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Costs, benefits and opportunities for adaptation under different drivers of climate change, including the relationship between adaptation and mitigation

Canada, Japan, New Zealand, Norway, and the United States are pleased to make this submission on the costs, benefits and opportunities for adaptation under different drivers of climate change impacts, including the relationship between adaptation and mitigation under ADP workstream 1, as invited in FCCC/ADP/2013/L.2.

In discussing this topic, it is important for Parties to draw from previous relevant work under the Convention, such as findings of the Working Group II contribution to the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report; the Special Report – Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation of the Intergovernmental Panel on Climate Change (SREX); and the Nairobi Work Programme's 'Assessing the costs and benefits of adaptation options: An overview of approaches'.

In addition, we believe that future discussions of this topic would benefit greatly from the findings of the Working Group II contribution to the IPCC Fifth Assessment Report, including the chapters on the Economics of Adaptation (Chapter 17) and on Climate-Resilient Pathways: Adaptation, Mitigation and Sustainable Development (Chapter 20), when they are released in April 2014.

In this submission, we maintain that:

- Adaptation can reduce risks posed by current and future climate conditions and therefore help avoid the costs of the impacts of climate change.

- Current efforts to estimate global adaptation costs are still in the early stages of development and face a number of serious challenges.

- Since adaptation needs and actions vary location by location, decisions about adaptation are best informed by analyses of costs and benefits at the local, rather than the global, level.

- The role of non-climate change-related drivers will heavily influence any cost projections of adaptation.

- All countries need to continue to improve their understanding of the costs and benefits of adaptation at the local level so that they can make more informed decisions to improve their climate resilience.

I. Understanding costs, benefits and opportunities for adaptation at the national and sub-national level is important

Global mitigation efforts will influence the rate of climate change, and hence how much and when we need to adapt. Even with strong mitigation action by all major emitters, climate change is and will continue to impact all countries. All countries, therefore, need to prepare for the unavoidable impacts of climate change that we are projected to face based on current scientific evidence, and to enhance resilience in the face of future uncertainties.

Adaptation costs are the costs for planning, preparing for, facilitating, and implementing adaptation measures, while adaptation benefits are the avoided damage costs or the accrued benefits following the adoption and implementation of adaptation measures (IPCC AR4, 2007). Adaptation actions whose benefits are greater than the costs can help protect hard-won investments over recent decades and enable countries to continue to grow and develop. This is particularly important for certain developing countries that are especially vulnerable to climate change due to their geographic exposure, limited resources, and reliance on climate sensitive sectors such as agriculture.

If the objective is to inform pragmatic adaptation action, efforts to project the costs and benefits of adaptation must be framed in the local rather than global context. Adaptation needs and actions will vary from location to location. Understanding the costs, benefits and opportunities for adaptation at the national and sub-national level is therefore important for policymakers as they make decisions about how and when to adapt to the impacts of climate change, including slow onset events like sea level rise, in the near, medium and long-term. Economic analyses of different adaptation options, particularly when conducted at the national and sub-national level, can enable more informed decisions on how best to protect and enable growth in our changing climate.

II. The challenges of a global costing approach

While global estimates of adaptation costs over the next several decades can help make the case for mitigation action as well as inform the scope of adaptation action in the near, medium, and long-term, they are still in the early stages of development and face a number of challenges. It is difficult if not impossible to compare existing global, top-down estimates, such as those made by the World Bank (2010) and UNFCCC (2007). These studies vary in terms of methods employed, socio-economic and emissions scenarios used, sectoral coverage, purposes, and timeframes. They are based on assumptions about climate sensitivity as well as assumptions about future economic growth, population change, technological development, and infrastructure investments. The sensitivity of these assumptions can dramatically alter adaptation cost projections. Further compounding the uncertainties arising from these assumptions is the need to also select a discount rate to apply to these costs and benefits over the projection period. Existing methodologies to determine the costs of adaption are equally, if not more, compromised due to the difficulty of placing monetary values on non-market benefits (e.g. human health and life, environmental services).

In addition, global, top-down estimates, typically based on global datasets and projections, do not help policy- and decision-makers understand adaptation costs and benefits at the national and sub-national levels. This is because the costs and benefits of adaptation measures are location specific. Estimated costs and benefits of adaptation for the purposes of making decisions about when and how to adapt should, therefore, ideally be derived from local analyses, which use methodologies that are most appropriate for a given location and issue.

It is important to note that it is virtually impossible to aggregate estimates of local costs into a meaningful regional or global total, primarily because estimates of local costs use methodologies that are tailored for a given location and issue.

III. The Benefits and Opportunities of Adaptation

Experience so far has demonstrated that while adapting to a changing climate involves costs, initial levels of adaptation can be achieved at a low cost relative to the avoided cost of the impacts of climate change. The costs of disaster preparedness and risk management, for instance, can be far less than the costs of disaster relief and recovery. The World Bank and U.S. Geological Survey calculated that global economic losses from natural disasters in the 1990s could have been reduced by $280 billion if just one-seventh that amount were invested in preparedness and risk management efforts.

Adaptation actions can help reduce risks posed by current climate variability. Both developed and developing countries currently face adaptation deficits, and more action can be taken to adequately adapt *existing* climate risks. At the same time, adaptation actions can reduce vulnerability to future climate risks, including risks associated with more frequent and/or intense extremes, like heat waves, droughts and floods, and with slow onset impacts, like sea level rise and melting glaciers.

Adaptation and sustainable development are and should be inextricably linked.

On the one hand, adaptation is essential for sustainable development. In practice, adaptation is an extension of good development practice and reduces vulnerability, including by promoting growth and diversification of economic activity, investing in health and education, enhancing resilience to disasters and improving disaster management, and promoting risk-pooling. The World Bank's report on 'The Economics of Adaptation to Climate Change' points to the importance of incorporating adaptation into development through considering climate change in the design and location of new infrastructure. City planners and coastal communities, for example, can strengthen their resilience to climate change by building infrastructure above flood zones and set back from potential sea level rise. In addition, adaptation actions can help protect climate sensitive sectors, like agriculture. Farmers, for example, can use climate information to make better decisions about what to plant and when to plant in the face of shifting rainfall patterns.

On the other hand, investments in basic development, such as poverty reduction, education, good governance, and land use planning, can go a long way toward reducing vulnerability and strengthen resilience to climate variability and change. As highlighted in the findings of the SREX, development practice, policy and outcomes are crucial in determining risk and that high exposure and vulnerability are generally the result of non-climate drivers, such as environmental degradation, unplanned urbanization in precarious areas, failures of governance, and scarcity of livelihood options for poor households and communities.

IV. Conclusion

While a number of economic analyses of adaptation are currently available, conceptual and technical difficulties still exist in projecting the global costs and benefits of adaptation. Estimates made at the global level, using top-down methods, are of relatively little use when it comes to informing the making of practical adaptation policy and funding decisions on the ground. To the extent possible, estimates should be made at the local level taking into account the vulnerability of each country.

There is no silver-bullet approach that a given country should take to adapt to climate change, but rather a suite of possibilities that needs to be considered. Each country needs to continue to

improve their understanding of the costs and benefits of adaptation so that they can make more informed decisions.

Sources

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