

KEY POINTS

- The consequences of damage due to climate change to road and rail infrastructures have negative impacts on all economic activities, transportation, income and livelihood of the affected population. The vulnerability of Bangladesh's infrastructure, the national

IMPACTS OF CLIMATE CHANGE ON INFRASTRUCTURE

Climate change will exacerbate many of the current problems and natural hazards the country faces. Floods, droughts, tropical cyclones and storm surges are likely to become more frequent and severe in coming years. The changes will threaten the significant achievements, Bangladesh has made over the last 20 years and it will make it difficult to achieve the Millennium Development Goals. According to IPCC's 4th Assessment Report, global warming will result in sea level rises between 0.18 and 0.79 meters.

Apart from the direct damages to infrastructure caused by climate change, there is also loss of revenue (particularly for Bangladesh Railway), cost overruns in

The government needs to encourage the development of insurance products by the private insurance industry, such as weather derivatives, catastrophe loss bonds, underwriting of national insurance programmes, etc. Initially, the government can subsidize insurance premiums, so that it is affordable to most businesses and people. Also, insurance policies can include the development of adaptation strategies and policies as eligibility criteria. Further discounts in premiums can be obtained with evidence of effective adaptation measures put in place.

POLICY AND INSTITUTIONAL ARRANGEMENTS

In Bangladesh, there are already several good policies and plans for developing robust and balanced rural road and railway networks that can provide a high degree of mobility, accessibility and safety.¹⁰ These include:

- National Land Transport Policy¹¹ approved in 2004;
- Draft Integrated Multi-modal Transport Policy¹² (IMTP) which covers all transport modes;
- Bangladesh Road Master Plan (RMP) 2007 which provides a physical plan for new road

construction, and rehabilitation and maintenance was prepared for future development and expansion of road network in line with the regional connectivity. Creation of a 'Road Fund' is awaiting approval of the government;

- A 20-Year Strategic Transport Plan (STP) for greater Dhaka;
- A Rural Road Master Plan (2005) is being followed by LGED, which includes the elements of strategic planning for rural road construction, rehabilitation and maintenance and resources requirements for 2005 to 2025;
- 20-year Railway Master Plan is in the final stages of preparation.

There is not sufficient attention given to climate change adaptation in the above policies and plans. Also there needs to be better integration between transport policies with other national policies such as the National Water Policy. Furthermore, there are no specific adaptation programs for rural roads and rail lines in the Infrastructure theme of Bangladesh's Climate Change A

far as possible. Some of the critical elements required for successful technology transfer are as follows:

- The technology must be needs driven and adaptable to local conditions.
- Life cycle management and full cost accounting is essential to ensure sustainability.
- Ownership by users required.
- Support infrastructure is required.

One of the main barriers to technology transfer is the high initial capital costs of many climate friendly technologies. In addition, there are a number of institutional and information barriers which the Government has to address before the deployment of climate friendly technologies will become more widespread. These additional barriers include:

- Limited number of skilled human and organizational resources needed to plan and manage the environment and operations involved in the use of technologies.
- Low technical capability of human resources to operate and maintain at reasonably efficient levels.
- Lack of a system of innovation that would allow maintaining or increasing high efficiency levels through incremental technical and organizational changes.

CONCLUSION AND RECOMENDATIONS

The consequences of damages to road and rail infrastructures have negative impacts on economic activities, transportation, income and livelihood of the affected population. The vulnerability of Bangladesh's infrastructure, the national economy, and the welfare of the people will increase if existing infrastructure is not well maintained and if proper adaptation measures are not undertaken.

It is recommended that a computer based Management Information System (MIS) is built for rural infrastructure to help monitor the impacts of Climate Change.

Infrastructure construction codes and standards need to be improved so that new investments are "climate proofed". Action needs to be taken now as the construction industry, building codes and standards change slowly. Professional bodies should be legislated to guide these changes, with guidance and assistance from international bodies (such as the International Standards Organization).

