

## EXECUTIVE SUMMARY

### **“The Climate and Development Challenge for Latin America and the Caribbean: Options for Climate Resilient Low Carbon Development”**

Changes in climate during this century will have broad impacts on human activities and ecosystems. The likely consequences are of such magnitude that the simultaneous need to adapt to the new climate conditions and to reduce the carbon footprint to prevent further damage will likely become one of the main driving forces for the global community. Specifically, a rise of 2°C over the preindustrial level is now seen as increasingly likely, resulting in significant negative impacts on economic activities, social conditions and natural assets.

Latin America and the Caribbean (LAC) are particularly vulnerable to the observed and projected impacts of climate change because of its geographic location and reliance on natural resources for economic activities and livelihoods. Key impacts in the region by or about 2050 include the forecasted collapse of a significant portion of the coral biome in the Caribbean, disappearance of most glaciers under 5000 m in the Andes, the likelihood of some degree of savannization in the Amazon basin, reduction in agricultural yields of many staple crops, increased flooding and inundation of coastal zones, increased exposure to tropical diseases, destabilization of the hydrological cycle in major basins, and the intensification of extreme weather events.

Estimated annual damages in LAC caused by the physical impacts associated with a rise of 2°C over pre-industrial levels are estimated to be of the order of over \$100 billion, or about 2% of current GDP. Losses of this magnitude would limit development options as well as access to natural resources and ecosystem services. More worrisome is the fact that many of these changes are irreversible, committed, and therefore will continue to impact the region over the long term. Conversely, overall costs to adapt are estimated to be on the order of 0.2% of GDP for the region, or about 10% of the costs of physical impacts, indicating that adaptation is generally very cost-effective.

On the other hand, total LAC greenhouse gas (GHG) emissions for 2010 are estimated at 4.7 GtCO<sub>2</sub>e (11% of total global emissions), a decline of 11% since the start of the century, mainly induced by reductions in land use change related emissions and improvements in energy efficiency. This significant reduction has taken place simultaneously with an overall growth in regional GDP.

Globally, however, the increasingly severe impacts resulting from the current pace of GHG emissions will be unsustainable. While an international accord to reduce emissions of GHG still eludes the global community, the current path would lead to a future that must be avoided; most analyses are based on the assumption that actions will be taken in time to avert particularly dangerous impacts. To prevent further damages and avoid crossing biospheric tipping points, global CO<sub>2</sub> concentrations need to be kept at 450 ppm for which no more than 20 Giga-tons of CO<sub>2</sub>e can be released by 2050, equivalent to about 2 tons of CO<sub>2</sub>e per capita per year (2tpc).

To visualize future LAC emissions, and alternatives consistent with a 2tpc, IIASA's GEA "counterfactual" is used as the business as-usual (or BAU) scenario to 2050. While there are countless other scenarios, the IIASA uses a comprehensive data base with one of the best sets of information for LAC. This scenario also fits into a global view of how future emissions will evolve over time.

Under the BAU, the region will reach close to 7GtCO<sub>2</sub>e of total emissions and 9.3 tCO<sub>2</sub>e per capita by 2050. The reductions anticipated in land use change emissions will be more than compensated by increases in emissions from other sectors. While the overall share of agriculture is projected to remain roughly constant, the shares of transport and power generation are anticipated, under the BAU, to grow by 50% to an overall contribution of about 2 Gt per year.

Bending the emissions curve to bring the projected regional emissions per capita level from over 9t to 2t in 2050 represents a significant change of trajectory. To visualize how this can be done, a mapping of potential alternative emissions pathways has been made. This report concludes that a pathway that promotes land-use policies stringent enough to achieve zero net emissions from deforestation and other land-use practices by 2030, combined with efforts to eliminate the carbon footprint in the power and transport sectors by 2050 (along with other actions), would achieve the 2tpc target. The additional costs required by these actions above and beyond expected investment and expenditures required under the BAU scenario, are estimated to be of about \$110billion/year (with an average net abatement cost by 2050 of \$20/tCO<sub>2</sub>e). This would represent about 0.6 % of LAC's GDP in 2050.

