

# CLIMATE CHANGE AND THE ADAPTION DEFICIT

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**ABSTRACT:** Two types of adaptation are identified. Type I Adaptation is the everyday adaptation to weather and climate that has always been a feature of human life. Type II Adaptation is the adaptation mandated under the UN Framework Convention on Climate Change. Type I Adaptation is promoted as part of sustainable development. Type II Adaptation relates to anthropogenic climate change and is subject to the rules and practices under the Convention. The two types of adaptation are similar but not identical. Type I Adaptation has traditionally assumed a stationary climate. In Type II Adaptation the climate is changing and the international community has a cost-sharing responsibility under the UNFCCC. There is a need to bring about a single seamless process of adaptation. Type I Adaptation has not been working very successfully. Losses from extreme weather and climate-related events are rising rapidly. This failure of current adaptation to keep pace with development is called the adaptation deficit. Type II Adaptation could be developed under the Convention to help eradicate the adaptation deficit. This would require the development of a more formal adaptation regime under the Convention similar to the mitigation (Kyoto) regime that already exists. The paper concludes that: 1. There is an unacceptably large and growing adaptation deficit; 2. The deficit can be more effectively addressed by combining the Climate Convention work with the development process and mainstreaming climate risk; and 3. By developing a more coherent and operational adaptation regime we can have more confidence that the efforts we collectively make will be rewarded with success.

**Keywords:** climate change, adaptation, deficit, risk

## 1. Two Perspectives on Adaptation

Adaptation is by no means a new concept or practice. Adaptation, including adaptation to climate, is as old as our species. Human beings have adapted successfully to all except the most extreme climates on the planet. People make a living and a livelihood in the sub-Arctic tundra of Canada, and in the steppes of Mongolia as well as in tropical rainforests, in small islands, and in mountain regions, and the Sahel. On this planet, climate varies as much or more over space than in time. Now however, we are concerned with something different from the age-old human practice of human adjustment

to environmental circumstances, including adaptation to a climate that for practical purposes can be considered as stationary. We are concerned with adaptation to a climate which is changing at a fast rate due to anthropogenic interference.

The United Nations Framework Convention on Climate Change (UNFCCC) was negotiated and agreed to deal with the new threat of anthropogenic climate change. The ultimate objective of the Convention as stated in Article 2 is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. Adaptation comes into this equation because the more that adaptation can be used to reduce impacts that might be considered dangerous, the higher the threshold of concentrations that can be accepted. Thus adaptation is important in the decision about how much and how rapidly greenhouse gas emissions need to be reduced. I call this the “pollutionist” view of adaptation, because it is important in deciding what level of greenhouse gas pollution can be tolerated in the atmosphere. It seems that the “pollutionist” view was what was uppermost in the minds of those who drafted the UNFCCC.

There is, however, a second view of adaptation that I will call the development view. This view recognizes that climate variability and extremes, even without climate change, can inflict significant damage on human lives and activities, and that this damage can be a significant impediment to development. Climate-related extreme weather events and climate variability help to cause poverty, and to keep poor and vulnerable people, poor and vulnerable. If we are to reduce climate-related disasters, eliminate extreme poverty, and attain the Millennium Development Goals we must incorporate adaptation to climate into development planning and implementation. We must begin adapting to climate change now. You might wish to argue that the two views are really the same. In both cases adaptation is needed. One difference however, is that the development perspective clearly implies adaptation now regardless of climate change, whereas the pollutionist view requires adaptation to be factored into decisions according to a schedule that involves the projection and observation of climate change and efforts at mitigation.

## 2. Two Categories of Adaptation

We can therefore think of two categories of adaptation. They might be called Type I and Type II Adaptation. Adaptation Type I refers to past and current adaptation strategy, policy, and measures without considering climate change. Most of the adaptation that we do is still Type I. Type II Adaptation is adaptation to climate change. Because climate change risks have still not been factored into many development decisions, and because awareness of the need for adaptation has still not been well incorporated into the work of development agencies, or Ministries of Finance and Development, not much Type II adaptation has taken place. This may also be partly explained by uncertainty about the amount and rate of future climate change, and to the lack of development assistance specifically earmarked for climate change adaptation. There is also a limited capacity to deal with adaptation in many countries in the face of a host of other urgent problems. It is also due to the adoption of short-term perspectives. Climate change is often seen as a slow process and the idea that adaptation can be left to a later date is commonplace. Type II Adaptation is therefore seen as not urgent, and also is often related to climate averages rather than variability or extremes. This is the case not only in developing countries, but even more so in the most highly developed and richest countries.

There is nevertheless a demand for attention to adaptation at the meetings of the UNFCCC, especially from those developing countries considered to be most vulnerable such as the Least Developed Countries (LDCs), and the Association of Small Island States (AOSIS). Article 4.4 of the Convention states, "the developed country Parties and other developed Parties included in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects". A number of funds which can be used to support adaptation have been established including the Least Developed Countries Fund (LDC Fund), the Special Climate Change Fund (SCCF), and the Adaptation Fund established under the Kyoto Protocol. The Global Environment Facility (GEF) is now proposing a Strategic Programme on Adaptation (SPA) that will be a pilot exercise in the implementation of adaptation. The strategic priority was adopted by the GEF council meeting in November 2003, as part of the 2005-2007 GEF business plan, which allocates US \$50 million to it.

How are these funds for adaptation to be used? It is proposed that their use be limited to the incremental costs of adaptation, that is the adaptation that is necessary because of climate change (Type II Adaptation) and not the costs of adapting to current climate or Type I Adaptation. From a development perspective it makes sense to graft adaptation to climate change onto existing adaptation strategies, policies and measures. Adaptation to climate change makes no sense unless it starts from present day adaptation. In other words Type II Adaptation should be built upon and strengthen Type I Adaptation. Type II Adaptation is what we need to do differently, both more and better, if we are to adapt to climate change. Unfortunately the science of climate change does not allow the theoretical distinction between climate and climate change to be measured. It is impossible to state how much of a tropical cyclone, or a heat wave or a flood can be attributed to climate change. Type I and Type II Adaptation therefore have to be considered as part of a seamless process of adaptation. There are however, two important differences between Type I and Type II Adaptation. Type I Adaptation has always been the responsibility of sovereign states. Type II Adaptation involves anthropogenic climate change, and therefore some degree of globally shared responsibilities. Further Type I Adaptation has been and is to a climate considered as stationery. Type II Adaptation recognizes tat the assumption of a stationery climate is no longer valid.

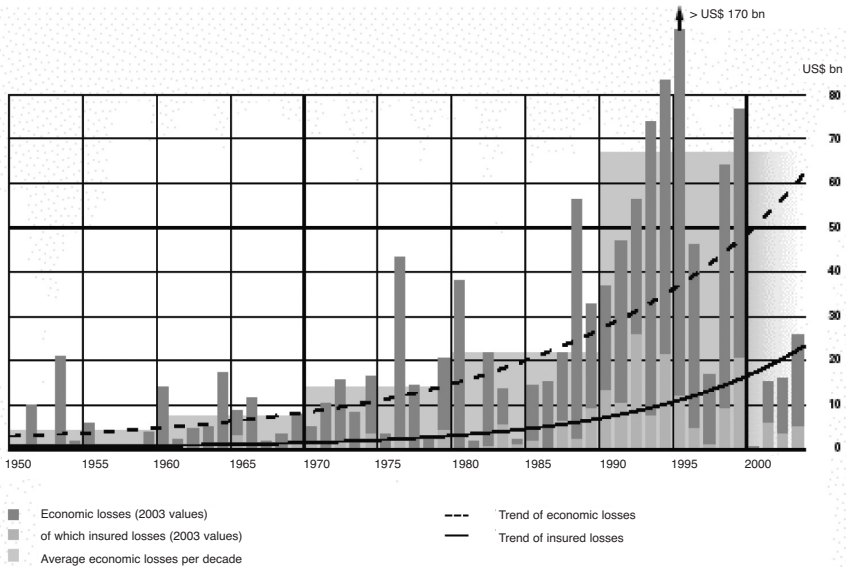
### **3. The Adaptation Deficit**

What is the status of Type I Adaptation and how successful is it? Unfortunately the story is not encouraging. An examination of losses from extreme weather events, or what might be called climate-related disasters, shows that they have been rising (Figure 1). Data from the Munich Reinsurance Company show that both insured and economic (non-insured) losses have been rising at what looks like an exponential rate. Those curves if extended on the same trajectory look very ominous indeed. The losses do not yet reflect much climate change. If we add some of the projected rates of climate change into this graph the levels of loss are likely to become catastrophically high.

The high level of current losses results from what I will call the adaptation deficit. Why are weather related losses growing so rapidly? There are a number of possible explanations. (White et al., 2001). Could it be that we have insufficient knowledge of the behaviour of the climate system and that the management of weather hazards continues to be flawed by significant

areas of ignorance? Scientific understanding of the processes generating natural extremes has expanded considerably in recent decades, and in many cases of atmospheric hazards, forecasting and warning capacity has improved dramatically. This accounts in large part for the reduction in the level of mortality from extreme climate-related events. Knowledge of the probability and potential magnitude of hazard events has also increased. White and his colleagues conclude that lack of scientific knowledge is not a major cause for the rise in losses.

Perhaps then the available knowledge is not used or not used effectively? There is more evidence to support this explanation. In developing countries especially, weather-related disasters continue to take people by surprise. Emergency responses are apparently improving, but longer-term programmes to reduce vulnerability through poverty reduction and related measures are slow to take off. There also might be a time lag. The initial expectations of the UN International Decade for Natural Disaster Reduction



**FIGURE 1**

Economic and insured losses during 1950-2003 with trends. The chart presents the economic losses and insured losses – adjusted to present values. The trend curves verify the increase in catastrophe losses since 1950. *Source: Munich Re (2004)*

(1990-1999) were that damage could be reduced by 50% by the effective use of knowledge and forecasting. Unfortunately these predictions proved to be far too optimistic. There is no doubt that more scientific knowledge would be helpful, especially the designation of hazards zones as a basis for the deployment of adaptation measures. There is no doubt that the knowledge that exists could be used more effectively, and that more timely action could bring more rapid results. While more and better knowledge, more effectively used could help, it has not so far proved sufficient to offset the growth in vulnerability and damage potential resulting from the growth of population, the increase of material wealth in some places, and the persistence of poverty elsewhere, and the expansion of human settlements and populations into high hazard zones. The adaptation deficit is increasing and is set to get larger with climate change. What seems to be needed is a much more effective process of adaptation (both Type I and Type II) that uses both structural and non-structural measures, and includes land-use planning, building codes are standards, insurance and where necessary policy innovations to bring losses under control.

#### **4. The Role of the Climate Convention (UNFCCC)**

Can the Climate Convention bring success where the UN Decade for Natural Disaster Reduction, and the efforts of many governments, development assistance agencies and humanitarian relief organizations have so far failed? If the Climate Convention is to help, the concentration on the “pollutionst” perspective and on Type II Adaptation will have to be augmented by the development view and take into consideration the need for Type I adaptation to address the current adaptation deficit.

There are indeed indications that this process is already underway, for example, as noted previously, in the creation of funds to assist in meeting the costs of adaptation. While these funds are directed at anthropogenic climate change or Type II Adaptation and not specifically at the current adaptation deficit, the operational guidelines being developed for the funds make it clear that their use is to be country driven, and “mainstreamed” or integrated into the national development process. Clearly Type I and Type II Adaptation need to be brought together. But as we have seen Type I Adaptation is not working very well. This is leading some to suggest that adaptation promoted and supported through the Convention must be something new, and stronger, and better. Perhaps this could be facilitated by the development of

a new legal instrument for adaptation which might become an Adaptation Protocol? My view of this is that before serious discussions or negotiations on such a topic are started it would be good to hear from the science and expert communities about the potential role of such a Protocol in promoting the adaptation that is needed. At the moment we have little idea of how the objective of an Adaptation Protocol might be specified, and what it might contain.

How might the international science and expert communities be asked to contribute? Some appropriate process has to be developed and put into operation. It is easier to suggest what is not likely to work. The organization of workshops under the Convention process has been one much used method of getting expert input. In my view this rarely works well because the time is too short and the workshop syntheses and reports have rarely produced truly helpful results. Another route is to use the IPCC, either the periodic Assessments or in the preparation of a Special Report. The deficiencies of this approach include the great length of time between IPCC Assessments, (the Fourth Assessment is not due till 2007), and the restriction that the IPCC limits its Assessments to the peer reviewed scientific literature, perhaps extended to include some informal folk or traditional knowledge. Whereas what is needed is creativity to develop new ideas and new options for the way in which adaptation might be facilitated. In the final section of the paper I have a few questions that could be directed to a group of scientists and experts especially selected to work for the necessary period of time on the idea of the potential contents of an Adaptation Protocol. Only when we have a better sense of what a Protocol might achieve does it make sense to start serious discussions within the established institutions of the Convention process.

## **5. Mitigation and Adaptation Compared**

The reduction of greenhouse gas emissions has been the focus of attention in the Convention Process, and a coherent regime has been created for mitigation. There is a clear objective in Article 2 which calls for the stabilization of greenhouse gas concentrations. There is no similar stated objective for adaptation. What is meant by mitigation is clearly understood. By contrast adaptation means too many unclear things. There is no formal definition of adaptation in the Convention. There is a mitigation baseline. The year 1990 has been chosen as the point in time against which to measure

changes. There is no adaptation baseline or discussion on what it might be and how it might be measured. There are agreed targets and schedules for emission reductions. There are no targets and schedules for adaptation. Mitigation has a clear funding regime in the Clean Development Mechanism. Adaptation can be supported from several funds in principle, but these are funds based on voluntary contributions, and are not linked to any measure of progress on adaptation. Mitigation has a legal instrument in the form of the Kyoto Protocol which clearly establishes a mitigation regime and points the way forward. We are far from having a clear adaptation regime.

## **6. Towards an Adaptation Regime**

It is not yet clear that an Adaptation Protocol could deliver the more effective adaptation that is required. (After all the Kyoto Protocol is not yet delivering mitigation). But it is clear that more needs to be done to create a more coherent and effective adaptation regime. Perhaps the need that is most recognized now is captured in the word “mainstreaming”. This means that ways must be found to integrate climate change risks into development activities. National governments, planning and development agencies, ministries charged with management tasks in agriculture, water, forests, environment, physical planning, coastal development, health and others, should to begin to consider how climate change risks will affect their policies, plans, and projects, and programmes. Bilateral and multilateral development assistance agencies and banks should be prepared to help in this process. Whatever is done under the convention should be integrated into present efforts, or in other words Type I and Type II adaptation need to be brought together. The ideas under development at the World Bank for the application of a climate change screening tool and climate risk assessment are examples of what might be done (Burton and van Aalst, 2004).

As part of the “mainstreaming” process, some serious thought should be given to the development of a more practical and operational view of adaptation. How is it to be defined and measured? Can the objectives of adaptation be specified in such a way that progress can be assessed? Does it make sense to formulate targets for adaptation? The International Decade for Natural Disaster Reduction (1990-1999) wanted to reduce the costs of natural disasters by 50%. But they have continued to increase. Can linking climate change risks and the Climate Convention process with disaster mitigation help development and reduce poverty?



Most climate-related losses are not insured. People and nations suffer the losses and have to rely on their own resources and humanitarian assistance to attempt to recover. They can also borrow money for reconstruction. The private insurance industry is generally not expanding its services in this area and reinsurance companies are concerned about increased exposure to catastrophic losses. Could some new provision be made for insurance under the Climate Convention that would help to spread losses, ensure a safer economic climate for investment, and at the same time promote effective adaptation policies? Could such a plan, organized at an international level, and involving public-private partnerships be an attractive way of addressing the need for more adaptation? Some experiments that are being tried in the areas of earthquake insurance and weather derivatives show that some people and agencies at least are awake to the possibilities.

Let us determine that the work of this conference, and the messages we send out from Yunnan, will say clearly to people at least four things:

- That there is an unacceptably large and growing adaptation deficit.
- That we can get on the right track and begin to address the deficit more effectively by combining the Climate Convention work with development process and mainstreaming climate risk.
- That by developing a more coherent and operational adaptation regime we can have more confidence that the efforts we collectively make will be rewarded with success.
- That future work on adaptation should be done in the context of applications, which include climate risk assessment. This experience should be monitored and evaluated so that a library of knowledge base of best or good practice can be built up.

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