



**REPORT OF THE**  
**WORKSHOP ON AN INTEGRATED APPROACH TO ADDRESS THE IMPACTS OF**  
**CLIMATE CHANGE IN BANGLADESH**

**October 7 – 8, 2009**

**Introduction**

DFID agreed to sponsor these workshops in Dhaka following the workshop on Conceptualizing Effective and Efficient Adaptation Policies to Climate Change in Bangladesh that was held at the Rockefeller Foundation's Study and Conference Center in Bellagio, Italy on May 20-22, 2008 and the subsequent support from Bangladeshi institutions, including Bangladesh Centre for Advanced Studies (BCAS) and Bangladesh Development Research Centre (BDRC). That Bellagio workshop had reached the conclusion that the application of the Threshold 21 model of the Millennium Institute would be a valuable tool to help Bangladesh improve its adaptation to climate change. As a result of the Bellagio workshop, efforts were made to introduce T21 to government officials and other interested parties in Bangladesh. After careful consideration of the model and its potential for Bangladesh, DFID agreed to sponsor these workshops on October 7 and 8. MI staff would present the Threshold 21 model and describe how it could be applied to climate change issues in Bangladesh. Dr. John Shilling, Chairman of the Board, and Dr. Weishuang Qu, Senior Director for Modeling and Analysis from the Millennium Institute made the presentations.

**Organization of Workshops**

The workshop on October 7 included members of relevant government agencies, and the one on October 8 included representatives of a number of NGOs, academic institutions, and other civil society groups. The Centre for Natural Resource Studies (CNRS) organized the workshops in the Spectra Convention Centre, including providing laptop computers on each table to help the participants follow the model. The ambience, refreshments, and meals provided were very good. There were over 50 participants in each workshop, nearly all of whom stayed for the entire time. The list of participants in each workshop is attached. There was ample time for the presentations and for very useful discussions between the participants and presenters.

**Presentations**

***Day 1: October 7 Workshop For Government Agencies***

Dr. Islam Faisal of DFID opened the session and introduced Dr. Shilling, who presented the Threshold 21 model and the Millennium Institute's experience to the participants. He explained the importance of taking a broader systemic approach over a longer term in dealing with climate change issues, and described how the Threshold 21 model of the Millennium Institute addressed

these issues. It integrates economic, social, and environmental relations into a single, holistic framework that generates scenarios over 30 years or more to illustrate what would be the main effects of different policies or assumptions about the changes in exogenous factors, like sea-level rise. These scenarios include the cross sector relations that show how changes in the economy will affect social and environmental factors, how changes in the environment will affect the economy and social factors, and how changes in social factors will affect the economy and environment. These feedbacks have positive and negative effects, and they may change over time. Dr. Shilling also described how the model has been applied in a number of other countries.

Dr. Shilling explained how this model would help Bangladesh address climate change challenges by helping develop better policies based on understanding what their broader effects would be, and taking necessary measures to offset negative side effects. He also noted that adapting the model to Bangladesh's specific circumstances would help better understand some of the key relations and would help build consensus and cooperation among different ministries and civil society groups. MI's practice in applying T21 involved training many local experts in how to use the model to generate a large number of scenarios comparing variations in a number of policy options and exogenous assumptions. MI also trains a number of modeling experts in how to build, update, and further modify the underlying T21 Bangladesh model to take account of new information and issues. The model is transferred to the Bangladesh client(s) for their own full usage, with support from MI as needed. The local team can then continue to modify the model as part of the country's ongoing planning process.

Mr. M Rafiqul Islam, Chief of Planning Division, MOP, then gave his presentation, describing how he had reviewed the model and found it impressive. He found that it would be a valuable tool for Bangladesh in the preparation of its upcoming 5-year plan. The model's holistic approach and ability to incorporate progress on MDGs, deal with climate change, and support risk analysis into the planning for economic development offered significant advantages over other approaches they had considered. He felt that T21 would be easier to use and would help build their skills and planning capacity.

Dr Weshiang Qu then introduced the T21 model and demonstrated how it was designed and used. He used the Jamaica T21 model as an example. This had been loaded on laptops on each table, so that participants were able to use it themselves. He showed the participants the flow chart structure of the model that illustrated the causal relations of each sector and the links among the sectors. He then showed how the model was calibrated against history. A base scenario was run starting in 1990 through 2030. The scenario results from 1990 to 2005 were compared graphically and quantitatively with the actual historical values of each variable in the model to determine how well the model actually represented the relations in the country and could track history. Significant gaps between the 'historic projections' and actual values of variables during the creation of the model helped identify gaps in the data, where the model did not take account of all the relevant factors, and possible structural changes. Further modifications were made in the development of the model to reduce such gaps and build confidence in the reliability of the model. Review of these base case results also identified

upcoming challenges to the economy if there were no further policy changes. In Jamaica, rising unemployment and growth too slow to reach their economic objectives had emerged as important challenges, and the government had then undertaken policies to address these issues.

Once the structure of the model and its calibration were presented, Dr. Qu demonstrated how to run scenarios on the user version. He showed how the model took account of natural disasters. Based on previous experience, the model included the impacts of hurricanes on Jamaica's development. The model's scenario options included the possibility of assuming hurricanes would hit Jamaica at various years in the future. While it is not possible to predict when, it is certain that Jamaica will be hit by a serious hurricane every few years. The model then generated a scenario (in about 5 seconds) that showed how Jamaica would be affected if hurricanes hit every five years. Agricultural growth was more volatile, overall growth lower, and health care availability less than in the base case, among many other changes. Dr. Qu then ran a scenario with the same hurricane assumption, and added a number of policies the government had considered to raise growth, including more micro credit to small businesses, more research and development, and more encouragement of private savings and investment. These factors led to higher growth than the base case and the case with hurricanes only, offsetting their negative effects. This was just one example of the many possible approaches Jamaica could take to improve its overall development prospects. Participants were able to test many other possible policy changes or exogenous factors with the user version of the model that they were provided.

A number of interesting questions were asked following the presentation. These concerned the how the model would be applied to Bangladesh, more details about the structure of the model, what its limitations would be, what data would be required, how it would be entered, how certain sectors could be developed, what more output detailed data could be extracted beyond the graphs shown, and the reasons T21 had been applied primarily in developing countries. These questions reflected deep interest in the model and interest in how it could be applied in Bangladesh. The responses explained the method of application, how data is gathered and incorporated into the model, how further sectors are added, how quantitative data on all variables is transferred to a spreadsheet, and the focus on developing countries to promote more sustainable development.

Following lunch, Dr Qu led another session to demonstrate how climate change would be included in a Bangladesh model. He started with a simple flow chart showing how climate change would impact things like water availability, temperature, sea level inundation, salination. Then each of those 'effects' of climate change would impact other things like agricultural production, access to clean water, migration, and so on. Based on this initial flow chart, Dr. Qu then invited the participants to identify further links of the effects of climate change, and the secondary and tertiary effects of the initial impacts, plus any feedback loops. This elicited a very interesting and intense response where participants identified a number of links across many sectors that needed to be taken into account. It also demonstrated how adapting the model to Bangladesh would be very transparent and would involve many interested parties from different sectors. This helps make the model more comprehensive and brings together experts in different

sectors to develop a clearer understanding of effects of climate change, or other factors, and how it promotes more cooperation in finding the best solutions. The participants very much appreciated this part of the exercise.

### ***Day 2: October 8 Workshop for Civil Society Groups and Academic Institutions***

Penny Davies, Senior Livelihoods Advisor from DFID opened this session with a brief introduction that emphasized the importance of taking an integrated approach in promoting development. She emphasized that the state needs to ensure there was wider involvement of civil society in developing and monitoring the outcome of planning. There needs to be more political and economic convergence in linking climate change factors to other goals and taking account of the future economic costs that will occur from climate change so planning can take measures to mitigate or offset those costs. New innovations and partnerships would help in this regard. Decision makers need to think ahead to see what their goals should be and do proper backward planning to determine what it takes to get there. And their planning needs to take account of the risks and uncertainties that face any programs going forward.

In light of these factors, Penny Davies expressed her belief that the Threshold 21 approach would be very useful in Bangladesh, especially with greater cooperation among government agencies and with the public through NGOs and other groups. She explained that the Government of Bangladesh was currently preparing its Poverty Reduction Strategy and about to begin preparing its next 5-year plan in 2010, so this would be a good time to introduce T21.

Then Dr. Atiq Rahman, president of BCAS, was invited to make a brief presentation, as he had been a major supporter and participant in the Bellagio Workshop and supported working with the Millennium Institute to apply T21 to help Bangladesh address climate change and other development issues. He emphasized the need to take a systematic approach to deal with climate change and other development issues. He also emphasized the importance of taking a multi-sectoral, multi-disciplinary, and multi-stakeholder approach. Although much attention is being directed to poverty reduction, this has to be related to climate change adaptation because the two are closely linked, and these linkages, along with those of food, energy, and finance, need to be taken into account. The T21 model takes these links into account and is a valuable tool to help generate better policy. He emphasized the importance of finding a way to apply T21 to help Bangladesh address climate change and other development issues.

Dr. Shilling then introduced the Threshold 21 Model and the Millennium Institute's experience to these participants with the same presentation as the previous day.

Dr. Zafar Ahmed Khan, Director General of Dept of Environment under MOE, delivered his speech.<sup>1</sup> He was also supportive of the application of T21 to help Bangladesh develop policies to better adapt to climate change. He emphasized the importance of building grass-roots connections to collect important information about what was actually happening and how to

---

<sup>1</sup> Dr. Khan spoke in Bengali, so this is based on the translation we received.

adjust and to build broader public understanding and support for the adaptation policies. He felt that the model should also be used to help better allocate budget resources directed to adaptation across sectors and among localities in order to obtain more effective results, including by offering better means to monitor results. Use of the model could also help achieve better allocation of foreign assistance by defining priorities more clearly. He felt that it is very important to move ahead in the application of the model and its ability of coordinate efforts across sectors.

Then Dr. Qu gave his introduction to T21 Jamaica, followed by lunch and the demonstration of adapting the model to climate change in Bangladesh. This replicated the previous day's presentation. The participants' response to the climate change flow charts was as intense as it was interesting. And it raised some additional factors that needed to be included among the impacts and their effects. This illustrated the importance of having these open discussions about the important causal relations with different groups on knowledgeable people. It helps assure that the most important factors are taken into account and the priorities represent a consensus.

During the breaks on both days, there was considerable interest expressed by individuals to Drs. Shilling and Qu about the model and possible cooperation with Millennium Institute in its application. We will follow up on these in cooperation with BCAS.

### **Conclusion and Next Steps**

These DFID sponsored workshops were highly productive and generated very positive reactions among the participants. On both days, they expressed strong interest in the T21 model and its application in Bangladesh to address climate change adaptation in the context of assuring more sustainable development and poverty alleviation. BCAS and others agreed to try to promote further interest in the relevant agencies in the government and seek to generate a proposal for support of the application of T21 to Bangladesh in time for the 2010 budget. They will also work to put together a partnership of civil society groups to assist in the application of the model and create a committee of key leaders to oversee the application of the model.