

# ... shoulder to the wheel



industry (65%), and land and forestry uses (40%).

It is crucial that reduction in the emission of greenhouse gases in a major way is begun without any further loss of time in order for the situation to become manageable towards the end of this century. If nothing or little is done up to then, the situation may go beyond control both in terms of required finances and technological possibilities.

It was concluded in the Third Assessment Report 2001 (WG II report) that both natural and human systems are affected by climate change. The AR4 (WG II) finds both the processes to be accelerating and intensifying.

It is further learnt from this report (AR4, WG II): Glaciers and ice are increasingly melting everywhere so that the concerned areas are faced with looming disasters. Due to melting of glaciers and ice, the mountains and the Arctic and Antarctic regions as well as oceans are facing structural changes, often extremely adverse to both natural and human systems. As a result of accelerated glacier and ice melt and increased precipitation, timing of run-offs and heights of water levels are changing; structure of water is changing as a result of warming of water in deltas and rivers; and with warming and sea-level rise accelerating, coastal areas are becoming increasingly disaster-prone and biodiversity is affected widely.

Problems are intensifying in various socio-economic sectors such as agriculture (crop, forestry, fishery, and livestock), industry, and human health and habitats. Essentially what is happening is that, due to climate change, life and living of human beings is adversely impacted and the process will intensify in future, particularly if the human behaviour in relation to economic, technological, and other aspects of life and living continue as usual.

It has also been stated clearly that developing countries will face high levels of risk as a result of climate change, i.e. these countries will suffer from the adverse

impact of climate change the most, the climate change management and socio-economic development must be pursued through an integrated process, and that the developed countries must provide resources to the developing countries as promised. It has also been proposed in the review that international community should come forward with financial assistance for collecting and improving data on the impact of climate change in different regions and for conducting research on achieving and maintaining improved agricultural productivity under conditions of droughts and increased precipitation.

If effective adaptation policies and programmes are implemented in a country or a region, it should be possible to minimize the adverse impact of climate change. For adopting steps to that end, certain guidelines emerge from AR4, WG II report, which include: (a) Adaptation to climate change and mitigation (i.e. reduction of greenhouse gas emissions) are both absolutely necessary. The process of reduction in the emission of greenhouse gases must be earnestly and adequately started without further loss of time so that by the end of the century it is possible to manage the process of global warming. (b) The climate change policy must be integrated with economic and social development policies to generate a process of sustainable development. The basic thrust, therefore, should be proper assessments of the problems in the context of both socio-economic development and climate change management and the utilization of the results in an integrated fashion.

At this stage attention may be drawn to five major conclusions (a) On the basis of the findings of the IPCC (AR4 in particular), it can be emphasized that the world community must work together to start reducing greenhouse gas emissions adequately on one hand and promote adaptation policies and programmes to minimize the adverse consequences of climate change on the other. (b) It is the developed countries which, having emitted greenhouse gases in huge quantities over the years, have caused the anthropogenic global warming. Therefore, the main responsibility for the climate change that is now occurring lies with the developed countries. Hence, they should come forward with adequate technical and financial resource transfer to the developing countries to help them formulate and implement appropriate adaptation policies and programmes. They must start reducing their own greenhouse gas emissions

adequately.

(c) If climate change management and socio-economic development are not pursued in an integrated fashion, sustainable development cannot be achieved. Therefore, the international community should also provide adequate financial and technical assistance to developing countries towards achieving their socio-economic goals.

(d) The developing countries must formulate and pursue socio-economic development policies and programmes and climate change management in an integrated fashion with full determination and commitment. In these countries, of course, economic growth has to be equitably distributed with a view to reducing poverty and hunger at an accelerated rate.

(e) The local communities, which are climate change risk-prone, can also play a role in the management of climate change. For them to be able to do so, necessary education, training, and health services should be ensured at the local space so that the local people can acquire abilities to play appropriate roles in managing climate change impacts, while contributing to their own and national economic development.

**BANGLADESH:** Bangladesh suffers from multiple stresses. These include the ones enumerated earlier. One other major constraining factor is the location of the country at the bottom of the three mighty river systems: the Ganges, the Brahmaputra, and the Meghna. The country is very flood-prone given that it drains over 92% of the total water annually generated in the GBM region to the Bay of Bengal. On the other hand, increasing upstream abstraction causes acute water shortages in the country in the lean season (January-May).

Bangladesh is indeed one of the countries, which is set to suffer the most in the wake of climate change. Floods, droughts, tornadoes, storm surges, and cyclones are almost certain to occur more frequently and more intensely in future. Due to sea level rise, a significant area of the country in the coastal belt may be permanently inundated. River erosion will intensify and low-lying areas inside the country may not be available for any use at all. As a result, huge numbers of people will become climate refugees.

The relief and rehabilitation work following a natural disaster requires transfer of resources from the development budget in addition to other resources raise specifically for the purpose. This may have an adverse impact on development. Hence, the more frequent the disasters are the more difficult the prospects of development will be. The two floods and Sider of 2007 are indicative of what may come in future. In fact, the three 2007 natural disasters may constitute a loud wake up call for the country to take the climate change issues as seriously as they deserve and formulate policies and programmes to address them with total commitment.

According to IPCC (WG II report), the agricultural productivity in South Asia may

decline by up to 30% by the middle of this century as a result of climate change. Even if Bangladesh suffers from only a 10% reduction in agricultural productivity coupled with a significant reduction in agricultural land through permanent inundation due to sea-level rise, river bank erosions, saline intrusion, and other uses, the country faces devastating food insecurity in 30 or 40 years time. During major floods, vector and water-borne diseases such as malaria, diarrhoea, skin diseases break out on a wide-scale. These health hazards often cripple, even kill people. As a result of accelerating glacier melt in the Himalaya, water flows in the eastern Himalayan rivers, particularly during the lean season, may increase over the next 10 or 20 years but will then start declining. Bangladesh which already faces severe water shortages during the lean season will face even greater shortages in the course of time, even if upstream abstraction remains equal. Indeed, there may be civil strife in the country as a result of shortages of agricultural land and increasingly declining water availability.

The drought-prone north-west Bangladesh will face intensifying economic problems (unemployment, declining agricultural productivity) as there may be more intense and longer droughts in future. The Sundarbans which contains World Heritage and Ramsar sites already faces decline due to freshwater problem. Moreover, Sider has destroyed virtually one-fourth of the Sundarbans. Biodiversity is declining fast. The Sundarbans is under severe threat of extinction as climate change intensifies in the coming decades.

Clearly, therefore, Bangladesh must focus on understanding, through properly designed and executed research activities, the nature of the problems arising from climate change and to devise adaptation policies and programmes to minimise the losses and damages. Indeed, adaptation is not a one-off activity. It is a process. Therefore, Bangladesh must increase its adaptive capacity and develop an integrated pathway for climate change management and socio-economic development. Obviously, Bangladesh is short of resources and climate change management is an area for which international assistance should be sought vigorously. Indeed, Bangladesh, while seeking to accelerate its economic development, should also try to do whatever it can in terms of using clean development technologies to reduce its greenhouse gas emission, although the total emission of the country is negligible. But, given that the developed countries which are responsible for climate change and, hence, for the sufferings of the people of Bangladesh in that context, equity and ethics would demand that they transfer necessary financial and technical resources to Bangladesh to enable the country to combat the consequences of climate change and pursue accelerated sustainable development.

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of the representatives of the governments is convened. They review it in detail and introduce agreed changes or modifications before accepting it. Usually, the SPM is gone through sentence by sentence, even word by word before a negotiated document is finally approved. The experts provide necessary support at this stage. In fact, these reports are prepared on the basis of peer reviewed research findings from around the world; and drafts at various stages are reviewed by experts from around the world, who are not involved in preparing the reports as well as by governments of the member countries. The comments and suggestions coming through this process are duly taken into account as the report preparation proceeds.

## Global climate change: a brief on status

First of all let us consider some key findings of the IPCC AR4. One major conclusion in which there is a high

degree of confidence is that global temperature will increase by 1.8oC to 4.0oC by the last decade of the 21st century compared to the last decade of the 20th century. This increase may even be up to 6.4oC. The concomitant sea-level rise during the same period is estimated at between 18 cm and 89 cm. Obviously, these figures are global averages. Different regions of the world may face different levels of warming and sea-level rise.

Indeed, the concentration of greenhouse gases in the atmosphere has now become so large that, even if further emission of greenhouse gases can be stopped today, global temperature and sea-level will continue to rise over the whole of this century, and even beyond. But, the reality is that emission of greenhouse gases continues to increase. The developed world, which is largely responsible for greenhouse gas emissions, is not taking steps to reduce greenhouse gases. In fact, they pursue the destructive path of increased emissions. Moreover, China, Brazil, India and several

other developing countries are now emitting increasing quantities of greenhouse gases. The Kyoto Protocol adopted in 1997 called for reduction in the emission of greenhouse gases to the extent of 5% by 2012 compared to 1990. But, this global accord has been of no avail, particularly because the largest polluter, the USA, withdrew from the Protocol. A new process of coming to an agreement regarding reduction of greenhouse gas emissions has begun in an international conference in Bali, Indonesia, in December 2007. A roadmap for negotiations to reach an agreement to replace the Kyoto Protocol, which expires in 2012, by 2009 has been agreed. However, it remains to be seen how the approaches evolve and negotiations proceed.

It has been seen that, during 1970-2004, emission of greenhouse gases as a result of different human activities has increased by 70%. Most polluting is the energy sector (with an increase of 145% during this period), followed by transportation (120%),

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