Economic Instruments for Greening Development: Understanding Policy-Design, Practice and Research Needs in Asia

Since the landmark United Nations Conference on Environment and Development in Rio de Janeiro in June 1992, the world has witnessed an unprecedented process of global economic growth underpinned by increased consumption and production patterns. The global gross domestic product has increased by roughly 60 percent over the past 20 years. The main challenge now facing humanity is to sustain the process of poverty reduction and economic development without impairing the productivity, diversity and resilience of the natural world. It is in this context that the concept of a ‘green economy’ has assumed increased relevance and was adopted as a “key theme” at the Rio+20 Summit held in June 2012. For Asia, projected as the global economic powerhouse of the future and where around 60 percent – including nearly a billion poor people – of the world’s population live, the challenges as well as opportunities of greening our economies are perhaps larger than other regions.

Some 55 economists, environmentalists, development planners, policy analysts, and academics from Bangladesh, Bhutan, Lao PDR, India, Indonesia, Myanmar, Nepal, Pakistan, and the Philippines, and UNDP and UNEP offices participated in the regional workshop on ‘Economic Instruments for Greening Development’, on 12th and 13th August, 2012, at Paro, Bhutan. The workshop was organized by the South Asian Network for Development and Environmental Economics (SANDEE) in collaboration with the United Nations Regional Poverty-Environment Initiative in Asia-Pacific and UNDP Bhutan Country Office.

Over the course of the workshop, the participants exchanged knowledge emerging from ongoing work on the economics of environment-development inter-connections, learnt about policy-design and practices across different countries, and identified research areas on economic instruments for greening development in Asia at a workshop. This brief encapsulates the main discussions of the workshop.

Greening National Accounts to Account for Inter-generational Well-being

GDP statistics for various countries in Asia show that the region in general has done well in increasing its GDP over the past 20 years. However, practitioners and proponents of sustainable development argue against the conventional GDP-centered model of national accounts and stress the need to include environmental costs into systems of national accounts. Increasingly, the emphasis is on developing measures of ‘comprehensive’ wealth that account for a country’s physical, human, natural and social capital. A country can be seen as growing in a sustainable manner if its comprehensive wealth is increasing over time.

Workshop participants were keen on understanding better how improved measures of national accounts could be implemented. Green national accounting efforts are fraught with challenges in terms of availability of data and valuation. While physical...
Putting a Monetary Value on Environmental Goods and Services

As countries move forward with planning and budgeting for the environment, a gap that is widely acknowledged is the lack of monetary values for environmental goods. Negative environmental changes can result from cumulative private actions to produce and consume that don’t account for spatial and temporal costs. The damages caused by the negative environmental changes are difficult to assess partly because the environment exists as a public good with no distinct ownership and no market clearing price. This has led economists working on environmental issues to spend a great deal of their time on valuation of environmental change and putting a price on environmental losses and gains.

Valuation of environmental change should, however, be more than an academic exercise and has to be linked to policy contexts. Some key areas of policy-valuation interface include: greening national accounts, allocation of budgets, making investment decisions, understanding the scale and distribution of externalities, evaluation of policies and programs, enabling trade (for example payments for ecosystem services), and financing public goods. The consensus at the Workshop was that the ability to assign economic value to natural capital and ecosystem services will aid greening of national accounts and various investment decisions. There was a felt need for building up valuation skills at the country level.

Some Environmental Economic Instruments in Practice in Asia

There are various mechanisms already in place to address environmental issues. These include:

- Benefit-sharing from mining industries (Bhutan, India, Lao PDR, Myanmar, the Philippines)
- Carbon tax on fuels (India); green tax on vehicles based on engine size (Bhutan)
- Clean Development Mechanism in energy, transport, construction, industry, agriculture, and forestry sectors (India), beer production industry (Lao PDR), and hydropower development (Bhutan)
- Community forestry (Bangladesh, Bhutan, India, Indonesia, Lao PDR, Myanmar, Nepal, Pakistan, the Philippines)
- Compensatory Afforestation Fund Management and Planning Authority (CAMPA) funds (India)
- Eco-certification of organic products (India, Nepal)
- Eco-tourism (Bangladesh, Bhutan, India, Indonesia, Lao PDR, Nepal, Pakistan, the Philippines)
- Green national accounting (Bhutan, India, the Philippines)
- Human-wildlife conflict mitigation insurance/compensation schemes (Bhutan, Pakistan)
- Low fare electric-buses for mass transport (Lao PDR)
- Minimum condition and performance-based local grant delivery mechanism to support development activities that integrates climate change adaptation and environmental management (Bhutan, Nepal)
- Payment for Ecosystem Services (Bhutan, India, Indonesia, Nepal, the Philippines)
- Perform Achieve and Trade scheme to improve energy efficiency (India) – see box for an overview.
- Protected area entry fees (Bangladesh, India, Indonesia, Lao PDR, Nepal, Pakistan, the Philippines)
- Public climate and environment expenditure review (Bangladesh, Bhutan, Nepal)
- Reducing Emissions from Deforestation and Forest Degradation – REDD/REDD+ (Bhutan, India, Indonesia, Lao PDR, Myanmar, the Philippines)
- Renewable Purchase Obligation in the energy sector (India)
- Removal of subsidy on gasoline (Myanmar)
- Strategic environmental assessment of economic development policies and investments (Bhutan, Lao PDR)
- Tax reduction for energy efficient technology (Bangladesh, Bhutan, India, Indonesia, Nepal, Pakistan, the Philippines)
- Watershed management fund from hydropower investments (Bhutan, Lao PDR)
accounting of natural capital is one major issue, monetary valuation of natural capital and ecosystem services poses an even greater challenge. Nevertheless, some developing countries are in various stages of developing systems for green national accounts. Notable examples include the Philippines, where the government is undertaking Wealth Accounting and Valuation of Ecosystem Services (WAVES), and India, which has set up an expert group under the Central Statistical Organization to develop a framework for greening its accounts. In some other countries, such as Bhutan, preparatory work on green national accounting has been recently initiated and the emphasis is on first setting up the institutional arrangement and building skills through technical cooperation with international/regional institutes.

**Expenditure Reviews as a Macro-economic Instrument**

There is a growing interest in Public Environmental Expenditure Reviews (PEER) and Climate Public Expenditure and Institutional Reviews (CPEIR). These reviews offer a way of systematically assessing the equity, efficiency and effectiveness of public spending on environment and climate-related activities. CPEIR can also help determine the additional costs of making development climate-resilient and plan for sustainable development taking into account climate change vulnerabilities and risks. Bangladesh, Bhutan and Nepal are among the countries that have carried out PEER/ CPEIR. The reviews in these countries reveal that while public expenditures on environment and climate-related activities have increased in absolute terms, these expenditures remain low in relation to the GDP. For examples, in Bangladesh and Nepal climate-related public expenditure accounted for just over 1 percent and 2.3 percent of the GDP respectively. In Bhutan public environmental expenditure has dropped from 3.9 percent to 1.9 percent of the GDP between the first PEER carried out in 2009 and the second in 2011.

One major challenge with these reviews is the definition of environmental or climate-related expenditure. This can be quite complex, particularly in terms of separating out environmental and climate-related spending from normal development spending which may have indirect linkages with environment and climate. Current experience with PEERs and CPEIRs is limited. Thus, government officials were cautious in acknowledging that we need to wait and see if expenditure reviews make any tangible impact on investment decisions, planning, budgeting and monitoring of public expenditures and thereby enable better environmental management.

**Renewable Energy as a Win-Win Consideration**

In recent years, a range of international and domestic policies and economic instruments that address climate change have emerged. Renewable energy policy is central to many such policies.

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**India’s PAT Scheme: A Market-based Instrument for Enhancing Energy Efficiency in Industries**

The Government of India has undertaken the Perform, Achieve, Trade (PAT) scheme as a key initiative under the National Mission for Enhanced Energy Efficiency. The PAT scheme is conceived as a market-based mechanism to enhance cost effectiveness of improvements in energy efficiency in large energy-intensive industries and facilities, through certification of energy savings that could be traded.

For the first cycle (2011/12-2013/14), the scheme will cover eight major energy-consuming sectors, namely thermal power, iron and steel, cement, fertilizer, aluminium, textile, pulp and paper, and chlor-alkali. Targets for reduction of energy consumption are set for various energy-intensive industries in these sectors. These targets are to be achieved by the relevant industries within a period of three years. If a company is unable to meet the energy reduction targets specified, it can either pay the prescribed penalty (which is dependent upon the units by which it has failed to meet its target) or purchase energy saving certificates which will be issued under the PAT scheme. Industries which have saved more energy than their target will be issued energy saving certificates for additional units of energy saved. These certificates may then be traded on the two power exchanges, namely Indian Energy Exchange and Power Exchange India.

The assessment of the energy consumption of companies will be done by third party auditors, who will submit their verification report to Energy Efficiency Services Limited, a company promoted by the Ministry of Power for implementing energy efficiency schemes in India.

Source: PAT Consultation Document 2010-11, Bureau of Energy Efficiency, Ministry of Power, Government of India
efforts. Many countries are trying to develop renewable energy sources to replace and reduce the use of GHG-emitting fuels. However, a challenge to promoting renewable energy is its high cost compared to conventional energy, which comes cheap largely because of government subsidies and the presence of the requisite supply infrastructure.

There is a clear need to fully consider the co-benefits of renewable energy, besides the immediate development benefits. For example, in a country like India, where 72 million households used kerosene according to the 63rd National Sample Survey in 2006-07, switching over from kerosene-based lighting to solar lighting system could result in avoidance of 10 million metric-ton of carbon dioxide emission annually. This is a huge co-benefit! Other co-benefits would include creation of green jobs, reduction in health risks, and safety from fire accidents. If such co-benefits can be translated into monetary term, there will be a far more favorable economic equation for renewable energy.

Cost-Benefit Analyses of Climate Adaptation

The main challenge in developing countries is to adapt to climate change. Given an array of impacts and options to adapt to these impacts, it is useful to carefully examine the costs and benefits of different adaptation options.

Some countries are beginning to undertake comparative cost-benefit analysis to make the best investment decisions now to adapt to the future. A case in example is the Khulna city water project in Bangladesh. The project applied a multi-disciplinary cost-benefit analysis of adaptation options to address the threat of water-logging. The analysis compared adaptation costs and benefits for base scenario (with no climate and socio-economic changes) and projected scenario for 2050 integrating climate and socio-economic changes. It also looked at the benefits and costs of adapting by undertaking various engineering and institutional/ behavioral responses. Table 1 provides an overview of the results. As Table 1 exhibits there are adverse socio-economic impacts and costs of damages from climate change but these can be minimized through adaptation. The costs would be significantly higher if no adaptation strategy was implemented as compared to when all recommended adaptation strategies are implemented.

Creating Markets for Managing Ecosystems

Well-functioning ecosystems and landscapes provide a wide range of services for human well-being. However, without markets to signal scarcity, ecosystem services continue to be used. Payment for Ecosystem Services (PES) is an emerging market-oriented mechanism for sustainable management of ecosystems. It primarily involves transfer of economic incentives to host communities in exchange for agreed environmental practices that sustain or enhance ecosystem services. PES exists in a variety of forms and in a variety of economies ranging from developed countries such as the United States to emerging economies such as China and least developed countries such as Nepal.

Reducing Emissions from Deforestation and Forest Degradation (REDD/REDD+) is one international PES-like mechanism that provides financial incentives for developing countries to contribute to global efforts to mitigate climate change. The REDD+ version goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management, and enhancement of forest carbon stocks. This mechanism has assumed increased relevance to many countries such as Bhutan, India and Nepal, where there is a widespread programme of community forestry or joint forest management to provide the social and institutional set-up for distribution and sharing of REDD+ benefits. However, for many of these countries, where there is heavy dependence on forests for local livelihoods and growth in population of forest-dependent communities, reconciling REDD+ objectives and dependence on forest-based livelihoods will be the biggest challenge.

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>% affected population</th>
<th>% loss in household income</th>
<th>% capital loss in industry</th>
<th>% roads damaged</th>
<th>Damage cost (million Taka)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base scenario before project (with flooding and no adaptation)</td>
<td>24</td>
<td>195</td>
<td>5</td>
<td>12</td>
<td>1,155</td>
</tr>
<tr>
<td>Base scenario with improved drainage system (adaptation)</td>
<td>6</td>
<td>159</td>
<td>4.1</td>
<td>9.3</td>
<td>285</td>
</tr>
<tr>
<td>2050 projected scenario with climate and socio-economic changes</td>
<td>58</td>
<td>236</td>
<td>7.8</td>
<td>17.6</td>
<td>108,679</td>
</tr>
<tr>
<td>2050 projected scenario with improved drainage system</td>
<td>30</td>
<td>217</td>
<td>6</td>
<td>13</td>
<td>39,259</td>
</tr>
<tr>
<td>2050 projected scenario with improved drainage system and all other recommended adaptation strategies</td>
<td>13</td>
<td>191</td>
<td>5</td>
<td>11</td>
<td>17,059</td>
</tr>
</tbody>
</table>

Addressing the Costs of Conservation

While there may be benefits to conservation, it is important to acknowledge the costs as well. A conservation dilemma that confronts many countries is human-wildlife conflict arising from crop and livestock depredation by wildlife. This problem undermines efforts to address community development and environmental conservation objectives in a mutually-reinforcing manner.

Various market mechanisms are currently being attempted to address human-wildlife conflict. For example, the government in Bhutan has launched community-based insurance schemes to monetarily compensate farmers for loss of crop and livestock to wildlife using endowments generated through various sources such as donations, entry fees to wildlife preserves, and incomes from community forests. Although conceptually appealing, there is currently very little evidence of how effective compensation schemes are in actually reducing human-wildlife conflicts. Verification of wildlife damage, estimation of cost, expeditious delivery of payments, and financial viability are some of the issues that challenge compensation schemes.

Strengthening Research on Economic Instruments to Manage the Environment

Towards the end of the workshop, break-out group discussions were held to: (a) highlight some of the economic instruments that were being put into practice to green development in various countries and; (b) identify key research topics to address some of the pressing issues related to these instruments. These discussions were rich in ideas. They highlighted the demand for new knowledge and the need for training and capacity building that would enable local researchers to meet this demand.
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