United Nations Framework Convention on Climate Change

CGE TRAINING MATERIALS - MITIGATION ASSESSMENT

MODULE F

Reporting Mitigation in National Communications and Biennial Update Reports

Module Objectives and Expectations

1. **Objective:** Provide participants with an overview of how to report on Greenhouse gas (GHG) mitigation in National Communications and biennial reports including:
   - Reporting commitments
   - Suggestions for reporting formats and approaches.
2. **Expectations:** Participants will have a broad but sound understanding of how to report on GHG mitigation in National Communications and biennial reports.

Module Outline

1. Reporting Commitments and Guidelines
2. Suggestions for Reporting (National Communications)

MODULE F1

Reporting Commitments and Guidelines

Reporting Commitments - Convention

- Article 4.1 of the Convention requires each Party to:
  - Formulate, implement, publish and regularly update national or, where appropriate, regional programmes containing measures to mitigate climate change
- Article 12.1 the Convention requires each Party to communicate:
  - A general description of steps taken or envisaged by the Party to implement the Convention
  - Any other information that the Party considers relevant to the achievement of the objectives of the Convention.

National Communications and Biennial Reports

- National communications:
  - Guidelines for Non-Annex I countries adopted in 2002 (decision 17/CP.8)
- Biennial reports:
  - Guidelines for Non-Annex I countries adopted in 2011 (decision 2/CP.17, Annex III).

Guidelines for National Communications Objectives

- **Principal objectives**:
  - To assist non-Annex (NAI) Parties in meeting their reporting requirements
  - *To encourage the presentation of information in a consistent, transparent, comparable and flexible manner*
  - To facilitate the presentation of information on support required for the preparation of national communications
  - To serve as policy guidance to the operating entity of the financial mechanism of the Convention, for the timely provision of financial support needed by NAI Parties
  - To ensure that the Conference of Parties (COP) has sufficient information to carry out its responsibility for assessing the implementation of the Convention by Parties.

Guidelines for National Communications - Scope

Scope:

- National greenhouse gas (GHG) Inventory
- A general description of steps taken or envisaged by the Party to implement the Convention
- Any other information that the Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its communication.

Guidelines – National Circumstances

- NAI Parties should provide a description of their national and regional development priorities, objectives and circumstances, on the basis of which they will address climate change (para.3 of annex to decision 17/CP.8)
- Description of existing institutional arrangements relevant to the preparation of their national communications on a continuous basis (para.5)

Guidelines – General Description of Steps

- Each NAI Party shall…communicate to the COP a general description of steps taken or envisaged by the Party to implement the Convention, taking into account its common but differentiated responsibilities and its specific national and regional development priorities, objectives and circumstances (para.25)
- NAI Parties may provide information on programmes containing measures to mitigate climate change by addressing anthropogenic emission by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol... (para.26).

Guidelines (cont.) – Mitigation Measures

- Each Party *shall* provide information on … steps taken or envisaged for formulating, implementing, publishing and regularly updating national and, where appropriate, regional programmes containing measures to mitigate climate change…and any other information they consider to be relevant…(para.37)

Guidelines (cont.) - Methodological Approaches

- Based on national circumstances, NAI Parties are encouraged to use whatever methods are available and appropriate in order to formulate and prioritize programmes containing measures to mitigate climate change... (para.38)
- In their assessment of these programmes on various sectors of the economy, NAI Parties may use the appropriate technical resources (para.39)

Guidelines for Preparation of Biennial Update Reports by Non-Annex I Parties

- **Objectives** include:
  - *To encourage the presentation of information in a consistent, transparent, complete, accurate and timely manner, taking into account specific national and domestic circumstances*;
  - **To enable enhanced reporting by NAI Parties on mitigation actions and their effects, needs and support received, in accordance with their national circumstances, capacities and respective capabilities, and the availability of support**;
  - To provide policy guidance to an operating entity of the financial mechanism for the timely provision of financial support needed by developing country Parties in order to meet the agreed full costs of preparing their biennial update reports;
  - To facilitate the presentation of information on finance, technology and capacity-building support needed and received, including for the preparation of biennial update reports.

Biennial Reports - Scope

- Provide an update to the most recently submitted national communication in the following areas:
  - National circumstances and institutional arrangements
  - National GHG inventory
  - **Information on mitigation actions and their effects, including associated methodologies and assumptions**
  - Constraints and gaps, and related financial, technical and capacity needs, including a description of support needed and received
  - Information on the level of support received to enable the preparation and submission of biennial update reports
  - Information on domestic measurement reporting and verification
  - Any other information the Party considers relevant to achieve objectives of the Convention.

Biennial Reports – Mitigation Reporting

- For each mitigation action or group of mitigation actions…provide the following information to the extent possible:
  - Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators
  - Information on methodologies and assumptions
  - Objectives of the action and steps taken or envisaged to achieve that action
  - Information on the progress of implementation of the mitigation actions and the underlying steps taken or envisaged, and the results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emissions reductions, to the extent possible
  - Information on international market mechanisms.
- Parties should provide information on the description of domestic measurement, reporting and verification arrangements.

Timing of Submission of Reporting

- NAI Parties shall submit:
  - National communications every four years and,
  - Biennial update reports every two years, either as:
    - A summary of parts of their national communication in the year when national communication is submitted, or,
    - A stand-alone update report
- NAI Parties, consistent with their capabilities and level of support provided for reporting, should submit their first biennial update report by December 2014.
- Least developed country (LDC) Parties and small island developing States may submit biennial update reports at their discretion.

Conclusion – Reporting

- Mitigation assessments and reporting form an important part of Parties' national communications on climate change
- They are read both by the international scientific community and by national and international policy makers
- They therefore need both a high level of scientific rigor and a high level of clarity and comprehensibility.

MODULE F2

Suggestions for Reporting (National Communications)

General Reporting Suggestions

- **National communications:**
  - Summarize the main findings of mitigation assessment, e.g. by scenario, sector, and strategy
  - Present mitigation options considered, and how national objectives and circumstance were taken into account
  - Describe overall assessment methodology
  - Explain scenario definitions, particularly how reference or business as usual (BAU) scenario is defined
  - Discuss the uncertainties associated with findings, along with suggestions for future assessments.
- **Biennial reports:**
  - Draw upon best practices in national communications and other published national reports and analyses.

Mitigation Reporting – Example Headings

- Introduction and context
- Description of baseline and mitigation scenarios
  - Methodologies, data sources, assumptions, results (energy, GHG emissions, other impacts)
- Mitigation initiatives planned or underway, including supportive legislation and programmes
- Non-quantified/assessed strategies such as awareness-raising efforts.

Scenario Definitions, Data and Assumptions

- **Reporting on scenarios should describe:**
  - How the baseline scenario(s) was framed (e.g. inclusion or exclusion of recent policies)
  - How the mitigation scenario(s) was framed (e.g. technology focused, examining all measures up to some specified cost level, etc.)
  - Any sensitivity analyses that were conducted.
- **Reporting on data and assumptions can include:**
  - Macroeconomic and demographic variables (population, GDP, urbanization, etc.)
  - Fuel price assumptions
  - Discount rates
  - Activity levels and energy intensities (describe base year and projections)
  - Major assumptions in each sector
  - Factors and assumptions used in emissions calculations.
- **Supplementary documentation or reports may be appropriate for more detailed information.**

Key Assumptions for Scenario Projections: Example from Rwanda's 2nd National Communication

- Documentation of macroeconomic variables used in scenario analysis: annual growth rates and projections for baseline and mitigation scenarios.

Variable	2005	**2030 Baseline**	**2030 Mitigation**
Population (millions)	8 ,81	18,5	**16,3**
Annual rate of population growth	3 %	3 %	**2,5**
GDP per head	272 USD	1167 USD	**1862 USD**
Number of households (millions)	1,9	3,978	**3,522**
Family average size	4,6	4,6	**4**
Urbanization rate	17%	30%	**40%**

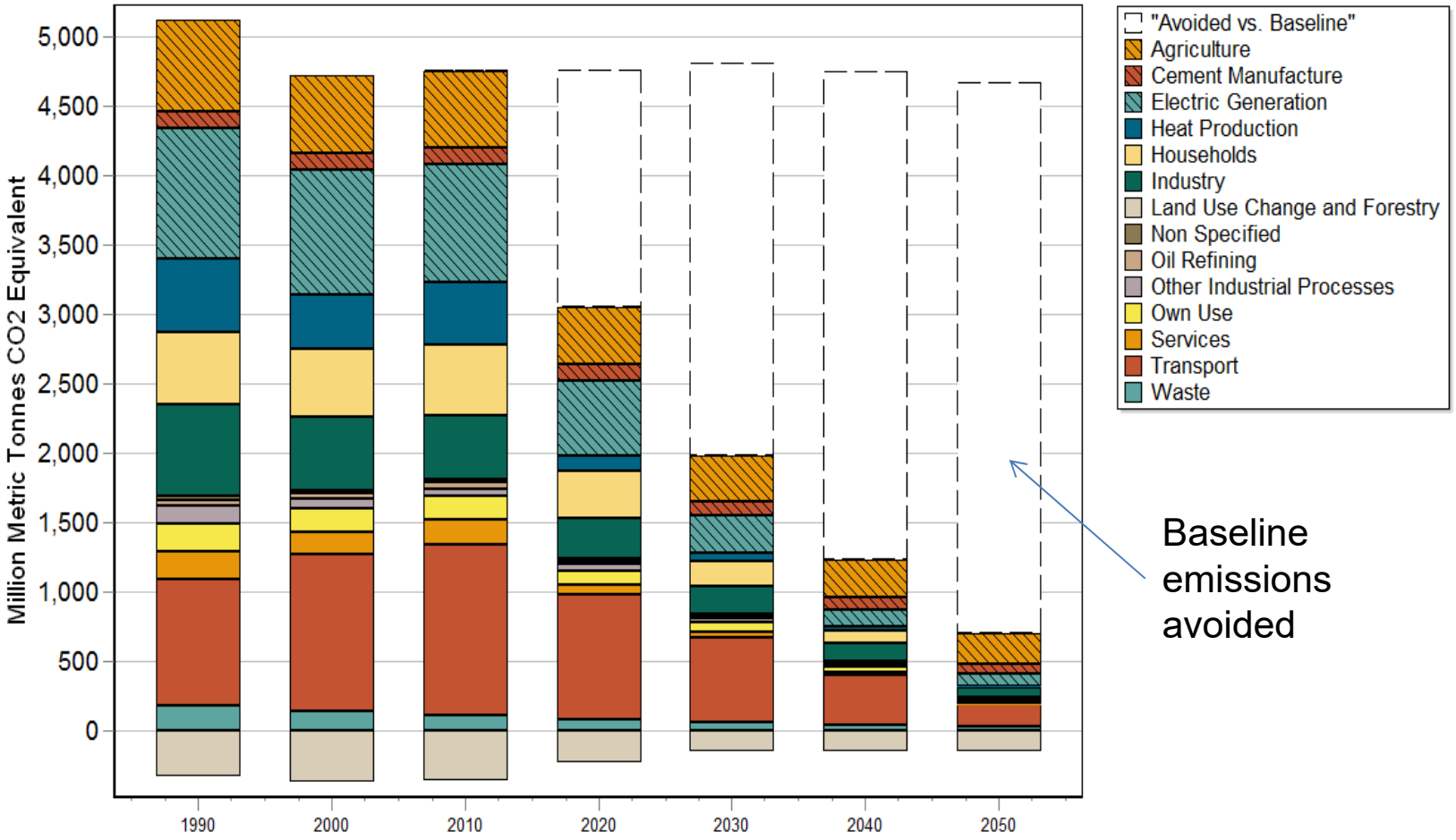
Suggestions for Reporting Quantitative Results

- Follow international scientific practices for documentation and referencing of data sources
- Specify units consistently, for example:
  - Expressing all GHG emissions results in metric tonnes of CO_2 equivalent (tCO_2eq) can simplify comparison across gases, sectors and countries
  - Use of standard energy units (e.g. GJ, GWh, TOE) can simplify understanding across national communications
- Back up charts with numeric tables for clarity.

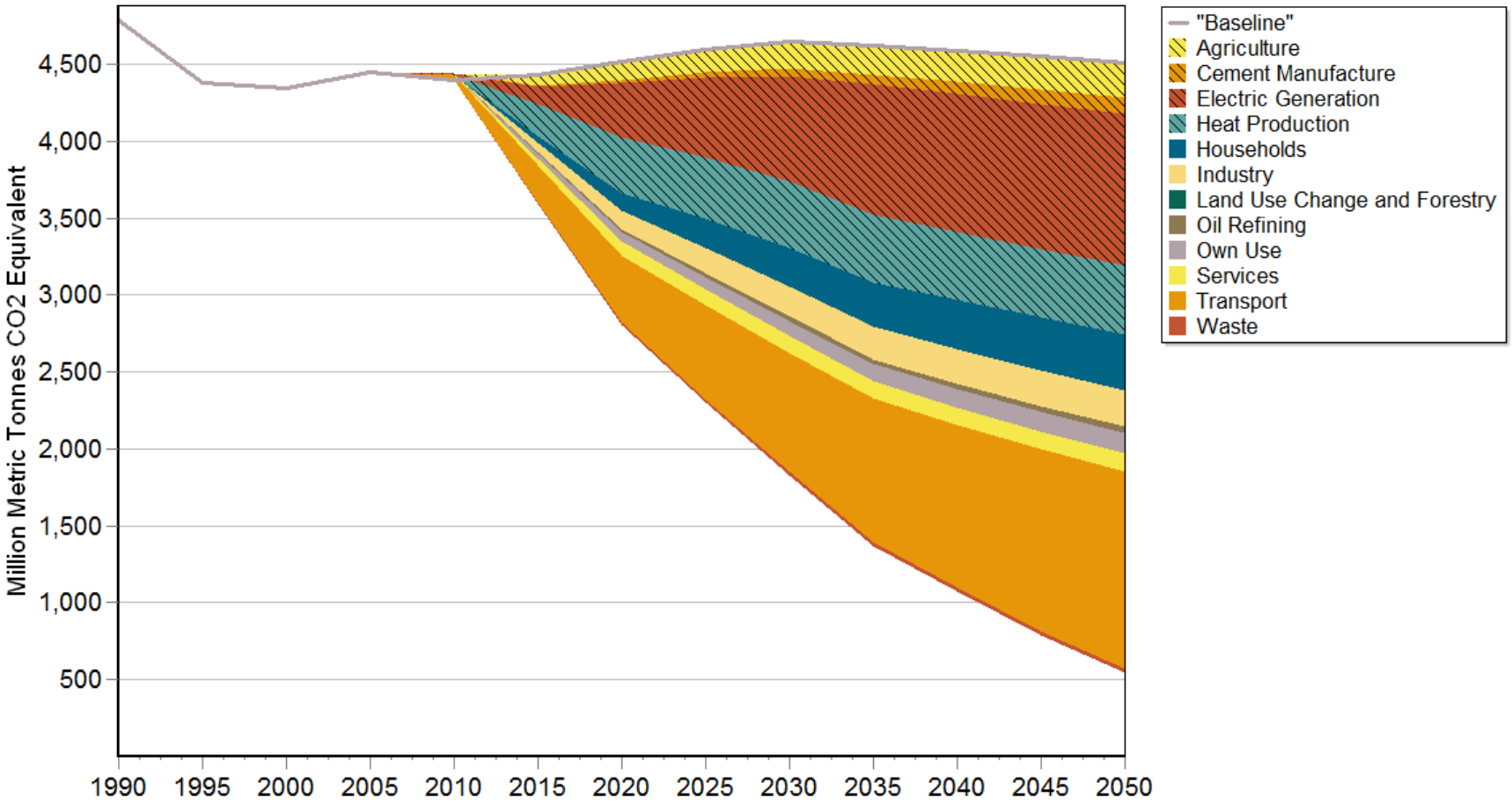
Options for Displaying Emissions Results

- Charts can provide important visual tools for conveying mitigation findings. Options include, among others:
- Charts for individual scenarios and indicators, e.g. baseline GHG emissions over time
  - Easiest to create and interpret
    - "Jaws/Wedge" charts
      - Enables presentation of baseline and mitigation scenario results, along with emissions reductions (by sector, strategy, or other category) in a single chart
    - "Waterfall" charts
      - Displays and explains incremental emissions benefits for individual strategies.

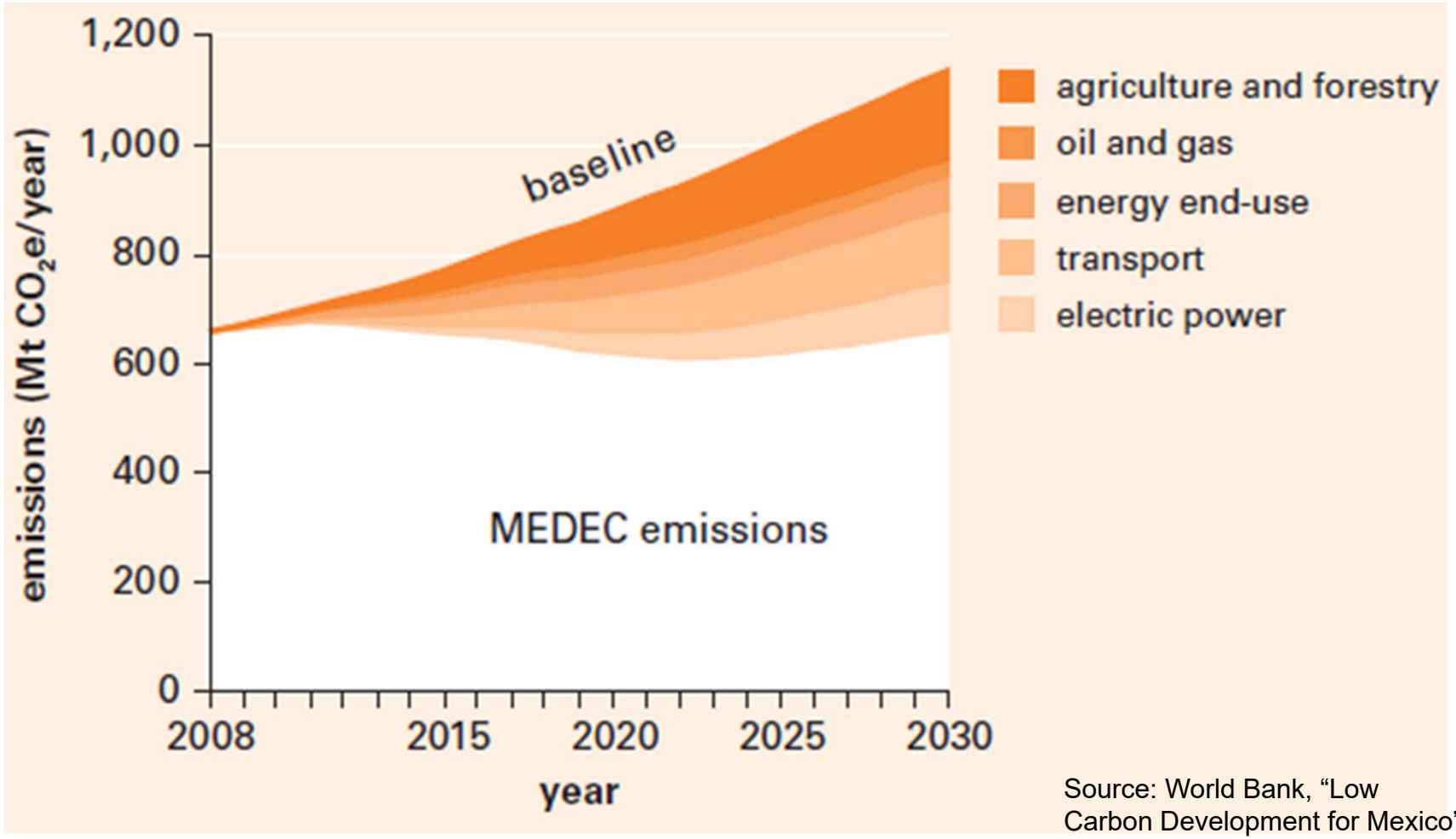
Example Chart: Emissions by Sector in a Mitigation Scenario and Emissions Avoided vs. a Baseline Scenario



Example of “Jaws/Wedge” Chart

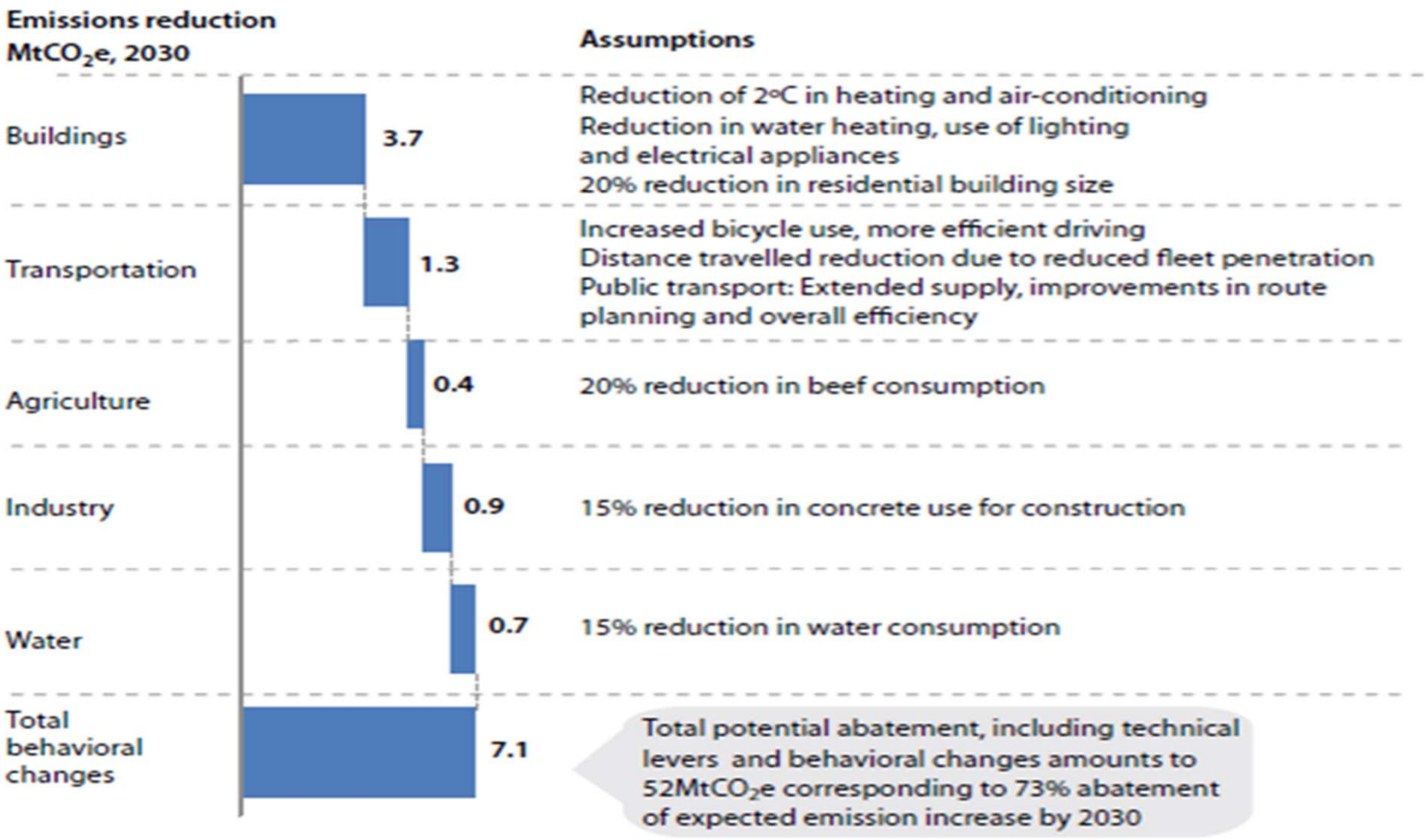


Example from Mexico's Low-Carbon Scenario: "Jaws/Wedge" Chart by Sector



Source: World Bank, "Low Carbon Development for Mexico"

Example of Waterfall Chart:
Effects of behavioural changes on GHG emissions



Example of Mitigation Options Considered

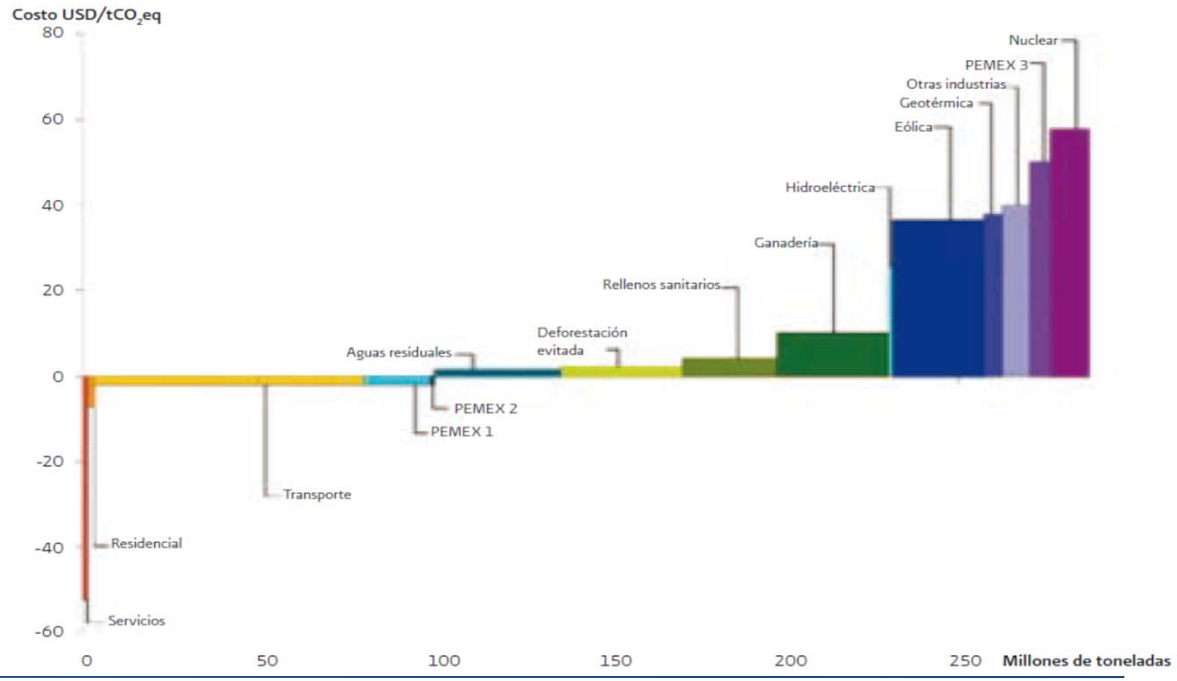
Sector	Potential Mitigation Options			
Energy	Implementation of RE for power generation	Implementation of EE in the industry, commercial and residential sector	Implementation of RE in the industrial, commercial and residential sector	Transportation - Hybrid (hydrogen, fuel cell) & electric vehicles, integrated public transportation system, bio fuels, low carbon petrol & diesel
LULUCF	Maintain existing forest cover	Reduce emission from forest and land use related activities	Where appropriate, to increase existing forest cover	
Waste	Encourage methane capture facilities at new sanitary landfills	Encourage palm oil millers to capture biogas for power	Encourage composting of organic waste, especially food	

Examples of Cost Tables and Curves

	Investment Cost (USD million)	Operational Cost (USD)	Total Cost (USD million)	Total Discounted Cost (10%) (USD million)	Cost (USD/Gg CO_2eq.)	Total Discounted Cost (15%) (USD million)	Cost (USD/Gg CO_2eq.)
Scenario A	1,854	370,909	2.22	2,658	693	2,537	661
Scenario B	2,083	416,741	2,50	3,624	672	3,288	610

Breakdown of costs for a mitigation option under two scenarios (2010-2030)

Marginal abatement cost curve example (2020)



Other Suggestions for Reporting in National Communications

- If assessed, present findings for:
  - Macroeconomic impacts of the mitigation scenarios on the wider economy
  - Other social and environmental indicators.
- Discuss barriers and needs:
  - Discuss any barriers to implementing the envisaged mitigation options and the types of policies (national and international) that could help implement the identified mitigation options
  - Identify capacity-building needs for the identification, evaluation and implementation of mitigation policies and measures
  - Identify long-term needs for education and building public awareness on climate change issues.

Excerpts from Mitigation Chapters

- Some national communications submitted to date include the following mitigation policies and measures:
- Iran:
  - Increase energy efficiency of end-use sectors (demand side) at the rate of 2% per year until 2025
  - Increase the share of compressed natural gas (CNG) in transport from 2.5% in 2007 to 25% in 2025 at the rate of 1.25% per year
  - Increase the share of natural gas in the industry sector from 59.4% in 2007 to 82% in 2025 at the constant rate of 1.8% per year (Iran).

Excerpts from Mitigation Chapters

Status of implementation of the some of the mitigation actions, South Africa

Potential mitigation actions	Status of implementation
Financial measures • **Imposition of carbon tax**	• Levy on electricity generated from fossil fuel already in place • Carbon tax on new vehicles already implemented • Universal carbon tax under consideration
Emissions trading	Discussion paper under development
Energy sector • **Support measures for mitigation actions in energy sector**	• Introduction of tax rebate for savings as a result of energy efficiency • Subsidy to promote installation of solar water heaters • Support for use of energy efficient lighting