustainable ecosystems.
Impacts of Community Management of Forest and Floodplains	- Distribution of benefits and ecosystem services generated from wetlands in Bangladesh. - Poverty reduction and sustainable ecosystem management. - Access of the poor to resources and ESS.

Table 2: How Ongoing/Completed ESPA Projects 'Uploading' the Local Demand	
ESPA Projects	**Local Demand Identified/Addressed**
	- institutional arrangements to deliver services to the poor.
Assessing Health, Livelihoods, Ecosystem Services and Poverty Alleviation in Populous Deltas	- ESS, human well-being and health. - Knowledge transfer. - Promotion of ESS for poverty alleviation. - Scenario development workshop
Risks and Responses to Urban Futures	- ESS and poverty in peri-urban areas of India, and implications for urban development - Human well-being
Institutions for Urban Poor's Access to Ecosystem Services	-Urban green and water structures. - Shelter, fuel, food, protection from extreme weather, access to safe drinking water, drainage, and flood and pollution prevention - Institutional arrangement and effectiveness

All projects literature used for desk-based review, *per* se looks completely attuned with the *Knowledge Framework* of ESPA. However, how much the projects are effectively addressing the local demands, transforming the research into use and creating development impact would be matter of a separate thorough review. So would be the case with the issue of how effectively the knowledge and evidence generated by the projects are being customized to empower the local stakeholders and practitioners and thus contributing to 'supply-side' of ESPA research and its presence in Bangladesh. The suggested stocktaking and review will be useful for ESPA and its current and prospective researchers finding better ways to identify and address future research demand.

4.3 How Demand can be Felt?

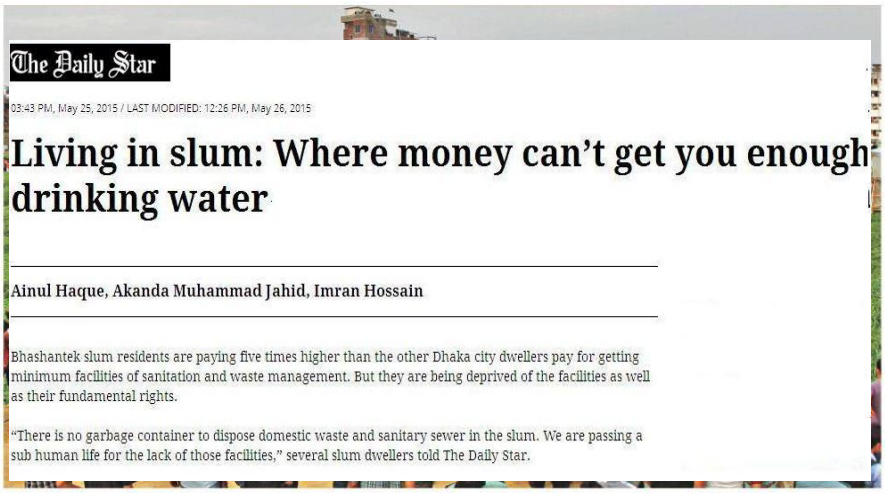
From their project experience, two PIs have opined that NGOs, government agencies, policy makers, and academics are best in a place to or capable of articulating the research demand on the ground, 'often in differing ways'. In response to questionnaire circulated prior to SCW, Dr. R J Nicholls, PI of , has elaborated this point as: 'NGOs tend to [articulate] so from a community perspective and based upon the impact on welfare, while policy makers consider large scale interventions and academics consider issues via models and data.'

ESS related demand or for that matter future ESPA research issues in Bangladesh can be determined through a set of sources and strategies such as:

a. Using the experience of PIs and other potential team members ofexisting and/or completed ESPA supported research project.

b. Interacting (offering scopes to get familiar with ESPA research; invitation to participate in dissemination, validation, and uptake process) with independent individual/organizational actors (e.g. individual researcher and academics, local think tanks/research organizations; local, national and INGOs). Local and national NGOs sometimes know people's needs more precisely and they are in need of necessary support and capacity building. Meaningful and significant involvement of capable local NGOs may generate better result in terms of identifying demand, intermediating knowledge and its application.

c. Collecting information from local media can be a very useful and practical means of identifying future ESPA research issues in Bangladesh. During ESPA Director's visit to Bangladesh to attend the SCW, he has shared his experience of seeing how local media reports indicate about the emerging ecosystem services and poverty related issues almost on a daily basis.[3]



The Daily Star

03:43 PM, May 25, 2015 / LAST MODIFIED: 12:26 PM, May 26, 2015

Living in slum: Where money can't get you enough drinking water

Ainul Haque, Akanda Muhammad Jahid, Imran Hossain

Bhashantek slum residents are paying five times higher than the other Dhaka city dwellers pay for getting minimum facilities of sanitation and waste management. But they are being deprived of the facilities as well as their fundamental rights.

"There is no garbage container to dispose domestic waste and sanitary sewer in the slum. We are passing a sub human life for the lack of those facilities," several slum dwellers told The Daily Star.

Onlookers and rescuers gather at a marshland in the capital's Rampura yesterday after a large two-storey structure made of corrugated iron sheets over the water went down. Only the first floor of the structure is visible and the "ground floor" has gone under water. The house had 20 rooms in which an estimated 120 people lived. PHOTO: RASHED SHUMON

Sensibleness of this observation can be affirmed by referring to three mentionable different types of media reports among many others between early April and mid-May 2015: 1. Collapse of a makeshift two-storied squatter made of corrugated tin built on a crucially important encroached water body caused the death of 12 slum dwellers in Dhaka city, 2. Construction of houses by filling up *haor* in Sylhet, and 3. Unsafe and hazardous migration of desperate and destitute men, women and children to neighbouring South-east Asian countries by crossing the sea in precarious conditions. This international scandal reveals the

[3] His discussion with the SCW participants and post-visit report: '… almost every day the main print media in Bangladesh had articles where ESPA could contribute evidence. During the visit the main English newspaper in Dhaka, *The Daily Star* was running articles that ESPA research could make a contribution.'

level of poverty persisting in Bangladesh; and perhaps, to a limited scale the failure of ecosystem services to serve the indigent; which ultimately results in unsafe migration, their captivity in jungles, forced labour, unbearable amount of ransom paid to the traffickers, cruel physical torture of men and women, and an ongoing 'passive genocide'[4]migrants' families are experiencing. Some KIs[5] have also mentioned about journalists and media who can provide clues to future ES related research demand. Comprehensive Disaster Management Program's(CDMP) experience shows important role of journalists in disaster reporting. Future researchers can explore local news media to formulate research questions relevant to local demand and initially identify relevant stakeholders.

4.4 Five Immediate Demands of ESPA Research and other Actions in Bangladesh

Specific and general suggestions of PIs, KIIs and SCW participants about '*what issues in Bangladesh can ESPA contributed to?'* are furnished below (*Table 3* and *4*) categorically, first, five specific immediate demands (*Table* 3) of research, capacity building, and South Asian (SA) regional network building highlighted with brief rationale and background. These specific suggestions came from the needs felt and expressed by the communities, local NGOs, and government agencies. Particularly, KIIs with the government officials, hinted some probable collaborative initiatives in research and capacity building of related actors.

Table 3: Five Specific Demands ESPA can Contribute to Meet

Sl. No.	Specific Area of Demand	Background and Rationale	Prospective Actors
1.	Assess the climate change, natural and man-made hazards, and their impacts on Sundarbans' ESS.	ESS of Sundarbans are endangered by both man-made and natural hazards. Recently this fragile forest has experienced the impact of major oil spill in its river system and facing threat by the construction of a coal-based power plant adjacent to it. The forest is also seriously damaged by two repeated super cyclones in recent times. All these incidents, including the poverty of vulnerable communities living around the forest and depending on it for livelihood demand a work on the ESS of this mangrove forest to	National and local NGOs, ESPA partner like IWFM, and communities surrounding Sundarbans. BCAS can lead, partnership needs to be explored.

[4]TeleSUR: 'UNASUR [Union of South American Nations] Calls for Global Action on Migrant 'Genocide''. May 19, 2015.

[5] Among others, CDMP II, Project Director, and Prof. Mizan R Khan of North South University have expressed this opinion in KIIs.

Table 3: Five Specific Demands ESPA can Contribute to Meet			
Sl. No.	Specific Area of Demand	Background and Rationale	Prospective Actors
		suggest wellbeing of both people and ecosystems.	
2.	Emerging urban ESS affecting the wellbeing and livelihoods of the poor.	Rural-urban continuum in changing in Bangladesh rapidly and affecting the wellbeing and livelihoods of poor, displaced, women, and youth. Metamorphosis of both settings also has serious impact on the ESS. Urban settings are not capable to cope with the influx of destitute but necessary supply labor force. A focus on urban ESS competent in addressing the wellbeing of the great majority is essential.	Community of urban poor, government service providers, NGOs, research organization active in urban areas, and universities with urban planning faculty,
3.	Policy review and capacity building of respective government officials and NGOs on ESS and PA.	Understanding on ESS is grossly missing among key actors like government officials, NGOs, and researchers. By overcoming this limitation both demand and supply-side of ESPA can be strengthen. This capacity building can contribute to reviewing the existing good policies and ensuring implementing those related to ESS and PA.	ESPA, government agencies, NGOs--perhaps planning a project involving BCCTF, BCAS, IWM for a capacity building programme might be useful.
4.	Designing mainstreaming ESS in DRR work to enhance the understanding of CDMP II. Inclusion of ESS in CDMP's program philosophy will bring in holistic understanding nationally both in state and non-state programs and strengthen resilience of vulnerable communities.	Comprehensive Disaster Management Program II (CDMP) is ending its current phase and reshaping for its next one soon. This opportunity can be exploited to mainstreaming ESS in DRR.	ESPA and BCAS together with other influencial national and international actors can take initiative to see how new project can be designed from this area of work.
5.	Establishing South Asian network of scientists (commonly referred as Science-Policy-People in this report) has potential to contribute enhance	Materialize the already taken initiative.	BCAS can design a programme involving this network.

Table 3: Five Specific Demands ESPA can Contribute to Meet			
Sl. No.	Specific Area of Demand	Background and Rationale	Prospective Actors
	better understanding of ESS at regional level, sharing knowledge and taking collective actions at regional level.		

Combination of these five activities ultimately covers four thematic areas: research, capacity building, mainstreaming and networking and holds the potential of enhancing the supply-side of ESPA research by meeting specific local demands, creating common understanding of stakeholders on ESS and thus increase the number of actors as potential knowledge intermediaries and impact partners both at country and regional level. Since two specific activities aspire to engage leading government agencies (e.g. CCTB, CDPM and relevant ministries) with ESPA programmes, better impact at policy level can be expected as outcome.

Table 4: Emerging Demand Where ESPA can Contribute		
Suggested by	**New Demand/Issues**	**Feature**
PIs[6]	Focus to date has been more on coastal environment, insufficiently considered ecosystems such as deeply flooded *haor*s, or *char*s, or forests.	Focus on less focused ecosystems such as *haors, Chars*, and forests
	Research on failures of community management of natural resources.	Continuity of and related to completed research project
	In depth assessment of ecosystem services changes in context of changes in natural resource management institutions.	
	Further research on influence of rights and tenure on ES-PA	
	Research on how to mainstream co-production of knowledge between communities and government agencies, and its use in national statistics and decision making.	Governance
	Further exploration of the impacts of macro-economics on ESPA *(by SCW participant also).*	Macro-economy

[6] Pre-consultation response collected through a questionnaire distributed electronically.

Table 4: Emerging Demand Where ESPA can Contribute		
Suggested by	**New Demand/Issues**	**Feature**
	Role of increased virtual ecosystem services demand from urban areas on rural development.	Urban/Rural ES
	Linkages between enforced migratory activity as mediated by ES and wage suppression in urban centers (migrants working in clothes factories).	Urban economy/domestic migration/Rights
	Beneficiary profile of shrimp farming – how does saline aquiculture evolve and who are winners and losers in greater detail.[7]	Coastal ES and local community
	Modeling of the salinization of groundwater through marine encroachment	Coastal ES
	Acknowledgment of urban future of poverty	Urban, poverty alleviation
SCW participants	Impact of mega projects (e.g. Ganges barrage, coal-based power plants adjacent to Sundarban, open-pit minning, large infrastructure. *(media report)*	New ecosystems, governance, livelihoods, NR preservation and extraction.
	Integrated Water Resources Management (IWRM)	Ecology/ES
	Urban housing for poor, water and sewerage, air quality. *(media report)*	Urban, ESS, health and wellbeing.
	ESS dis-service.	Governance
	Community demands for improved ESS, conservation of NRs	Governance
	Resilience building to climate change and poverty alleviation	Climate change
	Erosion and sedimentation	River, plain land eco-zone
	Poverty alleviation through mega projects	
	Regional cooperation and collaborative research in South Asia.	Regional collaboration and knowledge sharing
Key Informants	Population growth, ecosystem services and poverty for better delivery and management of ESS.[8]	Population and natural resource

[7] Several extensive and credible studies by reputed researchers have been carried out on different aspects of shrimp farming which can be consulted to check out their present relevance.

Table 4: Emerging Demand Where ESPA can Contribute		
Suggested by	**New Demand/Issues**	**Feature**
		management
	More work on sustainable fishing and fisheries sector can be done in Bangladesh.	Fisheries and aqua-ecosystem areas.
	Studies which clearly link poverty with ecosystem.	Ecosystems and poverty.

Beside suggesting specific future demand, KIs[9]have shared their views about how emerging issues (demand) can be identified precisely by creating a common understanding ESS, capacity building of government agencies, local actors and knowledge intermediaries(e.g. researchers, CBO/NGOs), engagement and participation (e.g. media, local knowledge intermediaries), and supplying new knowledge from ESPA's pool, Demand of ESPA (or similar research) can be enhanced or fulfil by bringing in integration among the programmes—particularly with the government projects. It is important to know the local demand-side, on the other hand, enhancing supply-side will also reciprocally help articulating the former. A powerful and practical supply-side can serve multi purposes such as common understanding building (which is lacking according to some KIs), familiarity of ESPA as a knowledge power house and its contribution to ESS and poverty alleviation issues. Finally, close contact and engagement with different type of local actors and institutions beyond the research team, will be a good mechanism of knowing the new demand where ESPA can contribute.

[8] Interview with Dr Ainun Nishat, KI.
[9] Dr Ainun Nishat, Mahbub Hossain, Dr Mizan R. Khan; KIs.

Chapter-5: Supply-Side: Research Output and Knowledge Product

5.1 Application Value of Outputs and Knowledge Products Generated by ESPA Research

Some of the KIs of this study (poverty related researchers and environmental experts, government and INGO officials) have explicitly expressed their lack of familiarity, understanding and also disagreement (AAB in this case) about ecosystem services. A number of them are not aware of ESPA's presence/contribution through its supported projects in Bangladesh or the region. With such a small number of KIIs, perhaps, it would be a bit risky to infer any definite notion in this regard. Nonetheless, it won't be prudent either not to pay any heed to their opinions and lack of familiarity. This report tends to agree with PI of ESPA Deltas, as he has emphasised on … 'developing the shared understanding of all the stakeholders of what was meant by ecosystem services and reassurance that much of the work they have been conducting in the past is in fact relevant to ecosystem services and likelihoods.'[10]

This impression by the KIs indicates the level of availability of 'supply-side '*vis-à-vis* ESPA's initiatives, mission, and image in Bangladesh. ESPA may ponder about the ways to highlight its activities to relevant stakeholders and how it can offer essential knowledge which can create common understanding of ecosystem services and thus enhance a collaborative process conducive to alleviating poverty.

> *The best way to get the most complex message of science across the policymakers is through producing a short video of the research findings* -
> Dr. A. Atiq Rahman, Executive Director, BCAS

It is true that since 2011, ESPA has only carried out only six projects related to Bangladesh; out of which one is a baseline study and another's major focus is primarily on Indian situation, and Bangladesh is included in it marginally. Out of three accomplished project, WD-NACE's nature seems more on academic side and its application and development impact in Bangladesh, replication and use of knowledge/model by others can be a issue of review. Study team's interaction with the three community based organizations at Shreemongol *Haor* areas gives the impression that completion of 'Impacts of community management of forests and floodplains' projets shows comparatively more visible presence and impact at the primary stakeholders level. However, the study team was able to

[10] Response to questionnaire by Dr. R J Nicholls

gather information from them about the support they have gained from this project and its implication for their rights and livelihoods.

In this context it is important to consider the role the outputs and knowledge products generated by ESPA research projects can play to build common understanding related to project goals in particular and ESS in general. In addition, those outputs and products contribute to disseminate new knowledge, tools for solutions, integration of ESPA and non-ESPA projects, advocacy initiatives to change behavior and policy, and better ESS for poverty alleviation. As an important 'by-product' outputs and knowledge products from individual project will enhance ESPA's image as a global knowledge power house dedicated to the betterment of ESS, wellbeing, health, governance and political economy environment of the countries ESPA is engaged in.

5.2 ESPA Research Outputs and Knowledge Products: Relevance, Potentials and Limitations

Six of the ESPA projects that are explored for this study produced or aiming to produce various types of research outputs and knowledge products for wider dissemination of their findings. The most common elements of research outputs in these projects are a number of major scholarly pieces and other forms of publications such as chapters of the books relevant to these research materials, scientific reports of the findings, and presentations in conferences, seminars and workshops. However, some projects have aimed for specific policy briefs, designing of models and simulations, informative journals in the format of newsletters- as a standalone piece or in conjunction with other relevant research information, and online presence on the projects in the form of websites. *Annex F* indicates various types of research outputs and knowledge products the ESPA projects are aiming to according the available information collected for this study.

ESPA Research outputs and knowledge products have the relevance and potentials to address: i) academics; ii) policy-makers; iii) local communities; iv) development practitioners; v) media.[11] Along with the outputs and products developed by the completed and on-going ESPA research programmes, some of the future projects' products can be produced from the newest, slick and informative knowledge design platforms such as impactful stories through audio-video materials[12], social media, user-experience and user-interface online platforms and designs[13];

[11] Dr. Mizan R. Khan, Key Informant Interview, ESPA, Mar 25, 2015; Mohammad Abdul Qayyum, Key Informant Interview, ESPA, May 4, 2015.
[12] Dr. A. Atiq Rahman, SCW, ESPA, Mar 30, 2015.
[13] Dr. Paul Thompson, Key Informant Interview, ESPA, Mar 18, 2015; Dr. Parvin Sultana, PI Interview, Apr 2015.

periodic, if not frequent, opinion pieces in the press[14], and infographics.[15] These cost-effective communication strategy emerged very recently to optimize understanding of the complex issues through simplified languages and pictographs. More importantly, certain products should be produced in properly customized manner for local consumptions, particularly for community, local NGOs/CBOs, mid-level government officials, and media. The study team has not come across to any such knowledge products befitting to local subscriber. Similarly, research reports, any academic co-production was found in local language and local knowledge intermediaries such as think tank and research organization (e.g, Bangladesh Institute of Development Studies) university or academic journal (e.g. Dhaka University, BUET) and media (e.g. an op-ed on some World Day like Water, Environment, Health). By paying attention to this aspect ESPA and its supported projects can make their presence felt at country level, create scope of integration and exchange of knowledge, and generate impetus for advocacy.

As far as limitations are concerned the study team has not noticed any publication of any type knowledge product produced in Bengali and meant for the community, local practitioners like NGOs/CBOs, mid-level officials and print or electronic media. Likewise, any plan of full or partial (customized and relevant part) publication of report in local academic/scholarly outlets was not evident. At the same time presence of ESPA projects in local media could have been made maybe with very little effort. This initiative can be an effective vehicle to project ESPA and its research projects prominently and build network of scholars and decision makers. Perhaps by paying attention to all these point ESPA can outreach local actors and trigger integration more effectively and can strike a balance between academic and non-academic domain and international and local expertise meaningfully.

[14] Dr. Paul van Gargingen, SCW, ESPA, Mar 30, 2015.
[15] Research to Action, "Visualising science: the infographic", www.researchtoaction.org, Dec 12, 2014.

While designing the research proposals, the future ESPA researchers consider todevelop a communication strategic plan in line with ESPA's *Communication, Knowledge,* and *Impact Strategies* as well to make impactful outcomes of their research findings, particularly at the policy level.[16] Capacity building of the researchers on communications and knowledge management issues can be undertaken to assist them identify and adapt to newer resources.[17] This opportunity will provide a supportive environment to enhance the scope of their research findings being widely studied, discussed and possibly considered at policymaking to bring influential changes in the communities depending on the ecosystems and improving the services deriving from the systems.

Front page of an ESPA project briefing paper. Customized presentation of relevant information in local language for community actors would have been an empowering knowledge tool.

FHRC Bangladesh Briefing paper no. 14 June 2013

Impacts of Learning Networks among Floodplain Community Organisations in Bangladesh on Poverty and Ecosystem Sustainability

Summary

Case studies indicate structured adaptive learning between floodplain CBOs has brought multiplier benefits compared with the practices of isolated CBOs. Networking has encouraged CBOs to:

- diversify natural resource management, recognising the value of diverse ecosystem services;
- improve their governance to be more inclusive (for example of women);
- direct benefits and access to poorer people with consequent improvement in their food security and living standards; and
- overcome local conflicts and strengthen their ability to negotiate with multiple governance levels.

These benefits remain threatened for some CBOs by conflicting policies regarding continued secure tenure and use rights over waterbodies, but federating has enabled CBOs to collectively raise these issues through legal processes and policy debate.

Context

Bangladesh floodplains are complex commons in terms of property rights (private lands when flooded form seasonal commons for aquatic resources, and are connected with public waterbodies), scale, multiple uses, overlapping initiatives and institutions. Community based co-management started in fisheries and water management in the mid-1990s. This expanded to over 500 floodplain community based organisations (CBOs), most

Floodplains bring diverse benefits but are intensively used

Research on "Community Management of Forests and Floodplains" was undertaken in Bangladesh by Flood Hazard Research Centre at Middlesex University and in Nepal by Forest Action Nepal, with support from the Ecosystem Services for Poverty Alleviation (ESPA) research programme of UK DFID, NERC and ESRC.

During 2012-13, this project aimed to assess changes in the distribution of benefits and ecosystem services generated from wetlands in Bangladesh and forests in Nepal. It focused on collating dispersed existing evidence to examine the effects of community management and networking of CBOs on a) livelihoods of poor people dependent on these systems, and b) key indicators of ecosystems sustainability.

initiated by projects but with some self-organised. Individually there is evidence of improved access to natural resources for the poor, restoration of ecosystems and wild fish catches, and continued operation of local water management. Since 2007 we have facilitated networking among these CBOs, primarily with the aim of enhancing cross-CBO lesson learning and knowledge sharing, and formalized through a federation of CBOs registered as Society for Water Resources Management (SWRM).

Methods

Case studies were conducted on 18 CBOs involved in natural resources (fish and water) management, purposively selected for having data available on their impacts, and for representing a range of environments and tenure arrangements over natural resources, with four selected for being less involved in networking (SWRM). Sites were selected where community management was established for some time, although the date of CBO formation ranged from 1994 to the mid 2000s. The details of data available from past monitoring and research on ecosystem and poverty indicators differed between sites and time periods. The floodplain environments considered were: floodplain/beel (seasonal wetlands), closed beels (lakes), haors (deeply flooded basins), rivers and coastal areas. The CBOs also differ according to their original focus (fishery, water or mixed natural resource management).

Middlesex University London

fhrc Flood Hazard Research Centre

espa

DFID

5.3 Relevant Communications Strategies in Non-ESPA Projects

ESPA research initiative in Bangladesh plays a rather unique position which focuses on producing high quality interdisciplinary research, aiming to address poverty through ecosystem services. Not many research are being conducted in Bangladesh that solely focus on poverty and ecosystems services simultaneously. It is noted that most of the ecosystems or ESS research are conducted in Bangladesh as part of a larger project or research initiative, unlike a standalone, fully focused research projects that are designed and delivered through ESPA programme. The literature review of thisstudy, therefore, looked into available knowledge related information of some of the projects in

[16] Winrock International, "Climate-Resilient Ecosystems and Livelihood (CREL) Project: Communications Strategy", Mar 31, 2013.

[17] Group Consultations and Presentations, SCW, ESPA, Mar 30, 2015.

Bangladesh that are relevant or similar to ESPA. The initiatives are CARIAA and its South Asian component HI-AWARE, CREL, SEALS, BCCT, and IUCN programmes.

Among many other knowledge/info products of CREL, this poster presents information about climate resilient management of forest and wetland in a non-technical and jargon-free local language.

All of these research projects are aiming produce various types of research outputs and knowledge products that are similar to the ones listed in the *Annex E.* However, to take the framework of CREL initiative, it has a clear communication strategic guideline to aware various groups of stakeholders at different stages of the project. Among knowledge products, CREL has produced a number of self explanatory posters, brochures, flipcharts and easy to communicate flyer, in simplified bi-lingual texts, and with images to help the local communities and organizations understand their roles and power to manage and protect the ecosystems on which they rely on their livelihoods. CREL also has a complete and clear communications strategic plan to ensure stakeholders engagement at the various stages of the project. It also has clear listings of the communications tools it is aiming to develop and distribute among the stakeholders throughout the process of implementing the project.

Many people do not understand the ecosystems and the services clearly; unaware how these services benefit them, and their rights to access the services.
Mohammad Abdul Qayyum, Project Director (Additional Secretary), CDMP II

5.4 Advancing Knowledge Management and Dissemination of ESPA Research

From the understanding gathered through analyzing the research outputs and knowledge products produced by ESPA and non-ESPA projects working on environment and poverty eradication, it is identified that there should be strategic guidelines in the communications process for each individual research project to ensure customized knowledge products and

research outputs are produced at the various stages of the research to ensure better engagement with the stakeholders.

Chapter-6: Stakeholder Typology: Interest and Engagement

Identifying and analyzing the role of the stakeholders is crucial for looking at poverty alleviation through ecosystem services (ESS). The linkage of ESS and poverty alleviation is intrinsically tied up to the role of different stakeholders in both facilitating and hindering the ESS. It is also important to understand which stakeholders cause impact and which are impacted both positively and negatively for a holistic picture of poverty alleviation effort in specific ecosystem level. In this study, role of both ESPA and non-ESPA stakeholders are studied to see the status of ESS and access and rights of community for livelihoods. Stakeholder type also varies considering different ecosystems and livelihood patterns. Stakeholders were identified in the urban, coastal, delta, forest and *haor* area of Bangladesh. The key steps for stakeholder mapping and analysis included: identification of actors and stakeholders in specific ecosystem with reference to ESPA and Non-ESPA projects; examine the role and responsibilities and their knowledge and capacity for influencing policy and practices; identify barriers and capacity needs to respond to enhancing both research and development impacts at different levels; and how to enhance effective collaboration and wider partnership for changes in policies, program, attitude, behavior and practices.

6.1 Identification of Stakeholders

According to the level of interest, role and influence, three types of key stakeholders have been recorded. The primary stakeholders are those who are directly impacted either positively or negatively and are directly involved in natural resource management (NRM), conservation and livelihood activities. Secondary stakeholders are considered those who are indirectly involved and can make impacts. The tertiary stakeholders belong to the category which has significant influence or importance in changing policy and process for greater impacts.

6.1.1 Primary Stakeholders

Primary stakeholders include the fishers, farmers, forest dependent people, slum dwellers, local businessmen, middlemen, pirates, local government etc. in the ecosystems under ESPA and non-ESPA projects. These actors can directly affect or be affected by any action to the ESS which may have both positive and negative repercussion to the livelihood options and poverty alleviation.

6.1.2 Secondary Stakeholders

The secondary stakeholders can facilitate or hinder the ESS to the community. Those include rights groups, local government institutions (LGI), trade and business such as banks and financial institutions, private money lenders, researchers, NGOs and international development agencies [BRAC, Grameen Bank, Shushilan, Uttaran, Caritas, Climate-Resilient Ecosystems and Livelihoods (CREL), Management of Aquatic Ecosystem Through Community Husbandry (MACH), Community Development Centre (CODEK), Prodipon, Rupantor, Bangladesh Environmental Lawyer Association (BELA), Rangpur and Dinajpur Rural Service (RDRS), ActionAid Bangladesh (AAB)**,** World Vision, Oxfam International, World Food Programme (WFP), Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP), Department for International Development (DFID), United States Agency for International Development (USAID), Integrated Protected Area Co-management (IPAC-Project), Muslim Aid, Japan International Cooperation Agency (JAICA), Asian Development Bank (ADB) etc.]; professional groups [media and human rights groups]; Government offices [Local Government Division (LGRD), Local Government Engineering Department (LGED), Agricultural Extension Department, Fishery Department, Forest Department, Upazilla Nirbahi Officer (UNO), District Commission, Government Health Clinic, Bangladesh Water Development Board (BWDB), Department of Public Health Engineering (DPHE), Livestock Department, Upazila Parishad and Union Parishad; and Social Safety Net (SSN) and DRR service providers. Besides, local social and political leaders, Resource Management Organization (RMO), local civil society, health practitioners, seed sellers, social worker group/voluntary organizations, church etc. play intermediary roles.

6.1.3 Tertiary Stakeholders

Among three types of stakeholders, the tertiary stakeholders play significant role to either protect or harm the ecosystem and the people. The policymakers, urban development related government agencies, forestry, river management, BWDB, department of forest and environment, and international development agencies could also be categorized as tertiary group.

6.2 Level of Engagement, Interest and Influence

The primary stakeholders live within the community and generally have direct access to the ESS. The marginal fishers, farmers, forest dependent people and the slum dwellers are in dire

need of ESS and have the highest interest due to their overwhelming livelihood dependence on ESS. Affluent farmers and fishers, local businessmen, middlemen and political leaders overuse the ESS for business and profit, and have also greater engagement and interest. All other stakeholders, unlike both marginal and affluent ecosystem dependent people, have indirect interest, especially more economic and political reasons than livelihood dependence. FGD participants from total seven groups from three ecosystems told that marginal groups as stakeholders engage to the ecosystem for resource extraction like forest resources, fishes, lands for cultivation and water for irrigation from the deep inland water bodies. But the participants said that people with local economic and political power mostly take the control of the ecosystem for profit. Md Abdul Alim, a deputy manager at ActionAid Bangladesh said in KII that market itself plays a bigger role as stakeholder. Extraction of resources and exploitation of ecosystem increases with the pace of market demand. Corporate bodies encourage local businessmen and middlemen to exploit the ecosystem for maximizing profits.

Secondary stakeholders play the role of intermediaries in either facilitating or hindering ESS to the poor people. But secondary stakeholders like local government bodies from Union Parishad to Upazilla level very often help the influential primary stakeholders to take control of the ecosystem like fisheries and forest resources. Forest dependent people in the coastal area told in a FGD that in addition to government fees, they have to pay bribes and extortions to both the coast guard and the pirates for getting access to forest resources. Forest department indirectly allows the pirates to charge money from the poor forest resource collectors for getting access to the forest and officials also take the share of such illegal money. On the other hand, FGD participants of both coastal and *haor* areas told that NGOs, local civil society groups, development partners etc. work for the betterment of ecosystem to conserve it and accrue benefits for the poor. There are areas where the government agencies and local public representatives are cooperative to the poor and ecosystem. In such areas, these authorities are also supportive to the ecosystem and the poor, as long as they do not face any political influence or have any personal interest.

Although tertiary stakeholders mostly government agencies and policy makers play influential role in suggesting and making policies, but in most cases, due to lack of proper implementation, these policies fall short to meet the need of the poor. FGD participants in all areas told that the influential people enjoy the benefits of the government agencies and policy makers due to the political chain that extends from local to mid and higher levels. Mr. Abdul Quayyum (CDMP) told in KII that most of the policy makers do not understand what an ecosystem service is. As they

do not understand the context, the terms that define ecosystems and the related services, they cannot design or plan any policy or projects clearly addressing the challenges and thus, improving the services for the citizens.

It is seen from both the key expert views and community demands through KIIs and FGDs that increasing the engagement of primary stakeholders, especially poor and marginal community, to the ecosystem will both conserve the ecosystem and improve poverty condition. As the local people is part of the ecosystem and possess inner knowledge of conservation, any action to the ecosystem should be considering the local community. Most of the experts on poverty alleviation think that local knowledge will help better policy design for ecosystem conservation and poverty alleviation. Knowledge intermediaries can play bigger role in gathering local knowledge, design plans and supply it to the policy makers for implementation.

6.3 Power Relations

In most of the cases, the powerful stakeholders hold the driving seat of ESS and decide who is to be delivered. The marginal fishers, farmers and forest dependent people, and slum dwellers commonly cannot get access to the ecosystem services. Power relations in ecosystem services centre on the control of resources by local elites with political influence and economic capability. They operate as businessmen driven by market rule of profit maximization in most cases, who deprive the poor people from ESS. In doing so, they get support from both the secondary and tertiary stakeholders.

Participants of FGD in *haor* areas told that unfair nexus exists among the powerful groups of community, the local government and the government agencies for resource control in the *haor*. They said that under the government control of the *beel*, only those with power and money can get access to it. The sheer logic of market is driving these actors to make profits. Broadly they are part of greater "conservation-business partnerships, corporate sponsorship, and management of protected areas by private for-profit companies, encouraging conservation programs centred on ecotourism, commercialisation of NTFPs (Non-Timber Forest Products), micro-credit, etc. These programs are growth and profit oriented, bringing the market logic of cost-benefit to issues of community prosperity and conservation."[18]

[18] J. Igoe, and D. Brockington 2007, 'Neoliberal conservation: a brief introduction,' quoted in Mohammad Tanzimuddin Khan and Tony Lynch, "Genealogy of Nature/Forest Conservation," *Human Geography* Volume 6, Number 3, 2013, p. 111.

6.4 Level of Governance

Inputs found from FGDs in different ecosystems reveal that in most of the cases the concerned government authorities and local government bodies do not play the roles as per their duty. FGD participants in both forest and *haor* areas said that most of the time, such authorities provide services to those who can deliver them money. Duty of the public representatives to look after the wellbeing of people through facilitation of livelihood options is below standard. Due to ineffective accountability mechanism, they cannot be held liable for this. In many cases, because of ineffective accountability mechanism, unplanned development creates more problem than it solves. One example was seen in Mongla where the Port Authority dredged the river for navigation, but stacked sands uncovered on roadside private land. Consequently, villagers around 200 meters long road and passerby are severely affected by dust and suffering severe health hazards.

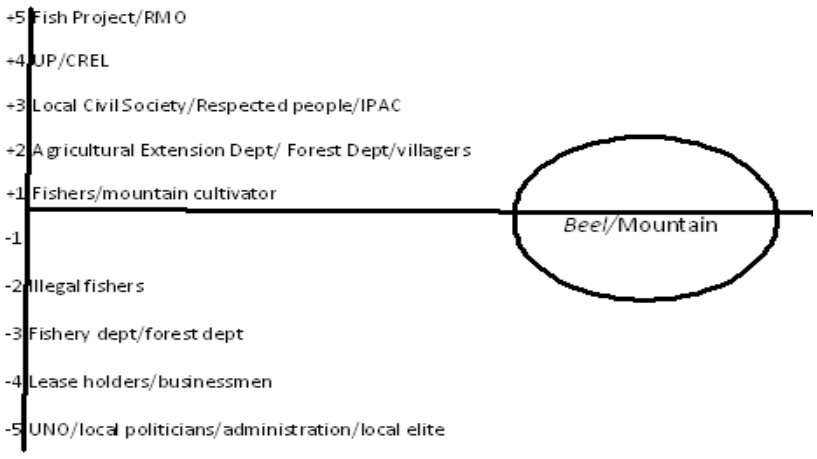
Participants in two FGDs said that in some cases, the local government bodies, few government agencies and public representatives are seen caring of the needs of the local people. It is depending on the persons in charge of the authorities, but not as institutions. The idea that necessary assistance must be provided for ensuring better ecosystem services to the general people have to be institutionalized irrespective of who is in charge of particular government authorities or local government bodies.

Without ensuring good governance at the local level, supply of ecosystem service to the poor is difficult. Government agencies and local government bodies have to facilitate ESS to the people. Media, NGOs and other knowledge intermediaries have the greater role in exploring the issues of mal-governance to the forefront and push incessantly to the tertiary stakeholders, especially the policy makers, to take necessary steps.

6.5 Interrelationships: Collaborative vs. Competitive

Perspectives from the field FGDs suggest that local elites who control the ecosystem services have a collaborative role with the local government bodies and administration. It is due to the political and

Figure: People's rating of harmful and beneficial stakeholders



economic power of these groups that they get the support from other powerful stakeholders. Sometimes, the relation between the government agencies and the NGOs are not cordial. Two FGD groups in *haor* areas think that NGOs working for ecosystem protection do not get things done by the government agencies smoothly because of the alliance of these agencies with the exploiter groups. FGD participants in the agro-ecosystem in coastal area and *haor* area said that when there is any misappropriation of ecosystem, all powerful stakeholders maintain a liaison. FGD participants in the *haor* area said that local civil society groups and the Resource Management Organizations face troubles from such alliance. Stakeholders working for better ecosystem management like NGOs, local civil society groups, poor members of the community etc. have conflicting relations with the powerful elites. In some cases, the public representatives and few government agencies play positive role to ensure the ESS to the poor people. Where the political leaders are not involved in the harm remain neutral. It is seen from the FGDs in coastal area that the Forest Department and the Coast Guard maintain relationship with the pirates for illegal financial gain. That is why the forest resource collectors unfairly pay huge amount of money to the pirates to get access to forest.

6.6 Impacts on ESS and Poverty Alleviation

Power relations and lack of good governance among the stakeholders negatively impact ESS and poverty alleviation. Dominating role of the powerful people in consuming the ecosystem services and drive for desperate profit hamper the ecosystem and deprive poor people. Deprivation from ecosystem services sustains poverty among the majority while few hold the ways of all resources in a particular area and continue harming ecosystem by indiscriminate use.

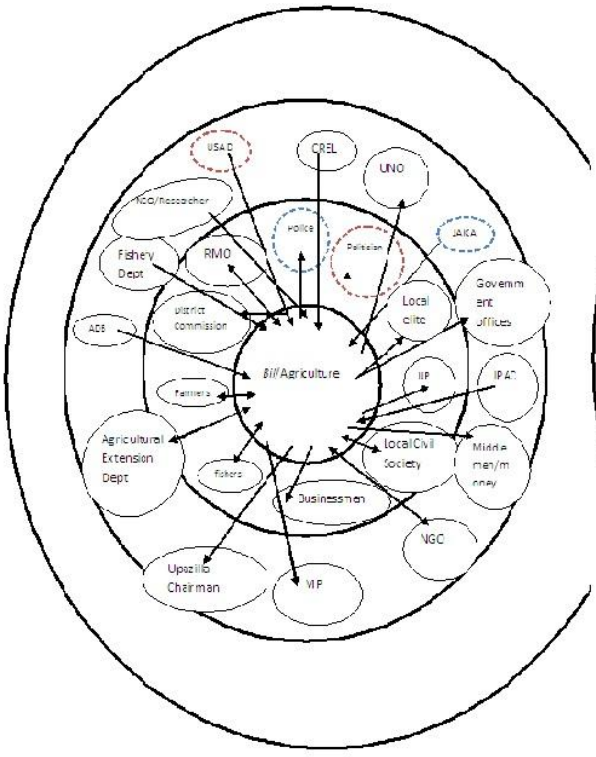
6.7. Crucial Issues and Concerns to Address

Local dominant groups with economic and political power and influence control the ESS with the help of the government agencies and public representatives. Such government agencies and public representatives take decisions to provide benefits to the local elite groups in most of the cases at the expense of good governance in all ecosystems. Market plays a bigger role behind the desperate control of ESS by those powerful groups. This small group has collaborative relations with the government agencies and local government bodies. On the other hand, poor and marginal people get supports from the NGOs, development partners, media, local civil society groups and the knowledge intermediaries.

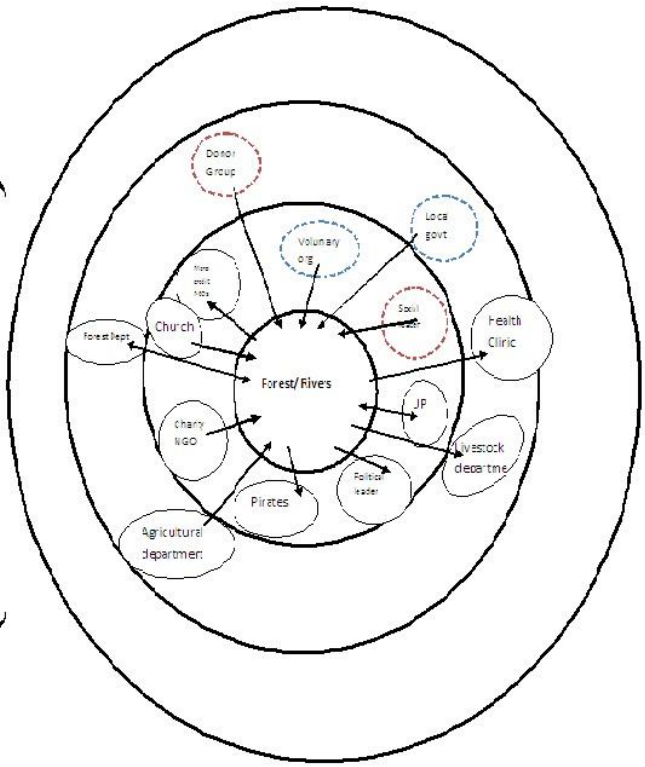
It is seen in most of the FGDs that stakeholders working for the ESS outside the government very often do not get cooperation and assistance from the government bodies. It is observed in the *haor* areas that local organizations are working for the ecosystem conservation and better management. They have some good capacities in community mobilization. If they are given more capacity training and knowledge, they can play much better role in this end.

Departments of forest, agricultural, fishery and livestock of the government have greater scope of ensuring better ESS to the poor community in all ecosystems. Forest department by facilitating people's access to the resource collection can help alleviate poverty through ESS. Agricultural Extension Department and Livestock Department can assist people in accruing better utility in the agricultural sectors. Fishery department have to play the pioneer role in managing the *haors* and *beels* and ensure that the few do not control these resources at the expense of impoverished many. Better advocacy and campaign for this reason should be conducted by the NGOs, media and knowledge intermediaries to pursue policy change. Actions should be taken to prepare social leaders and local civil society groups to better understandESS for ensuring good management of the ecosystems.

People's perception about influence and intimacy of relation with stakeholders in *haor* area



People's perception about influence and intimacy of relation with stakeholders in forest area



Chapter-7: Barriers and Gaps in Knowledge

Well intention of many useful researches maybe undermined while the barriers and gaps they face are not dealt with ingeniously. There are some areas and aspects of ESPA Bangladesh where barriers and gaps in knowledge generation, dissemination and implementation exist. Literature review done for this study has found that cultural ecosystem services got less attention in terms of research. Future areas of studies could look more into impacts through education, public awareness and involvement, cost effectiveness, income generating co-management, private sector partnership programs, governance issues relating to corruption and man-made barriers. Coastal and floodplains areas are vital to Bangladesh and it is important to continue research in these ecosystems. However, also the areas in northeast and southeast of the country having forestry ecosystems and northwest having drought affected ecosystems need further research in the future. While urban metropolitans are crucial areas of research, sub-urban, peri-urban, small-towns poverty issues and ecosystem services could be addressed as well. *Table 5* below shows the important areas of research gaps in ESPA Bangladesh.

Table 5: Research/Knowledge Gaps

- Cultural aspects of ecosystems;
- Protection and better utilization of aquatic resources;
- Impacts of macro-economics on ESS;
- Role of increased virtual ecosystem;
- Evolving of saline aquiculture and winners and losers;
- Salinization of ground water and its impacts on poverty dynamics;
- Equity and justice;
- Gender dimensions of NRM and poverty alleviation;
- Poverty and ecosystem in the contexts of rapid climate change.

According to environmental economists, protection and better utilization of aquatic resources in Bangladesh gets less attention. Sustainable conservation of the aquatic resources needs attention due to fast depleting nature of the aqua and aqua-agro ecosystems. Millions of Bangladeshis, mostly poor and living in flood hazards and climate change impacts zones, need support and guidance for protection of their livelihoods; but so far the works that have been done are not adequate how these largely vulnerable communities can receive long-term sustainable benefits from the outcomes of fisheries management. This is not just ESPA programmes but overall work on ecosystem services delivered by various organizations, agencies and institutions in Bangladesh. On the other hand, water structure is varying in various locations within the country that needs continued research. Water, sanitation and health hazard issues are matter of high

level concern, particularly for women, children, elderly and disabled population. The challenge will be to find effective solutions of WATSAN in different ecosystems and establish effective network by bringing synergies and avoid overlapping.[19]

Further research is needed in the areas like impacts of macro-economics on ecosystem services and benefits, role of increased virtual ecosystem services demand from urban areas to rural development, linkages between enforced migratory activity as mediated by ES loss and wage suppression in urban centers (migrants working in garment factories, beneficiary profile of shrimp farming –how does saline aquiculture evolve and who are winners and losers in greater detail, and modelling of the salinization of groundwater through marine encroachment.[20]

There is a gap in understanding about who are the most vulnerable people in different ecosystems and the poverty dynamics. In general, there is a trend of poverty reduction at national level, but thousands are also pushed into extreme and chronic poverty situation in Bangladesh to both social factors and environmental degradation including climate change. These need to be studied. The organizations working in local communities sometimes could not clearly differentiate who are the most, middle and less vulnerable. The criteria seem to be similar or blurred and thus this should be identified clearly to undertake appropriate actions for addressing various levels of poverty.[21] There is a research gap regarding how differently male and female respond to shocks.[22] Gender issue in the NRM projects and research work is often limited to the number but not much impact on the results or the outcomes.[23]

Often scientists overlook poverty issues during their research on ESS. It is because they usually remain more concerned with the technical aspects of ecosystems and a bit on the services but not much on the poverty issues. Understanding poverty should come first to explore on how to use ecosystem services for addressing poverty. It is felt that knowledge is fragmented and not being used in a holistic way. Scientific knowledge is produced to satisfy the purpose of the policy makers, but sometimes, the benefits are not accrued to the poor and vulnerable.[24]

ESPA research needs multidisciplinary approach to understand ecosystems and poverty situations. ESPA experience of different society should be taken into consideration - bringing in sociologists, anthropologists, indigenous culture experts together with scientific communications and policymakers.[25] Engaging private sectors in ecosystem services programmes to address

[19] Interview with Dr. Paul Thompson
[20] Interview with Prof. Robert Nicholls, Principal Investigator, ESPA Delta Project Q Survey
[21] Interview with Mr Shakeb Nabi
[22] Interview with Dr. Binayak Sen
[23] Interview with Mr Shakeb Nabi
[24] Interview with Dr A. Atiq Rahman
[25] Interview with Dr A. Atiq Rahman

poverty is also a complex task but needed. As the gaps between the wealthy and the poor continue to grow, there is a scope of research available to address this increasing phenomenon of inequity, explore how ESS can reduce the gap[26] and test to see sustainability in long term.

The challenge in addressing poverty is to distinguish between poverty driven by ecological destruction and the effect of climate change. It is important to note that in many areas, although the income poverty is lower, but high human poverty exists. For that matter, painstaking research is needed when identifying poverty. Social deprivation issue should be addressed when dealing with poverty alleviation. It is also important to search why social vulnerable groups settle in the ecologically critical areas.[27]

Like knowledge and research gaps, there are also barriers to dissemination and using knowledge in cost-effective way. Lack of interest, awareness, stereotype mentality and negative attitudes, and participation from the part of the relevant stakeholders, often government bureaucracy, policies and local level influencers, actions and poor governance, vested interest groups, lack of knowledge on how to access or use knowledge resources also create barriers. Weakness within the knowledge exists due to obscurity in the dissemination of wider public and communication strategies, lack of sustained knowledge sharing process, non-existence of inclusive and direct engagement between the most powerful and the local vulnerable poor community stakeholders and use of jargons. The glances of such dissemination and implementation barriers are shown in *Table 6*.

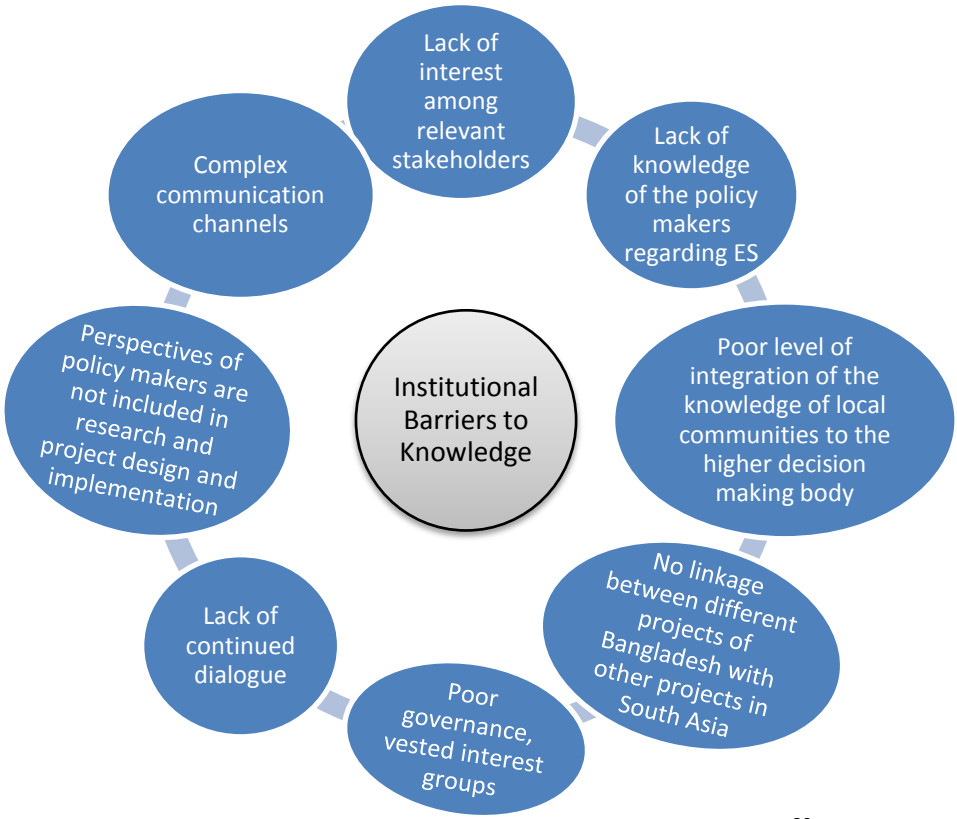
***Table 6*: Knowledge Dissemination and Knowledge Implementation Barriers**	
Knowledge Dissemination Barrier	**Knowledge Implementation Barrier**
Lack of space or common engagement in policy level debates	Isolated research works
Lack of exchange of knowledge among various stakeholders	Lack of funding and resources
Use of jargons/simplification	Lack of involvement of the policy makers
Attitude and stereotype mentality	
Lack of receptivity of new issues and ideas	
Lack of inter agency/actor exchange, sectoral approaches (ecologists do not know about the work of social scientist and poverty analysis)	

[26] Interview with Dr. Paul Thompson
[27] Interview with Dr. Binayak Sen

7.1. Knowledge gaps deriving from stakeholders

Several KIIs feel that often the policymakers have difficulties in understanding the importance of ecosystem service for poverty alleviation due to technical aspects. Lack of adequate understanding of the context of ecosystems and the related services, they cannot design or plan any policy or projects that can clearly address the challenges and thus, improve the services for the poor citizens. It is also very important to improve understanding, interest and attitudes and these to be communicated in a language that it is understandable for the policymakers.[28]There seems to be a lack of space or common engagement in policy level debates- where the local communities do not have access to directly participate at the higher level decision making process. More research can be done on this area to ensure maximum participation of people

Figure 1: Institutional Barriers to Knowledge



from all levels for better ecosystem services to address poverty issues.[29] The barriers deriving from institutional factors are shown in figure 1.

A communication gap exists in ESPA works at different levels and stakeholders. The key persons of different sectors and agencies working in ecosystem and poverty alleviation

[28] Interview with Mohammad Abdul Qayyum
[29] Interview with Dr. Paul Thompson

(although general economic division (GED) is generally aware of ESPA Deltas) are not aware about ESPA projects in Bangladesh. Powerful knowledge intermediaries such as media have not been communicated well. Development partners are also not fully informed about ESPA's activities. This gap has been a vital barrier towards the goal of knowledge and development impacts. There should be a clear understanding on the benefits and harms that may happen due to certain types of actions on the ecosystems and how they may impact the services. The information should be quantifiable for a clearer understanding on benefits and hazards.[30]

There seems to be a lot of research taking place in isolation. While there seems to be a number of research going on regarding ecosystem services but it has not reached the development organizations. ESPA needs to be open to sharing all the findings so that these can be transformed into actions as organizations are always looking for empirical data to understand what should be their next course of actions to address poverty.[31] However, there seems to be discomfort in sharing knowledge among various stakeholders, particularly those who are generating new knowledge and findings in research fields, and those who are generating ideas for projects in development sectors. Confidence building practices, workshops, more communication are needed to strengthen relationships and trusts to share findings and ideas to generate partnerships.[32] The outputs or the knowledge gathered from the local or national levels are not exchanged enough and for this reason, there seems to be a gap between what local communities are aware of and what the policymakers and experts at national level perceive. It is also seen that the projects that are delivered do not have the long term goals. This happens not only with the ESPA programmes, but also other ecosystem service related works due to the funding crisis.[33]

7.2 Addressing Gaps and Barriers

Multiple actions are needed to remove the knowledge gaps and barriers. Mohammad Abdul Quayyum thinks that first we need to identify the policymakers who may play a significant role in designing actions programmes and policies and then we must ensure arrangement of knowledge sharing and awareness raising programmes, and workshops for the policymakers and relevant stakeholders to understand this issue clearly. The perspectives of policymakers

[30] Interview with Mohammad Abdul Qayyum
[31] Interview with Mr Shakeb Nabi
[32] Interview with Mr Shakeb Nabi
[33] Interview with Dr. Paul Thompson

and government officials who work in planning commission and local government should be taken into consideration in all research and projects design and implementations.[34]

In terms of the ESPA projects along with other ecosystem services related programmes that are being delivered in Bangladesh and in South Asia, the challenge is that there is no strong linkage between these projects and thus, the risk of overlapping and knowledge gaps on particular area continues to persist. There is also a need to assure linkage between government policies and the projects that are being designed and delivered to ensure maximum benefits drawn from the outcomes. The projects also need to find a way from becoming institutional from individual delivery. For this purpose, more sharing of knowledge and synergy establishment among the researchers are needed.[35] Planning Commission and Delta Plan 2100 process are very keen to get input from ESPA. However, it remains a challenge for ESPA supported ESPA Deltas project how effectively it can influence key government agencies and bi-lateral project like GED and Delta Plan 2100 respectively.

There is a need for continued dialogue from local to national level and national to regional and international level. Dialogues must be face to face at workshops or seminar level for better and clearer interaction as well as establishing network at individual and institutional level but for continuity, Dr. Paul Thompson thinks that electronic, user-friendly platforms could be used. Newsletters could be one way to keep the experts and researchers updated on what is happening around ecosystem services related projects- it should come from one system to ensure system dissemination of knowledge. Closer understanding, linkage and dialogues are required in South Asian nations- particularly between India, Nepal and Bangladesh.[36] ESPA Delta is planning to organize exchange between two countries to share information and on FW flow and other fluxes and influence policy decisions.

Dr. Mizan R Khan thinks that there are several ways that the knowledge developed from the projects can be shared with various groups of stakeholders. The first can be, sharing the knowledge with other experts and researchers who may understand the technical context and scientific jargons. Media should receive a comprehensive understanding of the projects but with the improvisation of technical jargons so that they can help reaching out to wider audience.[37]

[34] Interview with Mohammad Abdul Qayyum
[35] Interview with Dr. Paul Thompson
[36] Interview with Dr. Paul Thompson
[37] Interview with Dr. Mizan R. Khan

According to Dr. Binayak Sen, policy makers have to own the research findings and knowledge generation in ESPA should be jointly carried out by environmental experts and economists to address the link between poverty alleviation and environment. Integrated knowledge generation is needed for deeper understanding of the linkage between poverty, environment resilience and sustainable development. Sensitization of the stakeholders can meet the need for effective distribution of generated knowledge and making it sustainable. It requires partnership of the institutions and researchers who are working. Academic researchers should be more engaged in the field level research.[38]

It is suggested that to reduce the gaps and confusions between ESS and poverty alleviation, more and more joint research works between the environmental experts and the economists should be undertaken. Increasing collaborative and multi-disciplinary research projects and joint advocacy initiatives can increase the possibilities to reduce such gaps and confusions. In addition, engagement of non-academic actors, both from environmental and poverty alleviation programs, also can play a catalyst role to bridge the gaps and considering phenomenon in isolation.

Poverty alleviation through ESS should prioritize informing policy makers with the knowledge and technical aspects of ecosystem services through workshops, seminars and other awareness raising programs based on knowledge and evidence. Informed engagement of policy-makers from the beginning to end of any research and development project enhances the possibility to change their attitude and make them more sensitive and receptive. Recognition of their active participation and inputs with critical and cautious measures, encourage them to own the new knowledge and become champion of the cause. It necessitates removing communication barriers for RiU, sensitizing the stakeholders of various levels, using good advocacy techniques for that matter, and creating effective platform for knowledge sharing among the stakeholders from national to local levels.

Different projects of South Asia should be linked to the projects running in Bangladesh to avoid overlapping and gaps and build network for application and integration of knowledge and greater development impacts. Besides, linkage should be established not only between ESPA projects and non-ESPA projects, but also among various projects of ESPA itself of Bangladesh. Linkage between academic research in theoretical level and more functional research done by different organizations working in the field level are also essential. Ensuring continued dialogue

[38] Interview with Dr. Binayak Sen

at all levels will lead to greater development impacts through coordinated efforts. Knowledge sharing from local to national to international level will strengthen efforts and generate new ideas.

Chapter-8: Potential Priority Action to Reduce Knowledge Gaps and Enhance Integration and Application of ESPA Outputs

8.1 Priority Actions for ESPA in Bangladesh

The national stakeholders' consultation workshop (SCW) and the interviews with the KIs and PIs provided various perspectives and priorities on what can be the next course of actions for ESPA initiative in Bangladesh. It is identified that to meet the knowledge demands, ensure better application of knowledge, and in the process, making development impacts, the future research projects of ESPA need to generate quality knowledge products and through a combined effort, a knowledge hub can be developed for effective management and common use. There needs to be actions to explore new issues and aspects of research. A collection and use of good practices and methods from across the country and beyond needs to be put together and shared with relevant stakeholders in various forms of languages and with appropriate communications tools. There should be an integrated framework developed for research works in terms of sharing the research findings through various influential outputs and knowledge products.[39]

The priority actions for ESPA were suggested by PIs and KIIs. One working session of the SCW in Dhaka was dedicated to identify priority actions for ESPA which are summarized in *Table 7* bellow. Few suggestions, covering knowledge management, governance, capacity building, and South Asia level collaboration and sharing are presented by the study team for the consideration of ESPA Directorate and relevant PIs. These suggested actions are not exhaustive by any means. Also, these suggestions may not be applicable to all projects. At some later point, a more realistic action plan can be developed based on the suggested one with the participation of PIs, projects' leading personnel, and select stakeholders.

Table 7: Priority Actions for ESPA in Bangladesh

What are the Actions Needed?	Who will Implement?	When it can be Started?
New research areas needs to be identified (e.g. IWRM focused; Erosion & Sedimentation, impact of mega projects, (*Please see Section 5 for elaborate discussion*) particularly issues that will benefit the poor immediately.	- Primarily ESPA Directorate	- Process can be initiated immediately by the Directorate after

[39] SCW proceedings; Key Informant Interviews.

What are the Actions Needed?	Who will Implement?	When it can be Started?
Capacity building of Research and Impact Partners to meet the supply and demand and influencing policy where needed.	- ESPA Directorate and individual project	- Immediate can be initiated for institutionalizing this process.
Supply-side of ESPA research needs to be strengthen through sharing, exchange, linking with other projects, and engagement with stakeholders	- Both ESPA Directorate and individual project.	- Immediately. Mostly at country level.
Well organized knowledge management mechanism to strengthen supply-side of ESPA research: generation and dissemination of knowledge, and stakeholders' effective access to knowledge.	- ESPA Directorate with the cooperation of research project and knowledge intermediaries.	- This mid-term (<5 years) process can be initiated immediately with a common understanding of ESPA Directorate and individual project.
Integration of ESS and Poverty Alleviation related knowledge generated seperately by various actors at different levels (local, regional, national, and actors).	- Individual research project - ESPA Impact Advisor's facilitation role.	- Can be a regular process with immediate effect.
Sharing data and information across countries.	- Individual research project	- Can be initiated immediately by the projects
Linking ESPA research with other relevant projects for greater development impacts (e.g. ESPA Deltas with Delta Plan 2100)	- Primarily by Individual research project at national level. - ESPA Directorate also can facilitate this process with PIs and non-ESPA projects. - ESPA Impact Advisor's facilitation role.	- Both projects and Directorate can take this as a mid-term targets. - ESPA Delta, will be working with GED to support the Delta Plan; not working with the DP 2100 directly, rather work through GED/Planning Commission to influence DP 2100. - ED will organize a workshop for exchange of new knowledge and evidence.
Facilitate to have a common analytical approach and lens to avoid contradictory results and explanation.	- ESPA Directorate to involve local projects and leading non-ESPA local and international actors.	- Long-term initiative to create a common understanding, framework and practice.
Identifying effective knowledge	- Mostly by Individual	- Both projects and

What are the Actions Needed?	Who will Implement?	When it can be Started?
intermediaries for coproduction, management and dissemination; and champions to create development impacts.	research project. - ESPA Directorate also can play role.	Directorate can take this as a mid-term targets.
Linking ESPA knowledge to South Asia level platform of Science-People-Policy initiative.	- Individual research project. - ESPA Directorate (Impact Advisor). - BCAS (due to its prior involvement).	- Process can be initiated immediately both by the projects and the Directorate
Going beyond political boundary with ESS: water, climate and biodiversity, Forests (e.g. *Sundarbans*, common river system like *the Ganges).*	- ESPA Directorate. - Individual research project	- Can be initiated gradually by the projects and the process can include SA countries like Bhutan, India, Nepal, Pakistan etc.
Communication for action and influencing policies: Project's own customized knowledge generation, ownership and sharing framework/plan needed.	- By Individual research project at national level.	- Each project can initiate this process immediately in consultation with its stakeholders, if such process/plan is not existent.
Dimention of governance: sustainability of ESS and its benefit: - How dis-benefitting the poor, and serving the interest of market and vested interest groups can be avoided.	- ESPA Directorate. - Individual research project	- Long-term target of ESPA Directorate.

Participants of the SCW also provided their suggestions by addressing the following two issues (*Table*8) in respective working groups:

Table 8: Summary Findings of the Group Work on Application of Knowledge for MakingDevelopment Impacts

Key questions	Responses
What needs to be done for co-production of knowledge and translation of knowledge for	• Combination of bottom-up[40] and of top down process • Horizontal learning approach • Ownership of the knowledge (make all, feel all of us owner) • Useable to all stakeholders • Translate into local language (mood, language, technical, non-

[40]SCW proceedings; KIIs: Dr. Atiq Rahman and Dr. Ainun Nishat.

Key questions	Responses
application?	technical) • Capacity building of impact partners • Customize the knowledge products according to the audience
How to ensure the application of ESPA knowledge to improve the lives of the poor by better utilization of ESPA knowledge?	• Training for all stakeholders • Increase awareness program through mass media newspaper, demonstration, seminar, workshop etc. • Follow up field research, if needed • Strengthening of government policies, institutional weakness etc. • Identify and engage the champions for changes

The learning approach should be horizontal and equal emphasis needs to be given to empower partners and stakeholders on the ownership of the projects.[41] The knowledge products of the research should be useable by all stakeholders, not only by the academicians and limited policymakers. For this reason, once again, the mode of languages to translate the raw and technical findings should be delivered in varied forms to ensure clear and easier understanding of the findings. One of the important aspects of knowledge dissemination is to distribute the stories at various stages of the project without stacking up all of the products for one large conference.[42] This is a good practice the ESPA research initiatives can adapt and design a timeline of the distribution of the knowledge products throughout the project cycle.

Customizing the knowledge products according to the audience level and needs should be given priority while designing goals for research outputs. There should be scopes in every research to help build understanding and capacity of the impact partners.

In terms of ensuring the application of ESPA knowledge to improve the lives of the poor by better utilization of ESPA knowledge, capacity building training should be provided to relevant stakeholders. It is key to increase awareness of the programmes through mass media to access the understandings of the general population--and for this purpose, it is important to ensure some of the trainings are inclusive of media practitioners.[43]

If a research is providing policy briefs or engaging with policymaking, it is important to go back to the field and conduct follow-ups to explore the status or situation of the local communities to capture the impact of the research project. Strengthening government policy process and

[41]SCW proceedings; KII: Shakeb Nabi.
[42] This understanding gathered from other non-ESPA initiatives, particularly from CREL and IUCN's Ecosystems for Life communication plans and activities.
[43]SCW proceedings; KIIs: particularly Dr. Mizan R. Khan and Dr. Mohammad Abdul Qayuum.

institutions will help enhance implementation of the research findings and recommendations. It is, therefore, important to identify the knowledge and policy champions and engage with them to ensure maximum utilization of the research findings to bring positive changes in the lives and socio-economic status of the communities dependent on the ecosystem services directly.[44]

8.2 Strengthening Capacity of the Researchers and Impact Partners

From the understandings and knowledge gathered from the SCW, the KIIs and exploring relevant other documents, it can be expressed that there is a gap in capacity and knowledge management among the researchers and impact partners, particularly in the process of research designing and sharing the findings. The researchers need capacity building workshops and training to help them acquire necessary understanding, knowledge, avenues and skills to develop strategic plans and actions for communicating their research findings to wider audience.[45]

One of the major concerns emerged from the SCW and KIIs that there seems to be a gap in designing and delivering gender inclusive research work. Often gender balance is maintained for the sake of reaching a target number without substantive elements emerging from the consultations and the findings. Gender focused and prioritized research is increasingly needed due to long standing lightness of designing and delivering in-depth research on this area of concern, especially on the vulnerable, poor women depending on the ecosystem services. For this reason, the researchers need capacity building programmes and informative toolkits to help them assist and gain clear understanding on gender inclusive research initiatives.[46]

There is also a concern on the driving force of the research programmes becoming more about addressing donors driven agenda and proving hypothesis that may not fully address the deepest issues persisting in the local communities. Perhaps capacity building workshops and/or toolkits to provide clear encouragements to ensure that the research outcomes aim to address poverty in the local communities depending on the ecosystem services instead of designing the project in a way that primarily aims to addressing donors expectations as principal goals.[47]

8.3 Working with Knowledge Intermediaries

[44] SCW proceedings.
[45] *ibid.*
[46] *Ibid 3.*
[47] Dr. Atiq Rahman Key Informant Interview.

The study teams and researchers, while planning and designing the research projects, should have plans to develop Communications Toolkit to disseminate their findings across the platform of various stakeholders. For this reason, it is important for the ESPA researchers to identify, not only the scientific research partners, but also the knowledge intermediaries who will help championing the process of knowledge dissemination of the research project.

To some extent, the identification process of knowledge intermediaries and champions are evident in case of ESPA Deltas and EcoPoor projects. However, how effectively this will work can be said after the more maturity of the project lives. Like any projects, all ESPA projects may need to re-evaluate and recognize the knowledge intermediaries and champions anew along the project cycle and changing of realities. For example, while the first-phase formulation of Bangladesh Delta Plan (BDP) 2100 is expected to be completed by late 2016,[48] perhaps, ESPA Deltas needs to re-think about its knowledge intermediaries and champions to be relevant and effective. So maybe the case for EcoPoor project.

This research identified a number of organizations and institutions that may play a strong role as knowledge intermediaries to help implement and disseminate ESPA research findings relevant to their programmes, stakeholders and partners. International NGOs such as Action Aid and Christian Aid expressed strong interest to learn from the research findings and look into how these outputs can support their actions and initiatives. Donor agencies such as USAID, GIZ, Nordic agencies, Dutch agency, Canadian agency, EU Delegation invested in a

Impact Partners Needs Capacity Building and Better Understanding

During FGDs, impact partners of two ongoing ESPA projects, ESPA Deltas and EcoPoor, showed inadequate knowledge about the projects, their purposes and activities. In one case, focal person of one impact partner told the study team that his organization only organizes events like FGDs and meetings when it is necessary without having clear understanding of the purpose or the details of the project. The community is not aware of the project either.

Almost similar experience was noticed from another impact partner. Its representative had very distantly recollected the name of the project only. She could not provide any other details. Contrary to this reality, both the organizations are prominently recognized as the impact partners of the projects.

Likewise, lack of awareness about the research project was also noticed within the staff members of a research partner. Capacity building of the impact partners and their better understanding

[48] The Daily Star: 'Long term plan for delta management being formulated'. Dhaka. May 27, 2015.

number of influential, large-scale ecosystem services and communities projects in Bangladesh and South Asia. IUCN's Ecosystems for Life which is largely funded by the Embassy of Netherlands, USAID funded CREL, UKAID and Canadian agency's CARIAA, EU Delegation funded SEALS, GIZ partnered projects with BCCTF are some of the notable projects identified in this research.[49]

One of the working sessions of the SCW tried to deal with 1. identifying the key stakeholders in knowledge generation and dissemination and use of knowledge and 2. potential knowledge intermediaries issues, came up with the result furnished in the*Table 9*. Their understanding shows the key knowledge intermediaries, who can play an important role in knowledge generation, dissemination, partnership building and advocacy towards making development impacts at ecosystem levels.

Table 9: Types of Knowledge Intermediaries

<table>
<tr><th colspan="2">Issues Discussed in Working Group</th><th colspan="2">Responses of Working Group</th></tr>
<tr><td colspan="2" rowspan="2">Key stakeholders in knowledge generation, dissemination and use of knowledge?</td><td colspan="2">They are directly associated with ecosystem services, that is why we think they are key stakeholders:</td></tr>
<tr><td colspan="2">- Local people
- Managers
- Policymakers
- Interface actors
- Researchers</td></tr>
<tr><td>Who are the potential knowledge intermediaries?</td><td>Knowledge Generation</td><td>Dissemination</td><td>Users</td></tr>
<tr><td></td><td>Researchers
Local People</td><td>Researchers
Managers
Local people
Interface Actors</td><td>Researchers
Managers
Policymakers
Local people
Interface Actors</td></tr>
</table>

Apart from this brief, and to some extent a bit indistinct, set of suggestions by the SCW participants, prospective knowledge intermediaries can be identified from among following major groups:

Potential	Potential as Knowledge Intermediary	Measures and Support Needed

[49] Key Informant Interviews; PI interviews; Consultations of non-ESPA projects available in public domain.

Intermediary		
NGOs/CBOs	Both national and local level NGOs/CBOs can perform the responsibilities of being effective knowledge intermediaries and bridge ESPA research and primary stakeholders.	To make them perform effectively appropriate capacity building of such organizations is needed along with equipping them with suitable information and knowledge products
Think tanks	BCAS, Bangladesh Institute for Development Studies (BIDS), Bangladesh Unnayan Parishad, ICAD, Gobeshana, Shamunnay,*Unnayan Onneshan,*Apart from big think tanks, small and potential, specialized, knowledge-based organizations active at local level can be dependable as knowledge intermediaries also.	Rapport building, Exposure, Exchance, Engagement with ESPA.
Universities	Different public and private universities which have relevant departments, institute, centers, and research initiatives with a potentials to run multi-disciplinary projects.	Rapport building, Exposure, Exchance, Engagement with ESPA.
Media	Mass media such as national dailies, both vernacular and English; about two dozen TV channels, both private and state owned; community radio stations which have close connection with the primary stakeholders; can work as effective knowledge intermediaries. They can serve both the demand and supply side.	Necessary capacity building and exposure to ESS related activities of media can enhance their efficacy

8.4 Translating and Brokering Knowledge

The ESPA projects should not be only limited to scientific and experts community but a strategy should be developed to ensure greater awareness and sensitization raised among the highest level of authorities which are lead by the ministers and elite politicians to support the plight of the local poor communities relying on ecosystem services for their everyday livelihoods.[50]

In many cases, it seems more talks and commitments are taking place rather than actions and implementations. This is happening for various reasons but also due to gaps in knowledge translations, promotions and management. The language for scientific community may not be clearly translated to the development agencies practitioners due to their lack of understanding of the scientific languages or jargons and also because their interests are already set on particular

[50] Dr. Mizan R. Khan Key Informant Interview.

goals, outputs, outcomes etc.[51] Bringing changes in the mindsets of various stakeholders involved in addressing poverty and ecosystem services should be set as priority as well for ESPA research since often there is a methodical conflict taking place between those who address poverty and those who plan to protect ecosystems without including humans in the system.[52]

[51]SCW, group discussions; Shakeb Nabi Key Informant Interview.
[52]SCW, plenary discussions.

Chapter-9: Linking ESPA Bangladesh Research with South Asian Science-People- Policy Initiative

While at least three ESPA supported research projects have been addressing crucial aspects of ESS and PA in neighboring India-Bangladesh-Nepal, contrary to this fact, the knowledge integration is absent among the stakeholders in Bangladesh and at South Asian (SA) regional level. For this reason, the most common thoughts emerged that it is increasingly important to establish a South Asian platform of *science-people-policy,* consist of interdisciplinary scientists and academicians, community and organizations, and policy level actors.[53]An earlier ESPA meeting in Delhi, initiated a scientific networking development of SA to address and interlink poverty, NRM, ES, indigenous knowledge and climate change. Bangladesh Centre for Advanced Studies has been working on developing a dynamic network of scientists and researchers.[54] However, to bring in communities and organizations connected in the region, as suggested by a number of experts, a fully focused research on this may help establish the platform required for effective engagement through Track II diplomacy initiative.[55]

It is identified, through close discussions with practitioners and experts that while in SA there are a number of ecosystems based research and development projects taking place in a disengaged way, it is still remained question on whether all of these are supportive towards community engagements in generating livelihoods, especially those who are completely dependent on the ecosystems, are marginalized and possibly ultra-poor. Future research should look into trans-boundary ecosystems services and how they impact on the communities, particularly those who are from two Bengals (Bangladesh and bordering West Bengal state of India).[56]

There is also a lack of awareness and information on the research taking place in various parts of the region, including within Bangladesh, creates gaps in knowledge sharing and management which leads to high risks of overlaps, impacts on cost-effectiveness and utilization of limitedresources, unawareness on policy implication that might affect communities residing in other parts of region.[57]

[53] KIIs, March-May 2015; SCW, Mar 30, 2015.
[54] Dr. A. Atiq Rahman, and SCW. March 30, 2015.
[55] Mohammad Abdul Qayyum, KII, May 4, 2015.
[56]KIIs: Dr. Ainun Nishat, May 2, 2015; Shakeb Nabi,April 9, 2015; Tanjir Hossain, May 10, 2015.
[57]KIIs: Shakeb Nabi, April 9, 2015; Paul Thompson, March 18, 2015; Mohammad Abdul Qayyum, May 4, 2015; Group Consultation, SCW, March 30, 2015.

Three Ws About South Asian Science-People-Policy Initiative

Climate change threatens food security in S Asia

Says ADB study

BSS, *Dhaka*

Melting Himalayan glaciers and other climate change impacts pose a direct threat to the water and food security of more than 1.6 billion people in South Asia, according to the preliminary findings of a new study financed by the Asian Development Bank (ADB).

Analysing current trends and scenarios based on projected temperature increases, the study warns that four countries in South Asia- Afghanistan, Bangladesh, India and Nepal - are particularly vulnerable to falling crop yields caused by glacier retreat, floods, droughts, erratic rainfall and other climate change impacts.

Produced by the International Food Policy Research Institute, the study, 'Addressing Climate Change in the Asia and Pacific Region: Building Climate Resilience in the Agriculture Sector', will officially be launched by the ADB on the sidelines of the United Nations Framework Convention on Climate Change meeting in Bangkok in late September.

The study warns that if current trends of climate change persist until 2050, the yields of irrigated crops in South Asia will decrease significantly with 17 percent fall in maize production, 12 percent in wheat and 18 percent in rice yield.

'Almost half of the world's absolute poor live in South Asia, where they tend to depend on rain-fed agriculture and live in settlements that are highly exposed to climate variability,' the study said.

The study outlines a range of agricultural adaptation measures that can significantly reduce the region's

Poverty: SA's Common Enemy Needs Collective Battle

South Asia, consist of eight countries—Afghanistan, Bangladesh, Bhutan, India, Maldive Islands, Nepal, Pakistan and Sri Lanka—ranged from Himalayan range in the North to Bay of Bengal and Indian ocean in the South, With a population of 1.7 billion, SA is home to 54% of the global MPI poor[58]population. SA is homogenous in terms of socio-cultural, political, historical, economic, educational, and poverty factors. 'Despite fast-paced economic growth in some countries, food insecurity still poses a massive problem in SA. 295 million people (16.8% of the total pop.) are undernourished.'[59] According ADB: 'The added hazards from global climate change will affect them [SA nations] the most, making their escape from poverty even more difficult.'[60]

Why SA Platform?	What will be the benefit?	What it means for ESPA?
Setting regional level agenda and priority for 'half the world's poor.' Building Common understanding of scholars-practitioners-policy makers. Integrating multi-disciplinary regional knowledge and expertise. Building Regional capacity and partnership. Sharing Regional data, information, knowledge and impact evidence through workshops, seminars, web-based forum or service. Celebrating research impact stories. Replicating knowledge evidence in other countries where applicable.	• Enhanced regional capacity to tackle poverty. • Effective regional cooperation for the betterment of ES to benefit the poor. • Enhanced people's diplomacy to influence policy makers for the common wellbeing of the region. • Better integration of intra/inter-country multi-disciplinary of knowledge. • Enhanced negation power of scientists and community.	• Fulfill ESPA's goal in a low-cost and effective way in a larger region. • Ensure ESPA's effective and simultaneous presence across the region. • Help to address ESS shared by the regional countries holistically. • Greater opportunity to use ESPA knowledge. • Create better knowledge impact. • Create a critical voice for global level impact.

[58] Oxford Poverty and Human Development Initiative. June 2014

[59] CGIAR: Big facts: Focus on South Asia. https://ccafs.cgiar.org/blog/big-facts-focus-south-asia#.VYqDD1Ibi1s

[60] Bloomburh Business: 'Climate Change Threatens South Asia's Escape From Poverty.' August 20, 2014.http://www.bloomberg.com/news/articles/2014-08-20/climate-change-threatens-south-asia-s-escape-from-poverty

The aquatic ecosystem of Bangladesh is deeply connected with the region and beyond-particularly with India, Nepal, China, and Bhutan; the Sundarbans is shared with India and the hill and forestry, and maritime ecosystems are shared with Myanmar and India. Often when the upstream river flow is changed due to barriers, it affects Sundarbans and the salinity levels of the Southern part of Bangladesh and drought in the Northern locations. For this reason, it is imperative for Bangladesh to have effective networking within the region for better management of the ecosystem services. In appropriate cases, quantifiable data collection should be conducted to capture scenarios in the region.[61]

In terms of sharing knowledge and networking in SA, besides connecting the scientific communities for regional research initiatives, it is important to explore avenues to bring the communities in the regions together by directly linking them to share the best practices and inform and warn each other on environmental issues. For example, heavy rainfall in Nepal could bring in floods in Bangladesh and thus, the community in upstream could warn the other communities residing in downstream of the region about the possibilities of flood hazards in their areas. It is noted that a much better result will happen in SA if communities can work together directly to overcome the political protocols which often create barriers to progress and common benefits in the region. Good examples of researching on improving state level and community connectivity can come from ASEAN, CELAC (Latin American and Caribbean States), and the EU regions.[62]

It is also identified that a South Asian think-tank model should be developed to set priorities in the region. This can also be Track II diplomacy.[63] Bringing policymakers will be significantly challenging to address and agree on certain issues but through Track II diplomacy the civil societies in the regions could come together and push for equity in the region and in the process protect ecosystem services and alleviating poverty. It is also suggested by some of the experts that legacy programmes can be initiated from completed research to share the findings and establishing the network from larger regional practical implementation from the findings.[64] The regional researchers, development practitioners can be benefitted through capacity building partnership as well as through technical workshops.

[61]KIIs: Dr. Ainun Nishat,May 2, 2015; Shakeb Nabi,April 9, 2015; Dr. Mizan R. Khan, March 25, 2015.
[62] Shakeb Nabi, *ibid.*
[63]*Ibid*. footnote 13.
[64] Paul Thompson, KII, ESPA, March 18, 2015; Nicholls, R. J, PI Interview, April 2015. Group Presentations, SCW, March 30, 2015.

While it is important to connect Bangladeshi research initiatives, outputs and outcomes with large-scale project such as CARIAA initiative, it is also suggested that South-South cooperation beyond the South Asian region should be encouraged as well.[65]

In SA there needs to be more work done to develop linkage between studies, academic and non-academic communities, and regions as the knowledge is fragmented and not being used in a holistic way. Such a suggested platform of science-people-policy can fill up those gaps and open up opportunities of integration and bridge building to battle the common enemy of SA—the poverty.[66]

[65] Dr. David Rafaelli, PI Interview, April 2015.
[66] Dr. A. Atiq Rahman, KII.

Chapter-10: Conclusion and Way Forward

Throughout the previous eight sections (3-10), this study has tried to address primarily five 'indicative questions' posed by ESPA. In the process of doing so, the study has sometime tried go beyond the boundary of 'ToR' and deep into the relevant issues in search of a suitable way forward for ESPA actions in Bangladesh.To address the objective of this study a set of recommendations which have emerged from relevant actors are presented below. In this respect, collecting suggestions from PIs about the future ESPA research needs and priorities, impact targets and action plan were given special emphasis. SCW also received equal importance to capture the opinions of wider range of participants for the same purpose.

While mapping the stakeholders of ESPA projects; according to the level of interest, role and influence, three types of key stakeholders—primary, secondary and tertiary—have been identified in this study. Increased engagement of primary stakeholders, especially poor and marginal community, will conserve the ecosystems and improve poverty condition. As the local people is part of the ecosystem and possess local knowledge of conservation, any action related to ecosystem should be considering active engagement of local people and institutions at every stage. The combination of five activities which has been suggested as the local future demand, ultimately covers four thematic areas: *research*, *capacity building*, *mainstreaming* and *networking* and hold the potential of enhancing the supply-side of ESPA research by meeting specific local demands, creating common understanding of stakeholders on ESS and thus increase the number of local actors as potential knowledge intermediaries and impact partners both at country and regional level. Most of the experts on poverty alleviation, who have contributed their inputs to this report, think that local knowledge will help better policy design for ecosystem conservation and poverty alleviation. Since two specific activities aspire to engage leading government agencies (e.g. BCCT, CDMP and relevant ministries) with ESPA programmes, better impact at policy level can be expected as outcome.

Community-based organizations are working for the ecosystem conservation and better management. However, iIt is seen in most of the FGDs that stakeholders working for the ESS outside the government very often do not get required cooperation and assistance from state. If they are given more capacity training and knowledge, along with legitimacy by the government mechanism, they can play much better role in this end. Local dominant groups, with economic and political power and influence, control the ESS with the help of the government agencies and public representatives. Such government agencies and public representatives take decisions to

provide benefits to the local elites in most of the cases due to poor governance in all ecosystems.

Future ESPA research issues in Bangladesh can be determined through a set of sources and strategies such as:

a. Using the experience of PIs,

b. Interacting with independent individual/organizational actors, and

c. Collecting information from local media.

Local and national NGOs sometimes know people's needs more precisely and they are in need of necessary support and capacity building. Meaningful and significant involvement of capable local NGOs may generate better result in terms of identifying demand, intermediating knowledge and its application. While it is important to know the local demand-side, on the other hand, enhancing supply-side will also reciprocally help articulating the former. A powerful and practical supply-side can serve the purposes such as common understanding building, familiarity of ESPA as a knowledge power house and its contribution to ESS and poverty alleviation issues. Finally, close contact and engagement with different type of local actors and institutions beyond the research team, will be a good mechanism of knowing the new demand where ESPA can contribute.

Number of stakeholders are not aware of ESPA's contribution through its supported projects in Bangladesh or the region. Though it would be risky to infer any definite notion in this regard, however, it will be prudent to consider future actions in this regard to enhance common understanding building of national and international actors in Bangladesh, integration of similar projects, co-production of knowledge, and collaborative process conducive to alleviating poverty.At the same time presence of ESPA projects in local media can be made visible with very little efforts. This initiative can be an effective vehicle to project ESPA and its research projects prominently and build network of scholars and decision makers.

ESPA Bangladesh research should address barriers and gaps in knowledge generation, dissemination and implementation issues that can bring in valuable result. ESPA experience of different society should be taken into consideration to understand ecosystems and poverty situations by applying multidisciplinary approach. Increasing collaborative and multi-disciplinary research projects and joint advocacy initiatives can increase the possibilities to reduce

knowledge gaps and confusions. In addition, engagement of non-academic actors, both from environmental and poverty alleviation programs, can play a catalyst role to bridge the gaps and considering phenomenon in isolation.

There seems to be a lack of space where the local communities can engage in policy level debate. More research can be done on this area to ensure maximum participation of people from all levels for better ecosystem services to address poverty issues. Poverty alleviation through ESS should prioritize informing policy makers with the knowledge and technical aspects of ecosystem services through programs based on knowledge and evidence. Informed engagement of policy-makers from the beginning to end of any research and development project enhances the possibility to change their attitude and make them more sensitive and receptive. Recognizing their active participation and inputs with critical and cautious measures, encourage them to own the new knowledge and become champion of the cause. ESPA projects can take initiatives for sharing research findings so that these can be transformed into actions as organizations are looking for empirical data to understand what should be their next course of actions to address poverty.

It necessitates removing communication barriers to research into use, sensitizing the stakeholders of various levels, using good advocacy techniques for influencing policy regime, and creating effective platform for knowledge sharing among the stakeholders from national to local levels. Besides, linkage should be established not only between ESPA and non-ESPA projects, but also among ESPA portfolio in Bangladesh. Linkage between academic research in theoretical level and more functional research done by different organizations working in the field level are also essential. Ensuring continued dialogue at all levels will lead to greater development impacts through coordinated efforts. Knowledge sharing at local, national and international level will strengthen efforts and generate new ideas.

To meet the knowledge demands, ensure better application of knowledge, and in the process, making development impacts, the future research projects of ESPA need to generate quality knowledge products and through a combined effort, a knowledge hub can be developed for effective management and common use.

Different projects of South Asia should be linked to the projects running in Bangladesh to avoid overlapping and gaps and build network for application and integration of knowledge and greater development impacts.

This study has identified a number of institutions that may play an effective role as knowledge intermediaries to help implement and disseminate ESPA research findings relevant to programmes, stakeholders and partners.

Five specific activities have identified for and suggested to ESPA which can be considered as immediate local demand to be addressed.

In conclusion, this study presents a set of recommendations which covers some broader categories pertaining to stakeholder engagement, research gaps and prioritized action plan for ESPA.

10.1 Recommendations

- Irrespective of ecosystems, agro-biological zone and rural-urban divide, the primary stakeholders are the protectors of the ES.
  Empowerment of the primary stakeholders to ensure their rights over ESS and application of ecological good governance needs to be addressed in any ESS related projects.
- At different ecosystems collaborative role of various stakeholders needs to be facilitated to mitigate the competitive and conflicting role among them for the betterment of ESS and people who depend upon the natural resource base.
- Five specific activities can be considered as part of future action plan by ESPA which will encompass *research* on ESS of endangered Sundarbans forest, and emerging urban ESS issues affecting the poor; ESS related *capacity building* of relevant government agencies, researchers, academics, media, and NGOs involved in research, conservation of ESS and climate change movement; *mainstreaming* of ESS in national programs.
- To support the above-mentioned five activities, possibility of cross links with other related programmes/projects (e.g. IDRC/DFID, CARIAA, DECCMA, BCCT) can be explored for partnership, co-financing and synergy building.
- Partnership with capable local NGOs may be strengthened for better result in terms of identifying demand, intermediating knowledge and its application.
- Local media can be engaged for identifying future ESPA research issues in Bangladesh.
- Emerging issues (demand) can be identified precisely by creating a common understanding ESS, capacity building of local actors and knowledge intermediaries, engagement and participation, and supplying new knowledge from ESPA's pool.

- Practical supply-side can serve the purposes of common understanding building, familiarizing ESPA as a knowledge power house and its contribution to ESS and poverty alleviation issues.
- Supplying quality, practical and applicable research will also enhance the ESPA research demand locally. To grasp the country level pulse more engagement and collaboration with local institutions (e.g. university, think tank, research organization) will result in enhancing supply of ESPA knowledge evidence and capacity building of local institutions.
- Periodic knowledge intelligence sharing mechanism can be established along with periodic interaction with ESPA, relevant non-ESPA and independent researchers, leading scholars and practitioners.
- ESPA research projects should have strategy to engage policy makers through knowledge evidence and viable technical alternatives about ecosystem services for changing attitude, behaviour and institutional barriers leading to real, long-term and sustainable improvements in human well-being and the status of the environment.
- Knowledge products developed through ESPA research should be available to different local stakeholders suitably.
- For success of ongoing and future ESPA research into use and development impact credible and efficient organizations/think tanks can be selected to be the knowledge intermediary. New organizations should be explored and necessary rapport and ties can be established.
- Partnership with the local credible institutions, with equal importance and focus can be beneficial to understand local demand and enhancing supply side of ESPA. Simultaneously, those institutions can work more effectively as the knowledge intermediaries closer to the communities and practitioners.

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-- : Report on Slum and water bodies in Dhaka city. April 16, 2015

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Mohammad Tanzimuddin Khan and Tony Lynch, "Genealogy of Nature/Forest Conservation," *Human Geography* Volume 6, Number 3, 2013

Ainun Nishat et al 2002,

Annexes:

Annex A: List of ESPA Supported Projects

Projects	PIs	Period	Status
Coastal ecosystems, governance and poverty: A case study of managing the Brahmaputra-Ganges mega-delta in a changing world	Dr. R J Nicholls	Jul 2010 - Dec 2010	Completed
Assessing Health, Livelihoods, Ecosystem Services And Poverty Alleviation In Populous Deltas	Dr. R J Nicholls	Mar 2012 - Mar 2016	On going
Impacts of community management of forests and floodplains	Dr. Parvin Sultana	May 2012 - Jul 2013	Completed
Institutions for Urban Poor's Access to Ecosystem Services: A Comparison of Green and Water Structures in Bangladesh and Tanzania (ECOPOOR)	Dr. Manoj Roy	Sep 2013 - Mar 2016	On going
Whole Decision Network Analysis for Coastal Ecosystems (WD-NACE)	Dr. David Rafaelli	Oct 2010 - Sep 2012	Completed
Risks and Responses to Urban Futures: integrating peri-urban/urban synergies into urban development planning for enhanced ecosystem service benefits	Dr. Fiona Marshall	Nov 2013 - Oct 2015	On going

Annex B: List of non-ESPA Projects' Documents used for Desk Study

Selected Information of Non-ESPA Project Used for Literature Review			
Projects	**Organizations**	**Period**	**Status**
Climate-Resilient Ecosystems and Livelihood (CREL)	Winrock International/USAID	2013 - 2017	On going
Himalayan Adaptation, Water and Resilience (HI-AWARE)	CARIAA/UKAid/IDRC	2013 - 2018	On going
Bangladesh Climate Change Trust (BCCT) Fund	Government of Bangladesh	2009 - present	On going
Sundarbans Environmental and Livelihoods Security (SEALS)	EU Delegation in Bangladesh	2011 - 2015	On going
Ecosystems for Life	IUCN	2010- 2015	On going
	IDS-BRAC		On going

Annex C: Representation of Key Informants

Representation of Key Informants				
Type of Organization and Location	No.	Organization/Project	Name of Person and Designation	Method of Opinion Collection
Government, Dhaka	2	Climate Change Trust Fund	Mr. Mahbub Hossain, Joint Secretary, Director of Planning and Negotiation Division.	Customized open ended questionnaire
		CDMP, a collaborative initiative of the Bangladesh Ministry of Disaster Management and Relief (MoDMR) and UNDP	Mr. Mohammad Abdul Qayyum, National Project Director, CDMP II	
INGO, Dhaka	2	Action Aid	Mr. Tanjir, Manager	"
		Christian Aid, Bangladesh	Mr Shakeb Nabi, Country Director	
Research Organization/ University, Dhaka	5	Bangladesh Centre for Advanced Studies (BCAS)	Dr. A Atiq Rahman, Executive Director	"
		Bangladesh Institute of Development Studies (BIDS)	Dr. Binayek Sen,	
		BRAC University	Dr Ainun Nishat	
		Flood Hazard Resilience Centre (FHRC)	Dr. Paul Thompson, Expert	
		North South University	Dr. Mizan R. Khan, Professor, Environmental Science, North South University	
Delta Project PIs and Research Partners, Dhaka, Khulna and overseas	5	Dr. Munsur, Manoj, Dr. Parvin Sultana, Nicholas, John (WD-NACE), WaterAid		Customized open ended questionnaire circulated through e-mail and discussion
Impact Partner and CBOs, Dhaka, Bagerhat (Mongla), Khulna (Dumuria), and	11	Ashroy	Mahubu Alam Monitoring, Evaluation and Research Officer	Seperate formal and informal discussions.
		DSK	Dhaka	
		Rupantar	Anup Roy, Manager, Mongla office	
		Eight CBOs (fishing community, water	Leaders and members	

Representation of Key Informants				
Shreemongol		management group, small farmers and producers, conservationist of water bodies, primary beneficiaries of CREL projects		

Annex D: List ofStakeholders Consultation Workshop Participants

Sl	Participant Names	Organizations
1	Mahbub Alam	Ashroy Foundation
2	Nelufa Yesmin	UNDP-CBACC-CF Project
3	Dr. Pronob Kumar Mozumder	NACOM
4	Md. Akhtar Hossain	SAU
5	Fahim Subhan Chowdhury	BRAC University
6	Sharif A. Wahab	BCAC University
7	Ahmad Huda	UNDP
8	Nazrul Islam	ZISA's Fashion
9	Dr. Faruque Ahmad	BARI Plant Physiology
10	Chowdhury Saleh Ahmed	ADB/BCAS Consultant
11	Md Amirul Islam	USAID's WEA-WI
12	Paul Thompson	
13	Surajit Kumar Saha	BHD
14	Munir Ahmed	TARA
15	Dr. Khokon Kumar Sarkar	BARI
16	Abdus Salam Miah	NGOF
17	Md. Maksudur Rahman	World Vision
18	Md. Ekram Ullah	WARPO
19	Dr. Dwijen Mallick	BCAS
20	Dr. Hamidul Haq	CSD, ULAB
21	Tawhidur Rahman	CSD, ULAB
22	Dr. Samerandra Karmaker	CREL
23	Md Kamruzzaman	Islamic Relief, Bangladesh
24	Dr. Md. Golam Faruq	Director & Chief Specialist, CEGIS
25	Dr. Anwarul Mamun	SMC
26	Dr. S.A. Harun	BCAS
27	Dr. Abdullah Al Muyeed	Water Aid
28	Nazrin Jahan	Shushilan
29	Dr. Md. Golam Rabbani	DLS
30	Ameer Md. Zahid	SRDI
31	Dr. Md. Monowar Karim Khan	BINA
32	Habib Ahmed	FHRC, Bangladesh
33	Dr. Zainul Abedin	SRDI
34	Prof Munsur	IWFM, BUET
35	Bijoy Paul	CEGIS
36	Dr. Nilufa Islam	BWP
37	Munirul Islam	Islamic Relief
38	Shakeb Nabi	Country Director, Christian Aid
39	Dilruba Hamid	UN Women
40	NR Mushfuka Khan	USAID
41	Dr. Md. Monirul Islam	University of Dhaka
42	Dr. AFM Afzal	IWM
43	Saiful Alam	WARPO
44	Md. Shaheduzzaman	FAO

Sl	Participant Names	Organizations
45	Dr. R Titumir	Unnayan Unneshon
46	Nazria Islam	BCAS
47	Shyamal Kanti Barua	SDA
48	Dr. Md. Abu Syed	BCAS
49	Dr. Md. Rabiul Islam	DLS
50	Dr. Shahana Chowdhury	CSD, ULAB
51	Sultana	B,NCC

Annex E: Local Demands Addressed and Knowledge Products Produced by Two non-ESPA Projects.

Project	Organizations	Period	Status	Demands	Knowledge Products
Climate-Resilient Ecosystems and Livelihood (CREL)	Winrock International/USAID	2013 - 2017	On going	- Resilience in ecosystem, livelihoods, and social system. - Economic Development for poverty alleviation. - Livelihood diversification. - Capacity of local community organizations.	- Development of Communication Strategy - Bi-weekly briefs, success stories, high level visits and events to generate and disseminate knowledge - Quarterly newsletters for various stakeholders in prints and online format - Technical advisory committee development along with Ministerial Advisory Committee, - Policy Advocacy Group established - Public awareness campaigns planned through television news and magazine items, radio commercials through community radio - Various promotional materials such as posters, flyers, flipcharts, notepads, calendars, billboards, t-shirts, mugs and key-chains design and distribution - Special gender focused events to sensitize gender equality relating to climate change co-management issues - Commissioning of documentary videos - Interactive popular theatre in communities to disseminate message through edutainment. - Website development and social media engagement. - Special Media packets or kits development and provide training for journalists advocating for

Project	Organizations	Period	Status	Demands	Knowledge Products
					change and conservation.
Himalayan Adaptation, Water and Resilience (HI-AWARE)	CARIAA/UKAid /IDRC	2013 – 2018	On going	- Demand meeting knowledge and evidence on climate change impacts and vulnerability. - Gender differentiated vulnerability. - Adaptation options and pathway on water, agriculture and livelihoods.	- Communication and Knowledge Management plan developed - Online presence through website and social media - Scholarly pieces - Policy briefs - Building awareness through workshops, conferences, and seminars. - Newsletters publications - Other public awareness materials developed.

Annex F: Primary research outputs and knowledge products goals of ESPA research projects

Sl.	ESPA Research Projects	Research Outputs	Knowledge Products
1.	Coastal Ecosystems, Governance and Poverty: A Case Study of Managing the Brahmaputra-Ganges Mega-Delta in a Changing World	Scientific findings **reports** and large-scale **research proposal** developed and shared to initiate research consortium with other researchers and experts for interdisciplinary study on the South Asian deltas.	N/A
2.	Assessing Health, Livelihoods, Ecosystem Services and Poverty Alleviation in Populous Deltas – ESPADELTA	A number of scientific **journals,** technical papers published and working papers on the process for publication. Policy Response **Framework**, Dynamic System **Modeling** and **Simulations** development on the process to enable policymakers to evaluate the effects of policy decisions on people's livelihoods. **Database** on socioeconomic and ecological developed.	**Communication Strategy** development is in the final stage to outline outreach aims and knowledge products and the ways they can reach the stakeholders. **Knowledge Tools** to assist policymaking and project partners. **Presentations** are shared through **workshops, seminars** and **conferences**. Introductory **brochures** developed. Project **website** developed and through this platform, **images** and photographs are shared online. Presence on **Social Media** is also noted.
3.	Impacts of Community Management of Forests and Floodplains	**Research reports** developed and shared through national and international **conferences, seminars and workshops**. Research publications include **proceedings, technical journals, and outcome reports**.	Non-tangible knowledge product perhaps can be **face to face** learning sharing that became an effective method for this project at local level communities and community based organizations and their federations. **Grassroots** level **workshops and meetings** held on alternative livelihoods. **Knowledge publications** for policymakers and other researchers include **policy** practices, recommendations and **briefs, newsletter, case studies reports**. Also hosted **policy seminar series**.
4.	Institutions for Urban Poor's Access to	Research publications include at least five	The project is aiming to develop further co-production of

Sl.	ESPA Research Projects	Research Outputs	Knowledge Products
	Ecosystem Services: A Comparison of Green and Water Structures in Bangladesh and Tanzania – ECOPOOR	**scholarly articles** and a **book** is on the pipeline. **Working papers**, **scientific presentations** shared through **workshops, seminars, international conferences**, and impact partners **meetings**. Other initiatives include south-south **exchange of researchers** at the strategically important points. Aims to **impact** on following Sustainable Development Goals: 1 (extreme poverty), 5 (health and wellbeing), 7 (cities), 9 (ecosystem services) and 10 (governance).	knowledge and has followings **communication strategy**: through media (i) **direct communication** with people; (ii) **online and social media** (project website; Twitter); (iii) **electronic policy briefings** to the research network; (iv) **press releases and newspaper articles**; (v) invited **talks**; and (vi) **informal contact**s. The project also aims to host a **round-table discussion** in partnership with a leading daily newspaper depending on required additional funding. Other forms of knowledge sharing include **dialogue** with communities; **case studies** developed and shared through **workshops, conferences and seminars** to engage with stakeholders; develop **audio-visual** materials, **newsletters** developed. Published book and articles to be disseminated at the policy level.
5.	Whole Decision Network Analysis for Coastal Ecosystems (WD-NACE)	The project developed and shared a technical, scholarly research **article** along with a number of **scientific presentations** at **seminars and workshops** and workshop **proceedings**. **Conceptual Framework** developed linking ecosystem and livelihoods domains, knowledge networks and decision-making structures.	The research hosted **participatory research consultations** and agent-based models with various and wide-range of stakeholders. **Presentations** and sharing findings through **workshops, conferences and seminars** were the key mode of sharing the research findings. Presentations and case study articles are available online, including on YouTube.
6.	Risks and Responses to Urban Futures: integrating peri-urban/urban synergies into urban development planning for enhanced ecosystem service benefits	Aims for **documented knowledge** of urban and peri-urban poor in India involved for multiple dimensions of poverty. Conduct **mapping exercise**, identify external drivers, policies and institutional arrangements	Stakeholder dialogue (details on Knowledge Products N/A)