ESPA in South Asia

South Asia is the most populous region on the planet, home to around **25% of the world's population living on only 4% of the world's land**.

It has some of the fastest growing economies in the world. Agriculture, natural resources, forests and fisheries are the foundation of its population's prosperity and wellbeing.

Exploring the relationship between land and livelihoods

The Himalayan mountain range supplies water to 1 billion people

The water feeds towns that have sprung up quickly in the hill regions as well as densely populated settlements at coastal deltas. Ensuring a safe and secure supply of water is a growing challenge. Changes to land use can lead to downstream contamination while climate change has led to more variable rainfall.

Agriculture is vital to the livelihoods of 70% of the often poor population living in rural areas.

In many areas the need for agricultural land competes with preserving ecosystems such as forests and wetlands. Finding a balance between feeding the growing population and preventing environmental degradation is essential as these areas provide valuable services for human wellbeing such as regulation of climate, air quality, water and disease control.

Water Security

Food Security

Climate Security
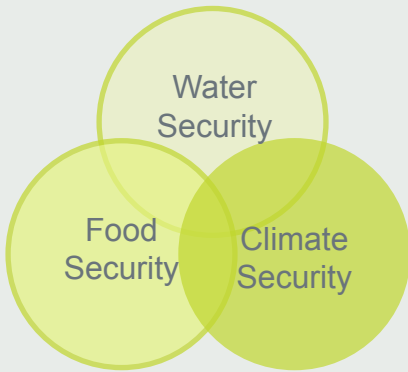
Coastal regions which support millions of people are the most vulnerable to climate change

These regions are rich in natural resources and agriculture, fisheries and tourism are vital ways of life. However, extreme weather, sea level rise and flooding pose a serious challenge to the growing populations that coastal regions support. The difficulties that arise often force migration to densely populated cities which create a new set of environmental pressures.

How can South Asia improve livelihoods and wellbeing while ensuring it doesn't deplete the environmental resources upon which it depends?

ESPA in South Asia is investigating the complex relationships between ecosystems, the services they provide and poverty.

15 projects across 3 countries will explore the most important challenges:

- food and water security
- climate change
- health & wellbeing
- income & social justice

ESPA Projects in South Asia

Curt Carnemark/The World Bank
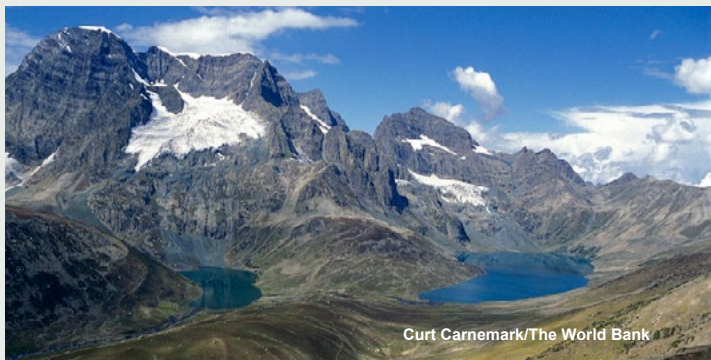
Water Security: Protecting water supply and communities in the Himalayas

High in the hill regions of Nepal and India over half the population live in small towns which have grown up fast. With little infrastructure planning, these towns are completely reliant on local springs, rivers and streams for their water supply. They are vulnerable to changes in water flow as well as any changes in upstream land use, such as agriculture, which may affect downstream water quality.

The 'The Political Economy of Water Security, Ecosystem Services and Livelihoods in the Western Himalayas' project is identifying parts of the landscape which are critical in securing water supplies and examining how land use change in these areas affects ecosystem services associated with water supply. The aim is to work directly with local government officials and local communities to protect these water zones for downstream residents, without adversely affecting livelihood options for upstream residents.

Improving food security and health in cities

Rapidly expanding cities often offer the promise of a better living yet many people still experience high levels of poverty. The poorest live in settlements with inadequate infrastructure and become heavily reliant on urban green spaces and water structures. These inner-city ecosystems provide essential services such as food, fuel, water and shelter but they can also be fraught with danger. For example, drinking water can become contaminated with harmful bacteria.

The 'Institutions for Urban Poor's Access to Ecosystem Services: A Comparison of Green and Water Structures' project is working in Dhaka, Bangladesh, a mega city with a third of its population living in slums with no access to sanitation. It aims to identify policies and institutional arrangements which could help the urban poor to get better access to the ecosystem services they rely on whilst minimising the risks.

When cities expand, their outskirts start to takeover previously rural areas sometimes with damaging consequences. These city fringes can become hotspots of poverty and environmental degradation, home to rubbish dumps and other polluting activities.

The 'Risks and Responses to Urban Futures: Integrating Peri-urban/urban Synergies into Urban Development Planning for Enhanced Ecosystem Service Benefits' project will examine the links between the environment and poverty in the outskirts of Delhi, looking at the impact on those who live there as well as the indirect impact on those living within the city. The research will combine modelling and case studies and will focus particularly on food provision and health.

Thomas Sennett/The World Bank

Sustainable livelihoods from community management of forests and wetlands

Effective land management and land-use planning are key issues for the majority of South Asia's population who live in rural areas and are reliant on the land for their livelihood. In recent years it has been found that community based organisations (CBOs) are often more effective at managing land for the benefit of poor people than traditional state controlled approaches, which often work in a top-down manner. In theory this should create win-win situations where local communities benefit from managing rich natural resources, such as those provided by forests and flood plains, in a more sustainable way - creating sustainable livelihoods whilst protecting the environment for future generations.

The 'Impacts of Community Management of Forests and Floodplains' project examined 10 years' worth of research combined with case studies, focusing on floodplain management in Bangladesh and forest management in Nepal, to better understand if CBOs lead to poverty reduction and a sustainable supply of ecosystem services. Key conclusions were drawn to explain the factors that are essential for CBO success.

Curt Carnemark/The World Bank

Coping with climate change and creating sustainable livelihoods for coastal communities

Worldwide deltas are home to over 500 million people. Despite the rich services that they provide, such as food, water and flood protection, many are still characterised by extreme poverty. To add to this, deltas and their growing populations are extremely vulnerable to a number of threats. Climate change is leading to sea-level rise. Flooding, extreme weather events and regional management decisions can affect water quality and many other important regulatory services.

In Bangladesh shrimp farming in the mangrove forests which fringe the coast are in danger of permanently altering coastal ecosystems. The destruction of mangroves poses a problem on several levels, these forests act as vital flood defences and carbon sinks as well as providing a nursery habitat for fish. But conservation is not a simple solution as many of the poor who depend on shrimp farming have few alternative livelihoods.

The 'ESPA Deltas' project will examine the links between ecosystem services and the health and livelihoods of those in the Ganges-Brahmaputra- Meghna (GBM) delta.The multi-disciplinary team aims to equip policy-makers with the knowledge and tools to help them understand the impact of environmental decisions on people's livelihoods and wellbeing.

The 'Whole Decision Network Analysis for Coastal Ecosystems' project worked with decision makers at different levels in Bangladesh to understand how local knowledge of coastal ecosystems shapes polices and management options. The resulting models are proving popular with fishers and local policy makers and are used to help with decision making.

Current Projects and Fellowships

Project Title	Principal Investigator/Fellow	Countries
Assessing Health, Livelihoods, Ecosystem Services and Poverty Alleviation in Populous Deltas	Professor Robert Nicholls	Bangladesh, India
Contribution to ESPA-Deltas	Dr Mohammad Nadiruzzaman	Bangladesh
Adaptive Governance of Mountain Ecosystem Services for Poverty Alleviation Enabled by Environmental Virtual Observatories (MOUNTAIN-EVO)	Dr Wouter Buytaert	Nepal
Risks and Responses to Urban Futures: Integrating Peri-urban/urban Synergies into Urban Development Planning for Enhanced Ecosystem Service Benefits.	Professor Fiona Marshall	India
The Political Economy of Water Security, Ecosystem Services and Livelihoods in the Western Himalayas	Dr Bhaskar Vira	India, Nepal
Ecosystem Services and Environmental Vulnerability in the Western Himalayas: An integrated participatory modelling approach using Bayesian Networks	Ms Sina Frank	India
Institutions for Urban Poor's Access to Ecosystem Services: A Comparison of Green and Water Structures in Bangladesh and Tanzania	Dr Manoj Roy	Bangladesh
Integrating a Web-based Ecosystem Services Monitoring and Modelling Tool into Local Decision Making Processes for Poverty Alleviation in a High Mountainous Region of Nepal	Dr Bhopal Pandeya	Nepal

Completed Projects

Project Title	Principal Investigator	Countries
Impacts of Community Management of Forests and Floodplains	Dr Parvin Sultana	Bangladesh; Nepal
Integrating Forest Ecosystem Service Assessment with Pro-Poor Governance in India	Dr Oliver Springate-Baginski	India
Whole Decision Network Analysis for Coastal Ecosystems (WD-NACE)	Professor Dave Raffaelli	Bangladesh
Human Adaptation to Biodiversity Change: Building and Testing Concepts, Methods, and Tools for Understanding and Supporting Autonomous Adaptation	Professor Patricia Howard	India
Negotiating Tradeoffs: Making Informed Choices about Ecosystem Services for Poverty Alleviation	Dr Bhaskar Vira	India
The ESPA Framework: A Socio-Ecological Systems Analysis of the Political Economy of Ecosystem Services for Poverty Alleviation.	Dr Genevieve Patenaude	Nepal
Just Ecosystem Management: Linking Ecosystem Services with Poverty Alleviation	ProfessorThomas Sikor	India

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