
# "Climate Change Mitigation and Sustainable Development: Lessons for Latin America and the Caribbean"

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# Lessons from the IPCC work …

- Providing policy-relevant, but not policy-prescriptive, scientific results
- Scientific excellence
- Integrating economic, social (including equity) and environmental aspects
- Mobilising the world scientific community
- Assessing regional, sub-regional and local literature
- Improving the participation of experts from developing countries in the work of the IPCC
- Scientific integration (Cross-Cutting Themes)
- Human dimension

# Presentation Structure

- **Main findings of the IPCC *Fourth Assessment Report (AR4) – WG III***
- **Expected results of the IPCC *Fifth Assessment Report (AR5) - WG III***
- **Climate Change response strategies and sustainable development in the LAC context**

# IPCC WG III AR4

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# Key Findings of IPCC WG III AR4

- GHG Emission Trends
- Climate Change Mitigation in the Short and Medium Term
- Climate Change Mitigation in the Long Term
- Policies, Measures and Instruments for Climate Change Mitigation
- Sustainable Development and Climate Change Mitigation

# Trends of GHG Emissions

- Global anthropogenic GHG emissions have grown since pre-industrial times, with an increase of 70% between 1970 and 2004, and carbon dioxide ($CO_2$) as the largest contributor
- $CO_2$ emissions grew between 1970 and 2004 by about 80% and represented 77% of total anthropogenic GHG emissions in 2004
- $CO_2$ emissions between 2000 and 2030 from energy use are projected to grow by 40% to 110%

# Climate Change Mitigation in the Short and Medium Term

- **Substantial economic potential for the mitigation of global GHG emissions, including opportunities with net negative costs**
- **No single sector or technology can address the entire mitigation challenge; and all sectors and regions have the potential to contribute**
- **Mitigation options, including energy efficiency & renewable energy**
- **Co-benefits (e.g. health, energy security, among others) would further enhance cost savings**
- **A multi-gas approach and the inclusion of carbon sinks generally reduces costs substantially compared to $CO_2$ emission abatement only**

# Climate Change Mitigation in the Long Term

- To stabilize the concentration of GHG in the atmosphere, emissions would need to peak and decline thereafter
- The lower the stabilization level, the more quickly this peak and decline would need to occur
- Global emissions should peak no later than 2015, if temperature increase is to be limited to 2.0 - 2.4ºC. That is only five years from now!

# Policies, Measures and Instruments for Climate Change Mitigation

- Multitude of policy instruments that are available to governments
- The effectiveness of policies depends on national circumstances, their design, interaction, stringency and implementation
- Advantages and disadvantages for any given instrument
- Barriers to mitigation options vary by country and sector, and can be related to financial, technological, institutional, informational and behavioural aspects
- Many options for international cooperation

# Response Strategies and Sustainable Development

- Opportunities for integrating economic, social (including equity) and environmental aspects
- Potential for realising synergies and avoiding conflicts with other dimensions of sustainable development
- Making development more sustainable can enhance both mitigative and adaptive capacity, and reduce emissions and vulnerability to climate change
- Adaptation, mitigation and sustainable development as a cross-cutting theme (CCT) for AR5

# IPCC WG III AR5 Cycle

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# Special Report on Renewable Energy Sources and Climate Change Mitigation (SRREN) - Outline

- 1. Renewable Energy and Climate Change
- 2. Bioenergy
- 3. Direct Solar Energy
- 4. Geothermal Energy
- 5. Hydropower
- 6. Ocean Energy
- 7. Wind Energy

**Technology Chapters**

- 8. Integration of Renewable Energy into Present and Future Energy Systems
- 9. Renewable Energy in the Context of Sustainable Development
- 10. Mitigation Potential and Costs
- 11. Policy, Financing and Implementation

**Integrative Chapters**

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# IPCC WG III AR5: Assessment Challenges

- More emphasis on the socioeconomic dimension of climate change mitigation
- Adaptation, mitigation and sustainable development (Cross-Cutting Theme for AR5)
- Exploring the costs, benefits and risks of different mitigation options (including renewable energy)
- Assessing a range of scenarios and their technical and institutional requirements
- More realistic policy cases through consideration of fragmented markets and technology failures (e.g. constraints for renewable energy technologies)

# IPCC AR5 WG III Outline

| | |
|---|---|
| **I: Introduction** | 1. Introductory Chapter |
| **II: Framing Issues** | 2. Integrated Risk and Uncertainty Assessment of Climate Change Response Policies<br>3. Social, Economic and Ethical Concepts and Methods<br>4. Sustainable Development and Equity |
| **III: Pathways for Mitigating Climate Change** | 5. Drivers, Trends and Mitigation<br>6. Assessing Transformation Pathways<br>7. Energy Systems<br>8. Transport<br>9. Buildings<br>10. Industry<br>11. Agriculture, Forestry and Other Land Use (AFOLU)<br>12. Human Settlements, Infrastructure and Spatial Planning |
| **IV: Assessment of Policies, Institutions and Finance** | 13. International Cooperation: Agreements and Instruments<br>14. Regional Development and Cooperation<br>15. National and Sub-national Policies and Institutions<br>16. Cross-cutting Investment and Finance Issues |

# Assessing Scenarios. Lessons for AR5

- Scenarios as key components for consistency among IPCC Working Groups.
- Catalyzing role of the IPCC
- Integrated Assessment Models (IAMs) allow for modelling different mitigation options
- Technology experts contribute to more realistic representation of mitigation options in models, with a long-term perspective
- Key role of scenario assessment in Chapter 6 of IPCC WG III AR5

# Key Messages in the LAC Context …

- Adaptation, mitigation and sustainable development
- Heterogeneous context
- Urbanization (79% of regional population)
- Land Use Change
- Energy technologies
- Opportunities, barriers & costs
- Options for cooperation

# Composition of GHG Emissions in LAC

| Sources of emissions | LAC % | World Total % |
|---|---|---|
| Energy Sector - $CO_2$ | 26 | **59** |
| Land Use Change – $CO_2$ | **46** | 18 |
| Agriculture / Wastes – non $CO_2$ GHGs | 28 | 23 |
| Total | 100 | 100 |

**Source: De la Torre, Fajnzylber & Nash (2009).**

# Energy Consumption by Sources in 2009 (%)

| Sources | LAC | World |
|---|---|---|
| Oil | 47 | 35 |
| Natural Gas | 25 | 24 |
| Coal | **4** | **29** |
| Nuclear energy | 1 | 6 |
| Hydro-electricity | **23** | **6** |
| Total | 100 | 100 |

***Source: BP Statistical Review of World Energy, June 2010.***

# Multi-GHG Approach in LAC

- **Energy related $CO_2$ emissions: LAC has relatively low levels of emissions per GDP unit and per capita, in comparison to other regions**

- **Total GHG emissions: LAC accounts for 12% of world GHG emissions, above the world average in per capita terms & per GDP unit.**

***See: De la Torre, Fajnzylber & Nash (2009).***

# Opportunities & Challenges in LAC Electricity Sector

- There is a new tendency for carbon intensity of electricity in LAC to increase, due to the growing use of natural gas and coal.
- Investments in energy efficiency, cleaner transportation and renewable energy are identified as key areas for CC mitigation in urban LAC.

# CC Mitigation Technologies in the LAC heterogeneous context

**Great differences among LAC countries regarding:**

- ✓ % of emission from land use change (LUC) and energy sector
- ✓Per capita emissions
- ✓Emissions per GDP unit

# Renewable Energy in LAC

- 23% of total energy supply (2007).
- Large potential.