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## DISCUSSION NOTE FOR HIGH LEVEL ROUNDTABLE ON CLIMATE CHANGE: MITIGATION AND ADAPTATION

## **I. CONTEXT**

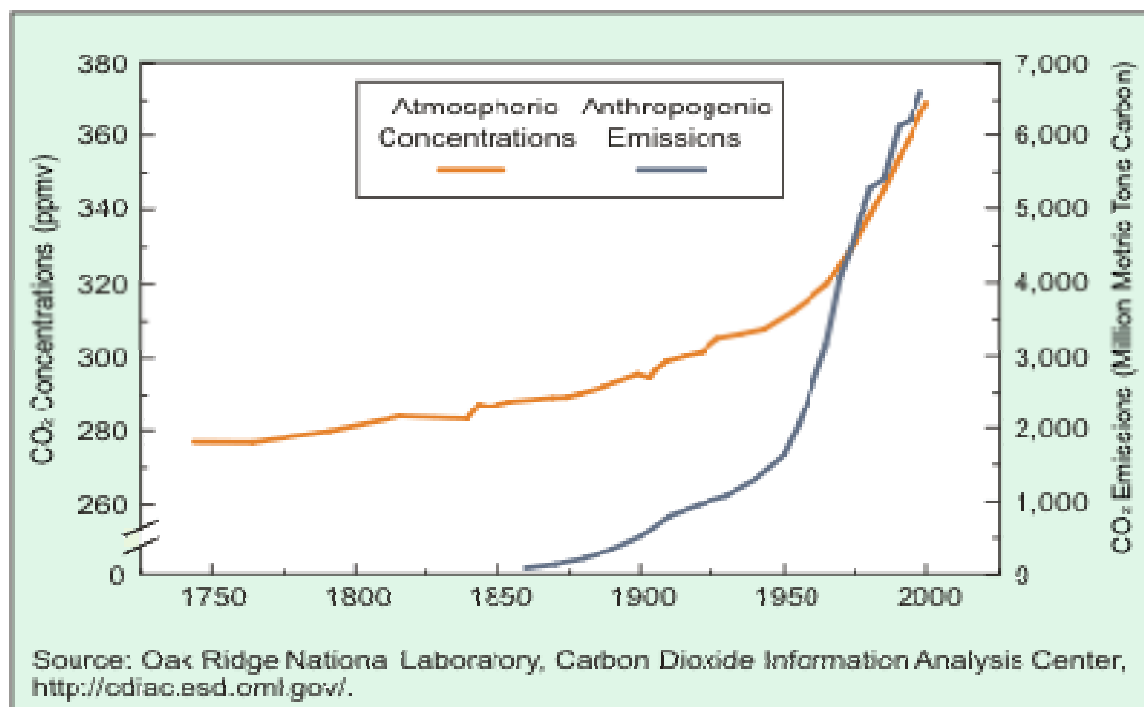
1. In the climate change focal area, the role of the Global Environment Facility (GEF), as stated in its 1995 Operational Strategy, is to support measures that minimize the damage resulting from the climate change phenomenon, either by mitigating the risk of its occurrence or by addressing its adverse effects.
2. So far, the climate change program within the GEF has clearly given priority to the mitigation aspect, mainly because the GEF's primary objective is to support projects with global environmental benefits, whereas most adaptation interventions focus on producing local environmental benefits.
3. Overcoming this contradiction appears to be one of the main challenges the GEF will have to face in the coming years, considering that the Inter-Governmental Panel on Climate Change (IPCC) reports and various recently available materials indicate that the adverse effects of the climate change not only are inevitable but also will be apparent much sooner than previously expected, whatever the extent of mitigation programs.
4. One important element to take into account is that the poorer, developing countries are the least equipped to adapt to the potential effects of climate change, although most of them have played an insignificant role in causing it. At the same time, developing countries have a dramatic need to access energy as an essential component of poverty alleviation strategies and sustainable development.
5. Consequently, the issues of mitigation and adaptation appear to be interlinked, particularly in the poor countries, which need to access energy in an environmentally friendly way while protecting themselves against the effects of the climate change provoked by the developed world. It is now well acknowledged, however, that the world system has not been able to design appropriate mechanisms for providing adequate "clean energy" to meet the basic human needs of the world's poorest countries. This problem was recognized by the G8 Summit in Gleneagles, which created the Dialogue on Climate Change, Clean Energy, and Sustainable Development.
6. Participating in this dialogue is certainly of the utmost interest for the GEF, in part because of the synergies created with the Clean Energy Investment Framework (CEIF) developed by the World Bank and other multilateral development banks. The CEIF has adopted a three-pillar strategy for achieving its end: (1) to meet modern and clean energy needs for developing countries, (2) to address climate change mitigation through greenhouse gas (GHG) reductions, and (3) to support the developing world in its effort to adapt to the adverse changes of climate change and variability.

## **II. THE CONTINUED NEED FOR CLIMATE CHANGE MITIGATION**

7. From its inception, the UN Framework Convention on Climate Change (UNFCCC) has sought as its goal "the stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the global climate system." This goal denoted a primary focus on mitigating GHG emissions to avoid more serious global warming.

All countries have been encouraged to view this action as a shared goal under the UNFCCC, interpreted through the principle of common-but-differentiated responsibilities. Yet now, nearly 15 years after the UNFCCC was first negotiated, the scientific record shows no appreciable decrease of either the rate of emissions growth or of the rate of increase of GHG concentrations in the atmosphere.

**Figure 1: Trends in Concentrations and Emissions of CO<sub>2</sub>**



8. Emphasis on mitigating GHG emissions must continue. Current analysis confirms earlier conclusions that no single, magic bullet can by itself tame global GHG emissions. One set of recent projections shows that through a combination of seven concerted efforts (or “wedges”) targeting GHG emissions through the adoption of specific policies or actions, future GHG emissions can be stabilized and reduced. Those wedges consist of increased use of energy-efficient appliances; enhanced energy efficiency in industry; increased use of renewable energy; enhanced efficiency of motor vehicles; increased use of nuclear energy; more efficient fossil-fuel use; and carbon capture and storage.<sup>1</sup> Solving the global warming problem is possible through concerted efforts that pursue a combination of these options, ignoring none. Finding a solution will require not only a serious political commitment but also a much greater reliance on modern energy technologies.

9. According to projections of the IEA, over the next two decades both the energy consumption and the GHG emissions of developing countries will exceed those of today’s developed countries. It is not enough to discuss solving the GHG emission problem among today’s developed countries alone, because they will not remain the primary cause of the

<sup>1</sup> S. Pacala and R. Socolow, “Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies,” *Science* Vol. 305, no. 5686, 13 August 2004, pp. 968–972.

problem forever. Although the initial focus on reducing GHG emissions has emphasized Organization for Economic Cooperation and Development (OECD) countries, this focus must change for a truly global solution to emerge. Such a solution will require not only more meaningful international cooperation but also greater development and adoption of new technologies in which technology transfer—from North to South, South to South, and even from South to North—plays an important role.

### **GEF's Role in Mitigation**

10. The GEF is well placed to play a critical role in fomenting this international, technology-based cooperation for GHG mitigation. Since its inception in 1991, the GEF has provided slightly more than \$2 billion to projects in the climate change focal area. Although about 10 percent of those funds have helped countries prepare their initial, second, and subsequent national communications, the remaining 90 percent has been directed to help countries achieve their sustainable development goals in a way that reduces GHG emissions. The GEF's Climate Change Program Study showed that by 2004, completed GEF climate change projects had accounted for a reduction of more than 224 million tons of CO<sub>2</sub> equivalent, counting both direct and indirect effects.<sup>2</sup> Ongoing projects were anticipated to account for another 1.7 billion tons of CO<sub>2</sub>. These numbers underline the fact that the GEF has played a role in setting the foundation for a low-GHG sustainable development path.

11. The GEF's operational strategy in the climate change focal area revolves around four Operational Programs: Removing Barriers to Energy Efficiency; Promoting Renewable Energy; Reducing the Long-Term Cost of Low GHG-Emitting Energy Technologies; and Sustainable Transport. More than \$600 million has been allocated to energy efficiency projects to promote energy efficient technologies and practices. Over time, the projects in this program have demonstrated both the greatest analytical coherence and the greatest impact on the ground.

12. More than \$800 million has been allocated to projects to promote renewable energy utilization in both on-grid and off-grid contexts. Although off-grid renewable energy projects are designed to promote renewably generated electricity for people currently without any electricity, critics contend that such projects have done little to reduce GHG emissions. On-grid renewable energy projects initially began by supporting renewable energy demonstration projects, but they have since moved "upstream" to assist countries in establishing a level playing field in which renewable generators sell electricity to the grid. Again, critics contend that the renewable energy projects are less cost-effective at reducing GHG emission, but proponents would argue that supporting them is essential to attaining sustainable energy development in a GHG-constrained world.

13. Approximately \$200 million has been committed to projects designed to provide early experience with new, low-GHG-emitting energy technologies, such as biomass-based gasification through combined cycle generators and concentrating solar power. This program, intended to give GEF program countries early experience with these technologies (which have not yet been commercialized) has been the most problematic of GEF's operational programs.

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<sup>2</sup> Office of Monitoring and Evaluation, GEF Climate Change Program Study: September 2004, Washington, DC: Global Environment Facility.

Critics argue that it is impossible to transfer technologies that are not fully mature, and to date, the GEF's portfolio would indicate that this criticism is justified. Proponents, however, argue that projects under this program can succeed and will give developing countries early experience with these new technologies, thereby facilitating their accelerated adoption through "technological leapfrogging." Future work on transferring new technologies should pay close attention to the GEF's experience under this operational program.

14. More than \$100 million has been allocated to Sustainable Transport, the newest operational program in the climate change focal area. Although early projects in this program focused primarily on new technologies, the more recent emphasis has been on helping to pilot and promote non-motorized transport, bus rapid-transit systems, and other forms of low-GHG-emitting transportation. As the newest and smallest of the climate change operational programs, results from the projects in this program remain limited in scale and scope.

### **Other International Mitigation Initiatives**

15. The World Bank and the other multilateral development banks continue working to develop the CEIF. It is worth noting that all the mitigation activities supported by the GEF are consistent with the first two pillars of the CEIF: increasing access to clean sources of energy and reducing the GHG emissions associated with energy use. The needs identified for the CEIF, however—nearly \$1.5 billion per year over the next 20 to 30 years—far exceed the scale of the GEF's operations in the climate change focal area. The approaches of the GEF and the CEIF can be made consistent if the GEF continues to focus on removing barriers and transforming markets for the clean energy and low-GHG sustainable development using its own programs and strategies and the CEIF is used to provide the investment capital necessary to bring about the desired energy future.

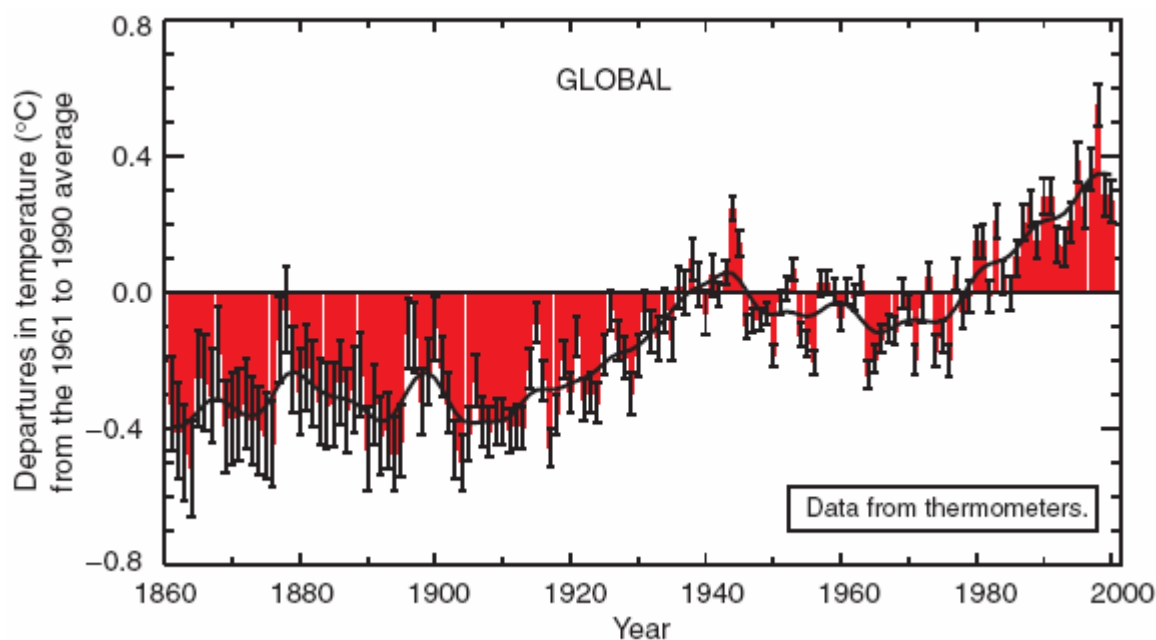
16. In addition, the Kyoto Protocol entered into force on February 16, 2005. Ratified by more than 160 countries, it represents the first global attempt to create an international regime for GHG regulation. The creation of the flexibility mechanisms—emissions trading, joint implementation, and the Clean Development Mechanism—represents a major step toward the use of market mechanisms to force economic decision makers to internalize the environmental externalities of their production and consumption decisions. To date, the CDM has announced that projects seeking to reduce GHG emissions by more than 1 billion tons have already been registered. Although the role of these mechanisms beyond 2012 remains uncertain, they are currently helping facilitate international action to reduce GHG emissions. Clearly, making effective use of these flexible mechanisms over the long run poses a challenge to the world as a whole in its efforts to control GHG concentrations in the atmosphere.

### **III. THE EMERGING NEED FOR ADAPTATION**

17. Regardless of how effective mitigation efforts are, how hard the GEF works, how quickly the CEIF and other similar initiatives can be brought into operation, and how universally the CDM and the other flexible mechanisms are adopted, global warming has already begun and will continue to occur. Historical and current GHG emissions—largely from developed countries—have preordained a significant amount of global warming. All countries must begin serious

efforts not only to reduce GHG emissions but also to begin adapting to the climate change that is already occurring. Particularly for the poorest countries in the world—and the poorest people within those countries—these changes will constitute a major challenge over the coming years.

**Figure 2: Variations of the Earth’s Surface Temperature for the Past 140 Years<sup>3</sup>**



18. Recent years have seen climate scientists’ predictions about global warming come true. The increasing concentration of GHGs in the atmosphere has led to increasing mean global temperatures. Ten of the hottest years on record have occurred in the past 15 years. In turn, this has led to an increase in glacial melting, a thawing of the permafrost in polar regions, and an increase in the frequency and intensity of extreme weather events. Other adverse effects of climate change are already affecting food security and people’s access to water for drinking and irrigation. These effects will increasingly be felt by extremely vulnerable populations in developing countries, which may have the least flexibility to be able to deal with the anticipated changes. Developing-country populations have done the least to create the climate change problems, yet they stand to suffer more from the adverse effects of climate change. Although adaptation to climate change is a significant global environmental challenge closely linked to development, its dimensions are still not well understood. As recent UNFCCC discussions have articulated, adapting to climate change is an enormous challenge that is made even more daunting because there continue to be limited resources to pay the costs of adaptation as well as a limited understanding of how to make sustainable development and human society more, rather than less, resilient to the adverse effects of climate change.

### GEF’s Role in Adaptation

<sup>3</sup> Watson, R. (ed). 2001. Climate Change 2001: Synthesis Report. Intergovernmental Panel on Climate Change (IPCC). Geneva: WMO and UNEP.

19. Although the GEF only recently has begun to play a role in meeting the challenge of adaptation, its efforts still place it at the forefront of global action. Because its mandate is to provide incremental cost funding for projects in developing countries with global environmental benefits, the GEF's efforts in the climate change focal area have largely focused on mitigation activities. Vulnerability and adaptation assessments originally were only supported as part of the process of preparing national communications. In response to UNFCCC guidance and to the realization of the imminent nature of global warming, however, the GEF has initiated three avenues for funding adaptation-related activities: the Strategic Pilot on Adaptation (SPA), the Special Climate Change Fund (SCCF), and the Least Developed Countries Fund (LDCF). Each avenue has a different focus and adopts a different approach, but they all stand to make a unique contribution to an improved understanding of the challenge of moving from assessment to action in the field of climate change adaptation.

20. In response to guidance provided through the 7<sup>th</sup> Conference of the Parties (COP7) to the UNFCCC held in Marrakesh, the GEF Council committed to allocating a portion of funds from the climate change focal area to support pilot and demonstration projects that address local adaptation needs and generate global environmental benefits in the GEF focal areas: biological diversity, climate change, international waters, land degradation, ozone layer depletion, and persistent organic pollutants. Projects that generate both local (development-focused) and global benefits will be eligible under the SPA if their benefits are considered to be primarily global in nature. Because the funds from the SPA were drawn from the GEF Trust Fund, the projects supported were expected to be consistent with the principles of the Trust Fund, including criteria concerning incremental costs and global environmental benefits. This initiative—which has now been operational for approximately two years—is beginning to provide lessons and experiences to help countries ensure that adaptation interventions on the ground reduce the risks to vulnerable ecosystems and deliver global environmental benefits in the face of accelerated global warming. Slightly more than half of the initial \$50 million allocated to this initiative has been committed to projects supporting concrete adaptation activities in projects seeking to deliver global environmental benefits.

21. The SCCF also was established in response to guidance received from COP7. Its adaptation program is designed to address the adverse effects of climate change in the areas of water resources, land management, agriculture, health, infrastructure, fragile ecosystems (including mountain ecosystems), and integrated coastal zone management. Because these sectors are of greater relevance to national development than global environmental benefits, the concept of incremental costs cannot be applied. Instead, the concept of additional costs—defined as the costs of achieving sustainable development imposed on vulnerable countries by the effects of climate change—was applied. Following the adoption of this framework, the SCCF was created, operationalized, and implemented. Nearly \$50 million is available for adaptation programming, and additional funds are expected to be made available later this year. The concepts approved for entry into the SCCF pipeline during its first year of operation are expected to result in projects integrating concrete adaptation measures into development projects in the water, agriculture, health, infrastructure, coastal zone management, and other relevant sectors.

22. Like the SPA and SCCF, the LDCF was established in response to the Marrakesh Accords to help the least developed countries meet their urgent and immediate adaptation needs. The first stage of support provided through the LDCF was support for the preparation of National Adaptation Programs of Action (NAPAs). Forty-four countries have received support from the LDCF to identify their most urgent adaptation needs and to prioritize them for support. As the preparation of most of these NAPAs nears completion, the urgent and immediate priorities are becoming known. The NAPAs completed to date have identified the following six sectors for priority support:

- (a) *Water resources*: Expanded use of rainwater harvesting and storage for domestic and irrigation water supplies, protection of water supply sources, and improved water resource planning to account for heightened variability and vulnerability.
- (b) *Food security and agriculture*: Increased utilization of no-till agriculture techniques, including in tidal areas and wet conditions; improved matching of crops to changing weather patterns; and increased use of traditional crops to reduce crop-production variability in response to increased temperature and rainfall variability.
- (c) *Health*: Greater emphasis on monitoring the incidence of and expanding control of vector-borne diseases at and beyond current boundaries.
- (d) *Disaster preparedness and risk management*: Increased emphasis on development of early warning systems against climate-related extreme events, monitoring of conditions for and development of programs to respond to glacial lake outburst and other flooding and droughts, and raised awareness and understanding of local communities about the necessity and benefits of preparedness for climate hazards.
- (e) *Infrastructure*: Review and revision of appropriate regulations and policies relevant to construction of buildings, roads, bridges, culverts and sewers; urban planning; and coastal defense structures.
- (f) *Natural resources management*: Enhanced support for community-based forest fire management and prevention; increased experimentation with cultivating salt-tolerant fish species in areas prone to sea-level rise; and renewed efforts to promote sustainable fisheries.

23. Support for the LDCF will again be provided for the additional costs of an activity, where the term is defined as the costs imposed on vulnerable countries to meet their immediate adaptation needs. Countries are prioritizing their needs and preparing concepts to be submitted to the LDCF for programming. As the least developed countries (LDCs) move from preparation to implementation, the GEF has mobilized nearly \$100 million to support the urgent and immediate needs of the LDCs under the LDCF.

24. One additional source of adaptation funding was established under the Marrakesh Accords: the Adaptation Fund. The Adaptation Fund is to be funded through the encashment of the 2 percent share of proceeds derived as a “tax” on certified emission reductions (CERs) issued

under the CDM of the Kyoto Protocol and other voluntary contributions. Initially tasked with the operation of this fund, the GEF had begun making arrangements for operating the Adaptation Fund. Although the parties at COP11 agreed to reconsider potential institutions to operate this fund, the GEF has restated its availability and reaffirmed its capacity to manage the Adaptation Fund.

25. The GEF has taken a leading role in helping to pioneer support for adaptation. Although it will continue to use the concept of incremental costs to determine support for projects delivering global environmental benefits under the SPA, it has defined the concept of additional costs to identify countries' need for support to deal with the costs imposed upon their sustainable development paths by the adverse effects of climate change. The GEF has made an impressive first step in raising funds for adaptation, but it is clear that those funds are insufficient if used in isolation from national economic development planning. New tools for supporting adaptation needs must be identified: the opportunities posed by the insurance industry and the use of climate-linked derivatives need to be fully explored. In this context, as in the case of mitigation, the role of the GEF will continue to be catalytic in promoting climate-resilient development.

### **Other International Efforts to Support Adaptation**

26. Recent studies have estimated that a large fraction of all development projects is susceptible to one dimension or another of the adverse effects of climate change. "Climate proofing" development will involve mainstreaming adaptation to climate change into all aspects of development planning. Making development more resilient to the adverse effects of climate change remains a daunting challenge and will require the sharing of information, technology, and knowledge from the experiences of the developed and developing world alike.

27. The third pillar of the CEIF has emphasized the need for adaptation support to the most vulnerable developing countries. Although it is difficult to separate climate change entirely from climate variability, certainly the wide swings in current variability provide sufficient grounds to begin to identify the coping ranges and strategies that future climate systems may require. Once established, the CEIF is intended to play an important role in helping to climate proof development, making sustainable development more resilient and, therefore, more robust. Until funds are made available for funding adaptation under the CEIF, however, the GEF and the adaptation-related funds that it manages will play a pivotal role in financing concrete projects that support adaptation.

## **IV. QUESTIONS FOR ROUNDTABLE PARTICIPANTS**

- (i) What are the experiences of developed and developing countries in pursuing both mitigation and adaptation? What weighting or emphasis should be appropriate for each? How, then, should GEF respond to those needs in its program countries? How can the GEF increase its

effectiveness and help countries pursue appropriate programs in both the mitigation and adaptation fields?

- (ii) The costs of climate-related damages are expected to increase over the next century. Some analysts have argued that compared with the costs of adaptation, the costs of mitigation seem like a bargain. Others believe that the costs of adaptation are marginal if adaptation is systematically mainstreamed into development. What are the anticipated monetary and non-monetary benefits and costs for comparing and evaluating the effectiveness of mitigation and adaptation measures? What are appropriate success criteria for measuring progress towards mitigation and adaptation goals?
- (iii) What role should technology transfer play in both the mitigation and adaptation field?
- (iv) What do we really mean when we talk about “climate-resilient development”? How can it best be achieved?
- (v) What is the role of the GEF in the context of the first commitment period of the Kyoto Protocol? What should it be in the period extending beyond 2012?
- (vi) What is the role of the private sector in both mitigation and adaptation? In particular, what role should the insurance industry play?
- (vii) Within the mitigation field, how do countries find a balance between clean energy for development and reducing emissions? Where does the balance lie, and how should it differ by country?