

Modelling Energy System for Climate Policy

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Aims at strengthening the global response to the threat of climate change,

- **Holding increase in global average temperature well below 2°C (preferably < 1.5°C)**
 - **Increasing ability to adapt to adverse impacts of climate change**
 - **Making finance available**
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- All Parties take actions to contribute to the global response (NDCs with progression over time)
 - Developed country Parties shall provide financial resources to assist developing country Parties for mitigation and adaptation (communicate this information biennially)

Nationally Determined Contributions



Various Types of NDCs Submitted by Parties

Base Year Emission Targets

Fixed Emission Targets

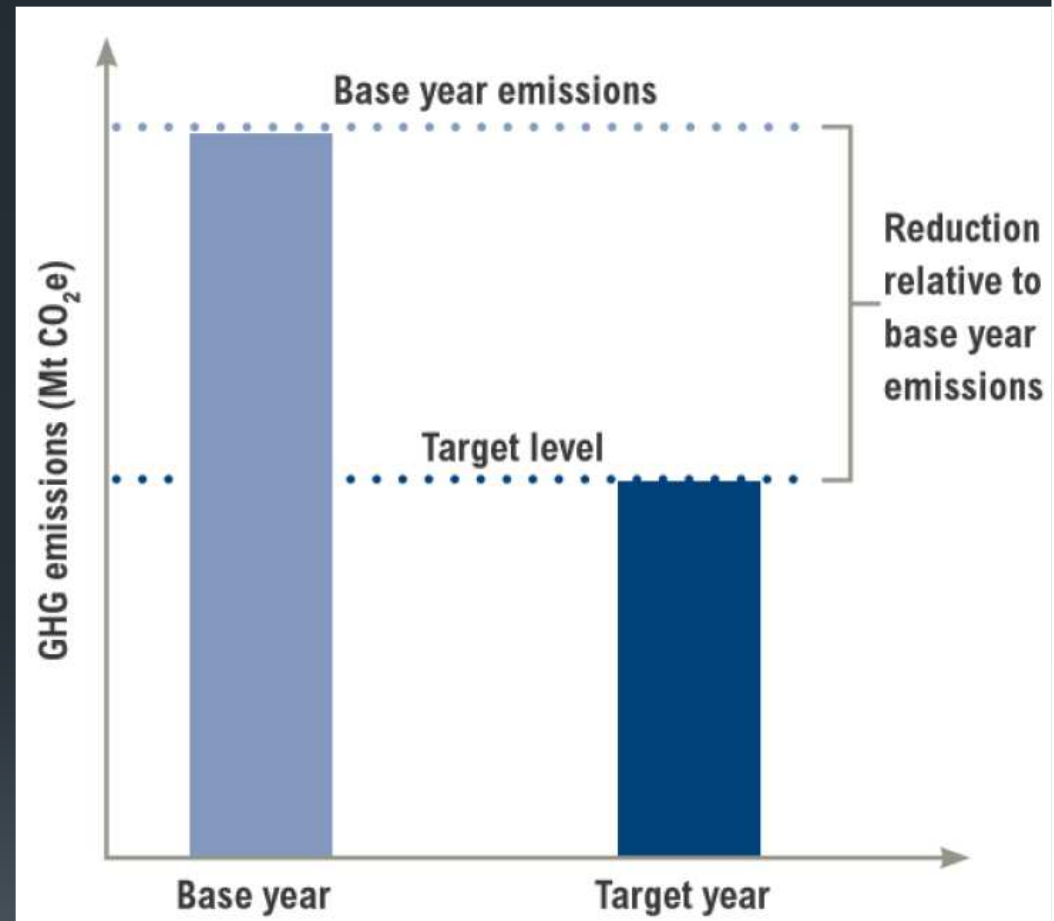
Intensity Targets

BAU Scenario NDCs

Trajectory Targets

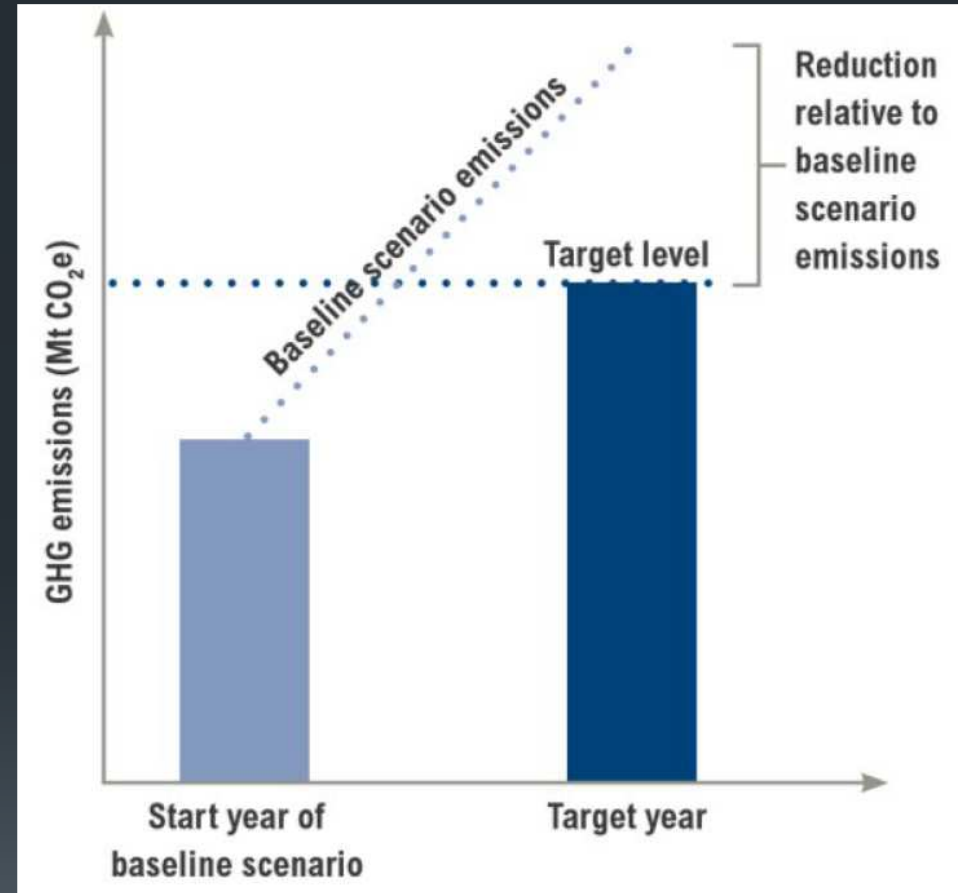
Base Year Emission Targets

- A commitment to reduce, or control the increase of, emissions by a specified quantity relative to a historical base year.
- Example: United States' pledge to reduce emissions 17% below 2005 levels by 2020 Emissions Historical base year



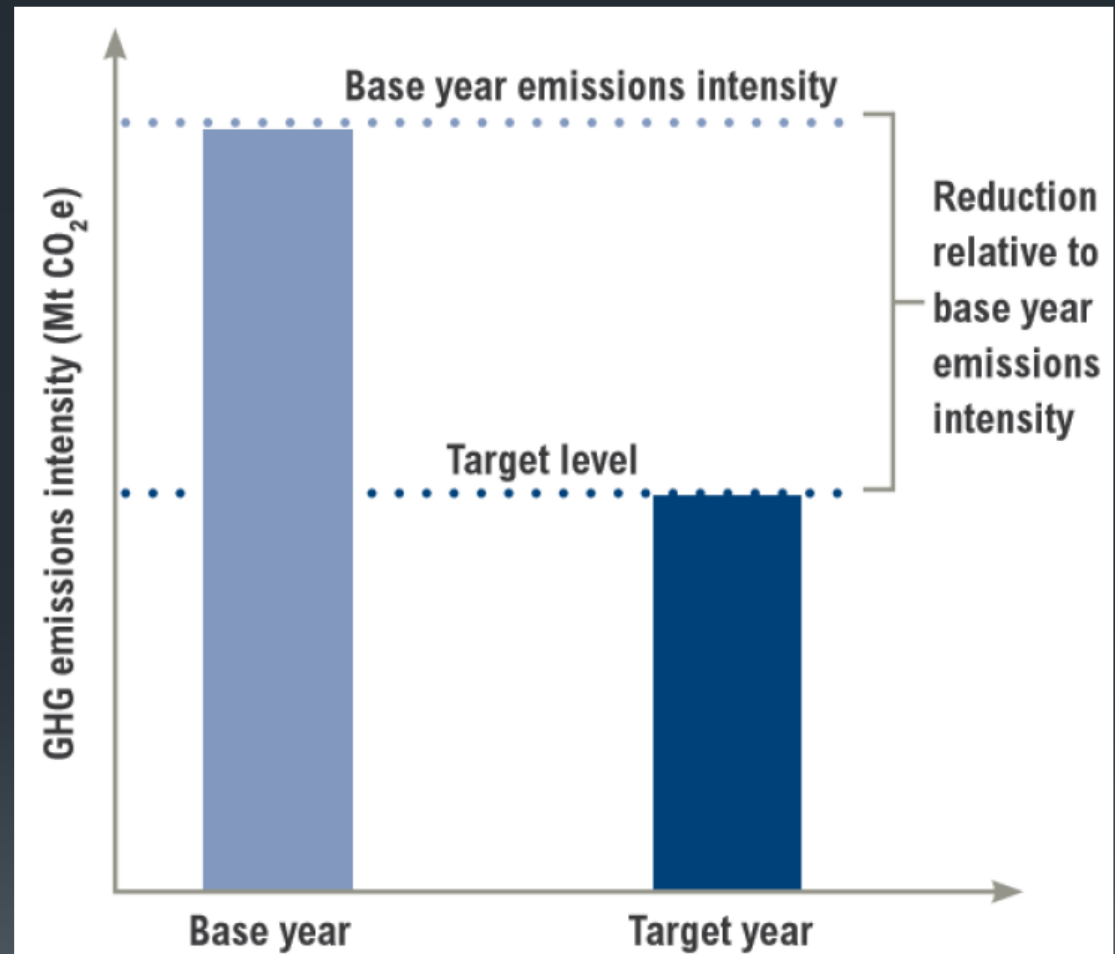
Baseline Scenario Targets

- A commitment to reduce emissions by a specified quantity relative to a projected emissions baseline scenario.
- Example: Brazil's pledge to reduce emissions 36.1% to 38.9% below projected emissions in 2020 Emissions Projected baseline scenario



Base Year Intensity Targets

- A commitment to reduce emissions intensity (emissions per unit of another variable, typically GDP) by a specified quantity relative to a historical base year.
- Example: China's pledge to reduce CO₂ emissions per unit of GDP 40-45% by 2020 compared with the 2005 level Emissions intensity

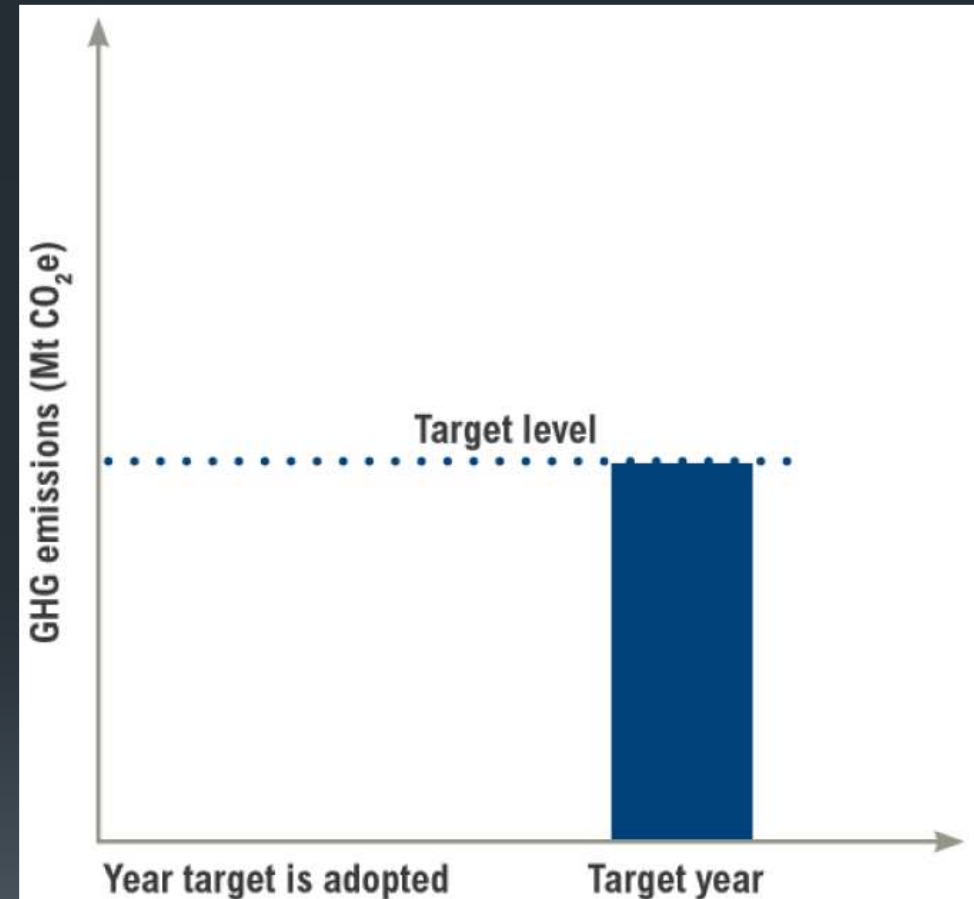


Source: WRI, UNDP, 2015

Fixed Level Targets

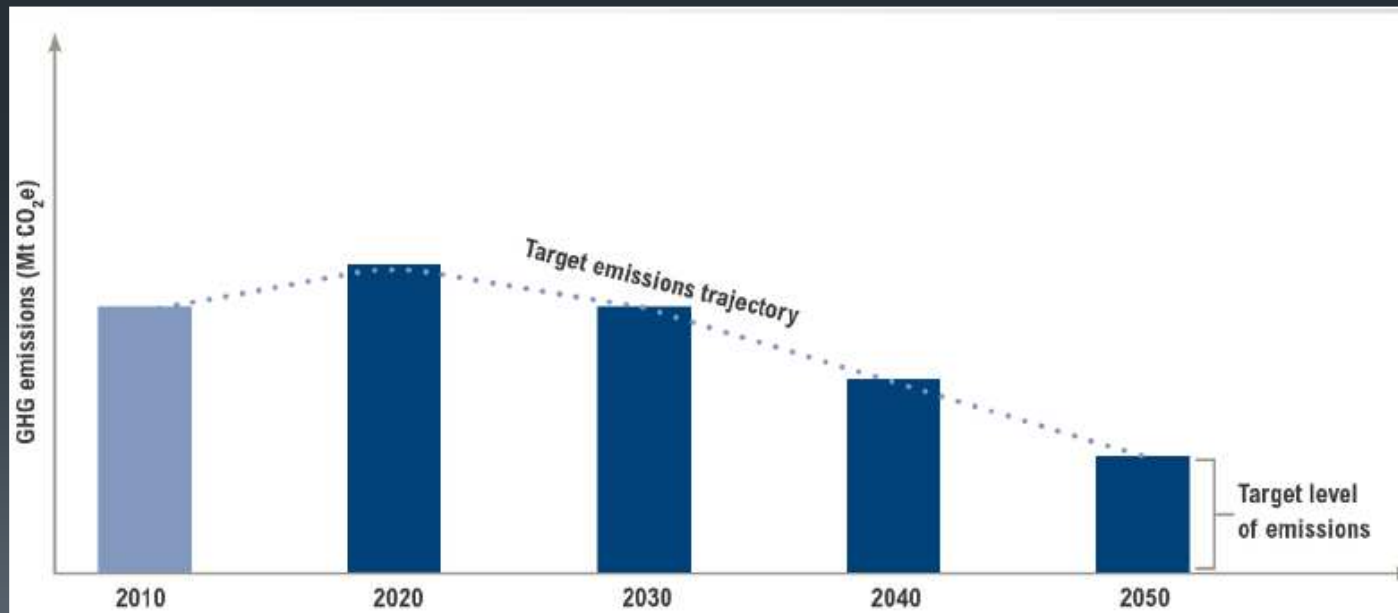


- A commitment to reduce, or control the increase of, emissions to a specified emissions quantity in a target year/period.
- Example: Costa Rica's pledge of 'long-term economy-wide transformational effort to enable carbon-neutrality' Emissions No reference level



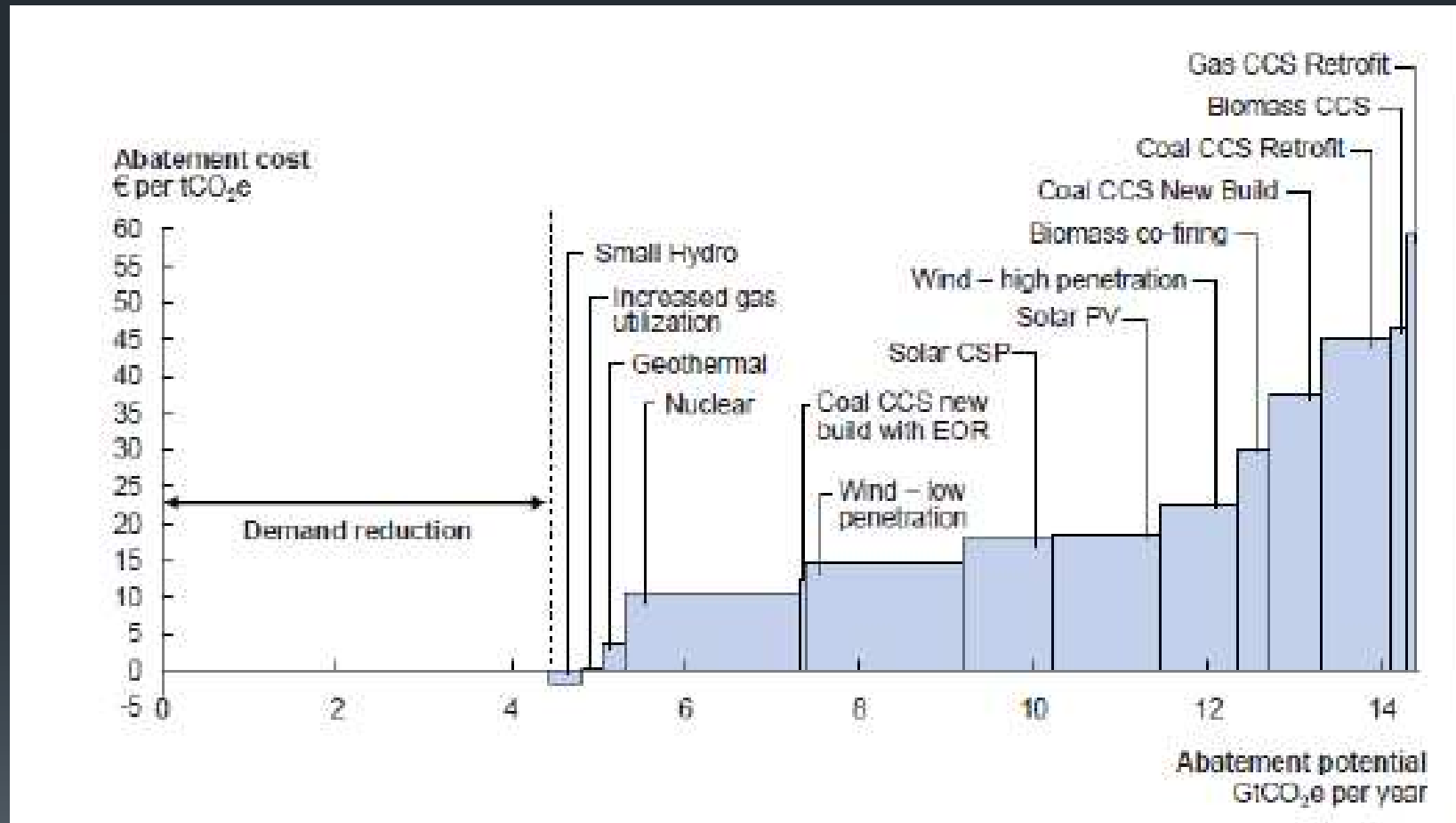
Trajectory Targets

- A commitment to reduce, or control the increase of, emissions to specified emissions quantities in multiple target years or periods over a long time period (such as targets for 2020, 2030, and 2040 over the period 2020-2050), e.g South Africa.

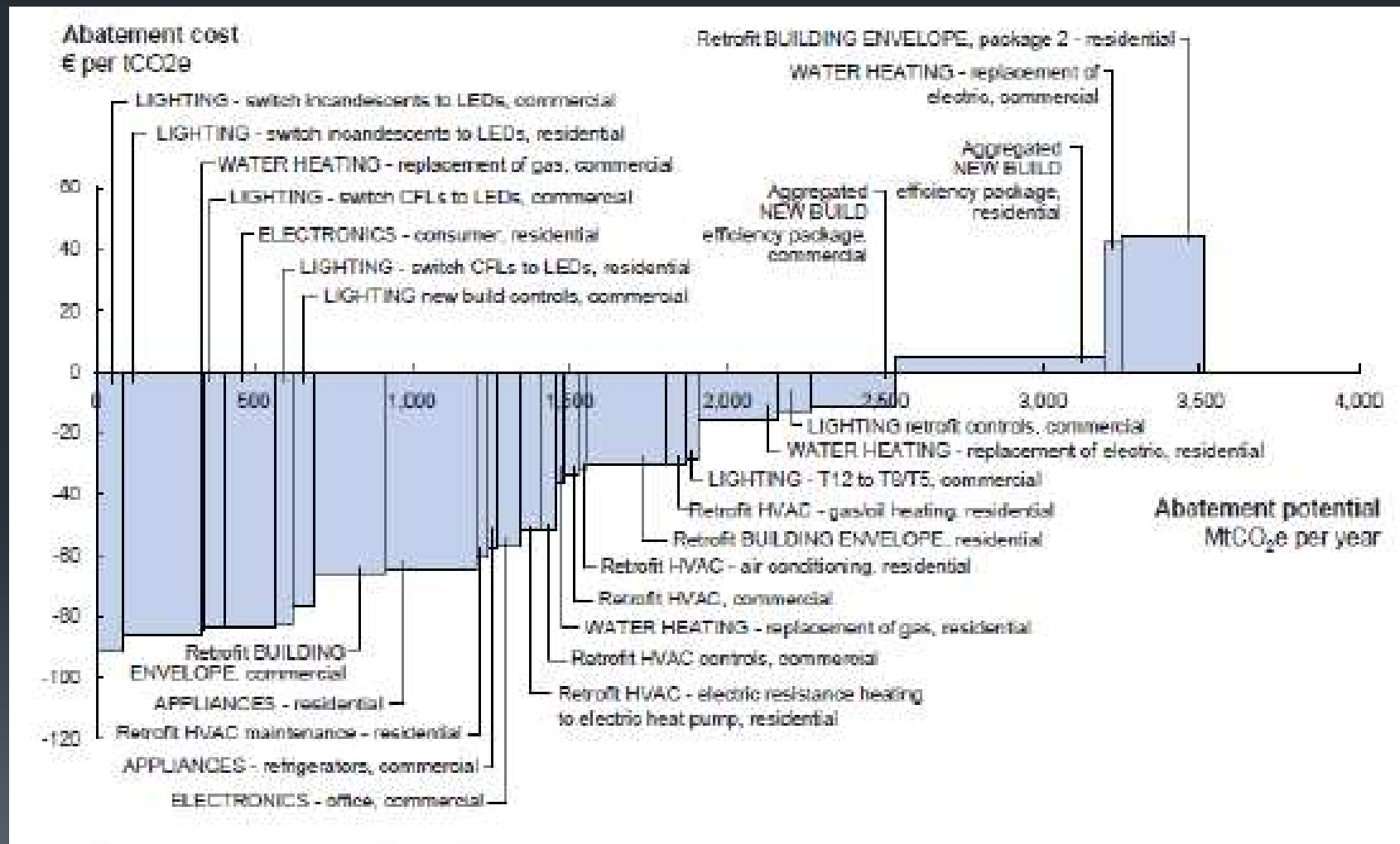


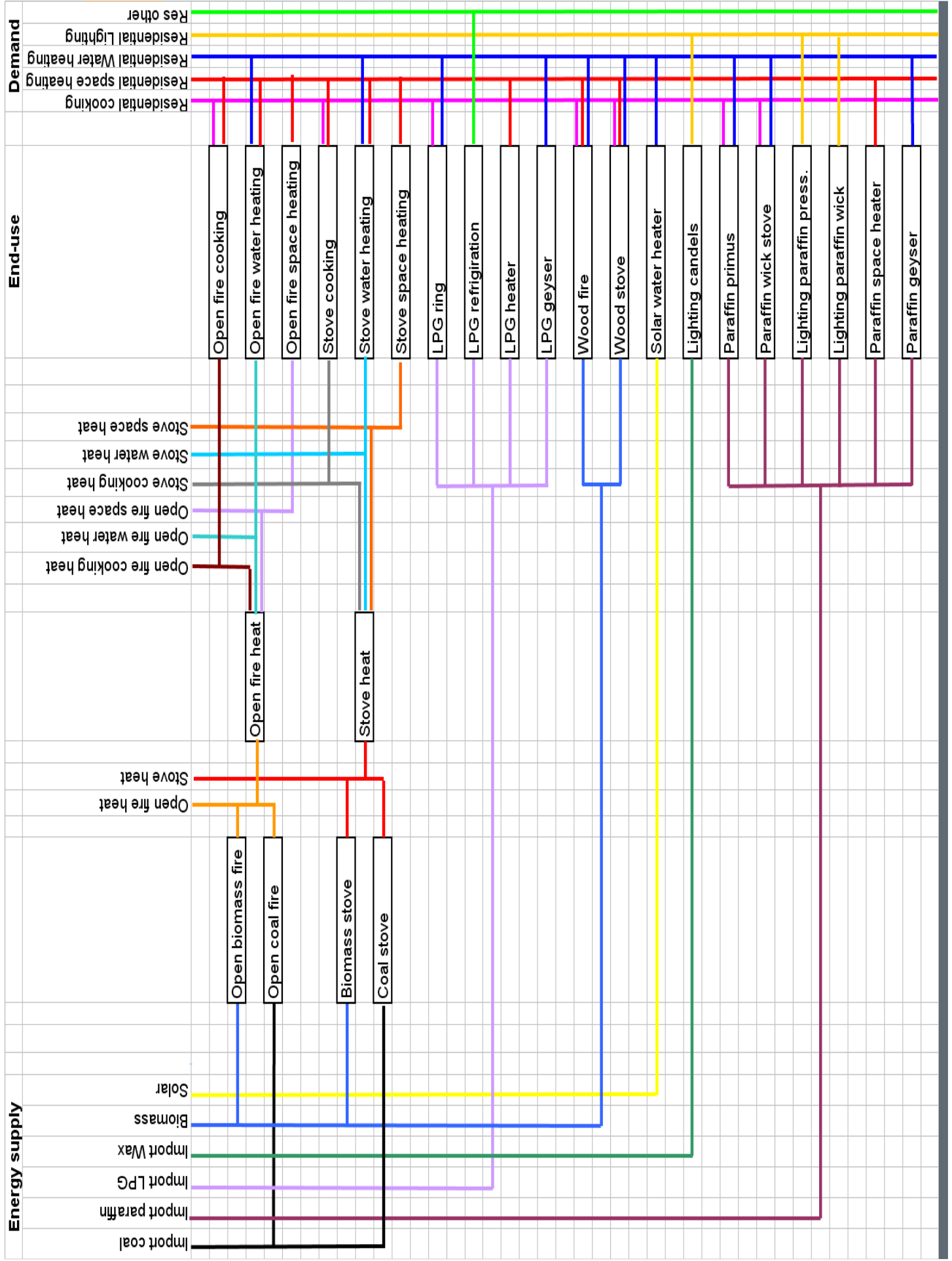
Source: WRI, UNDP, 2015

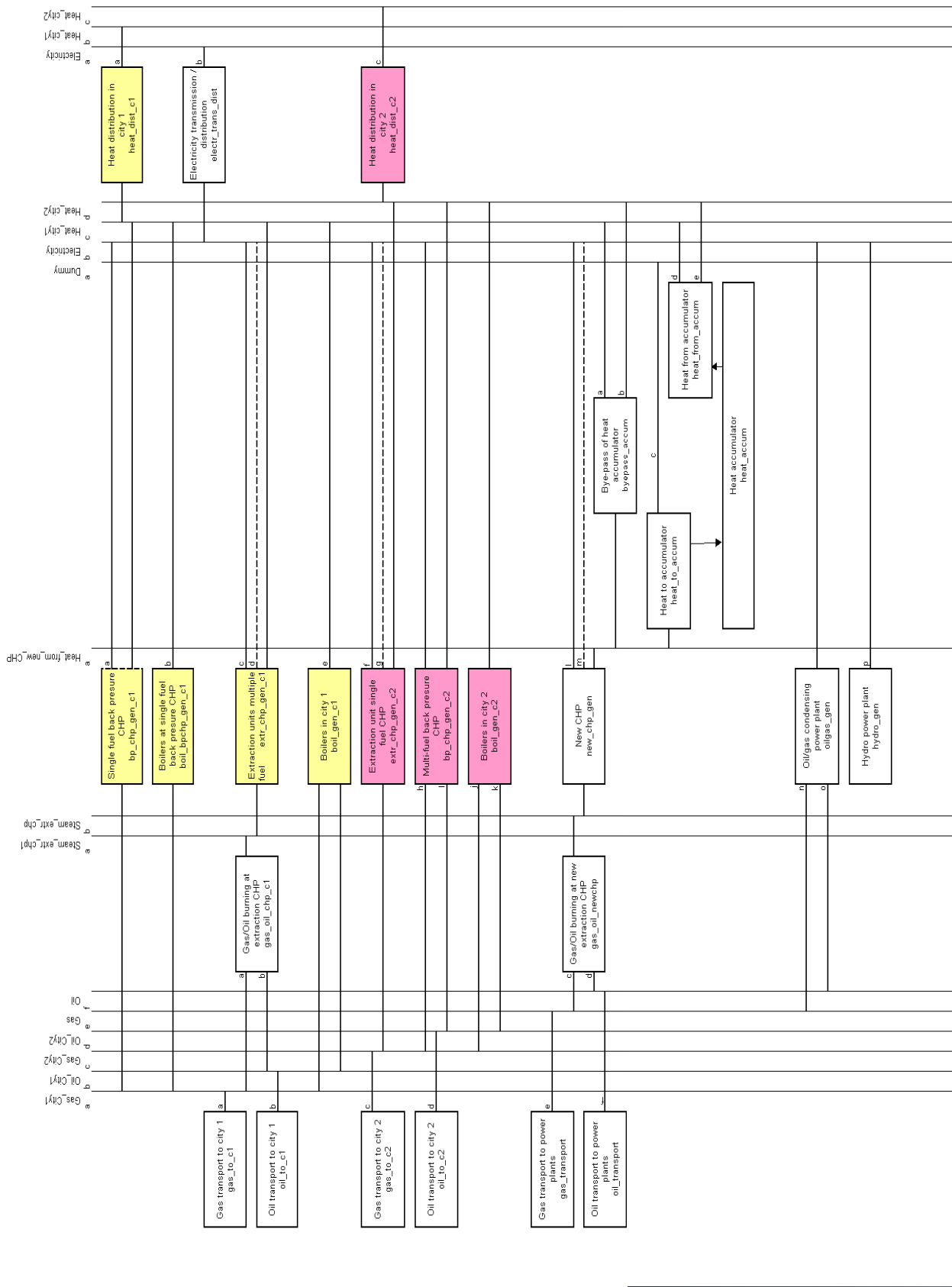
CO2 Avoidance Potential and Cost - Power Generation



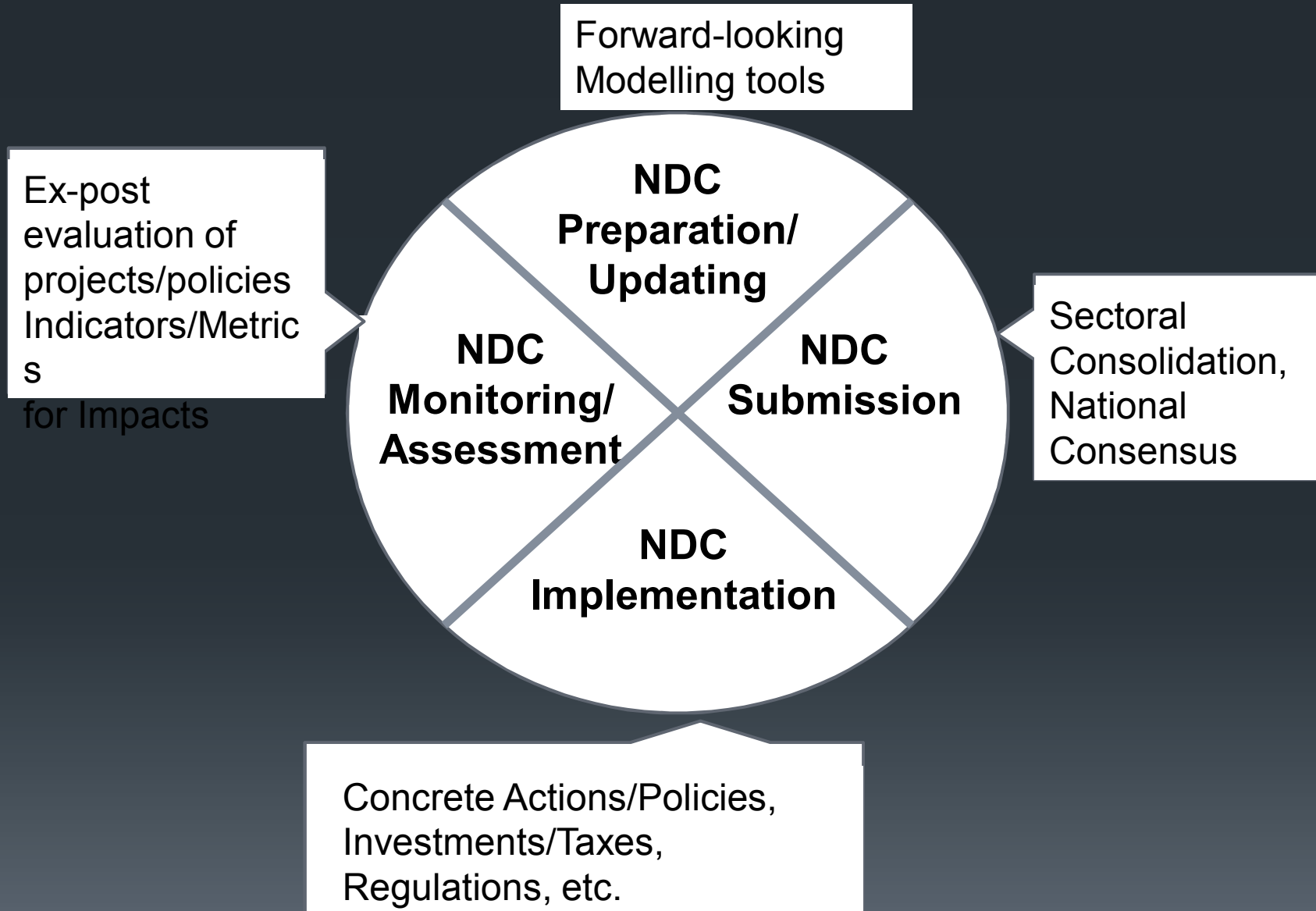
CO2 Avoidance Potential and Cost - Buildings







NDC Process & Assessment Tools



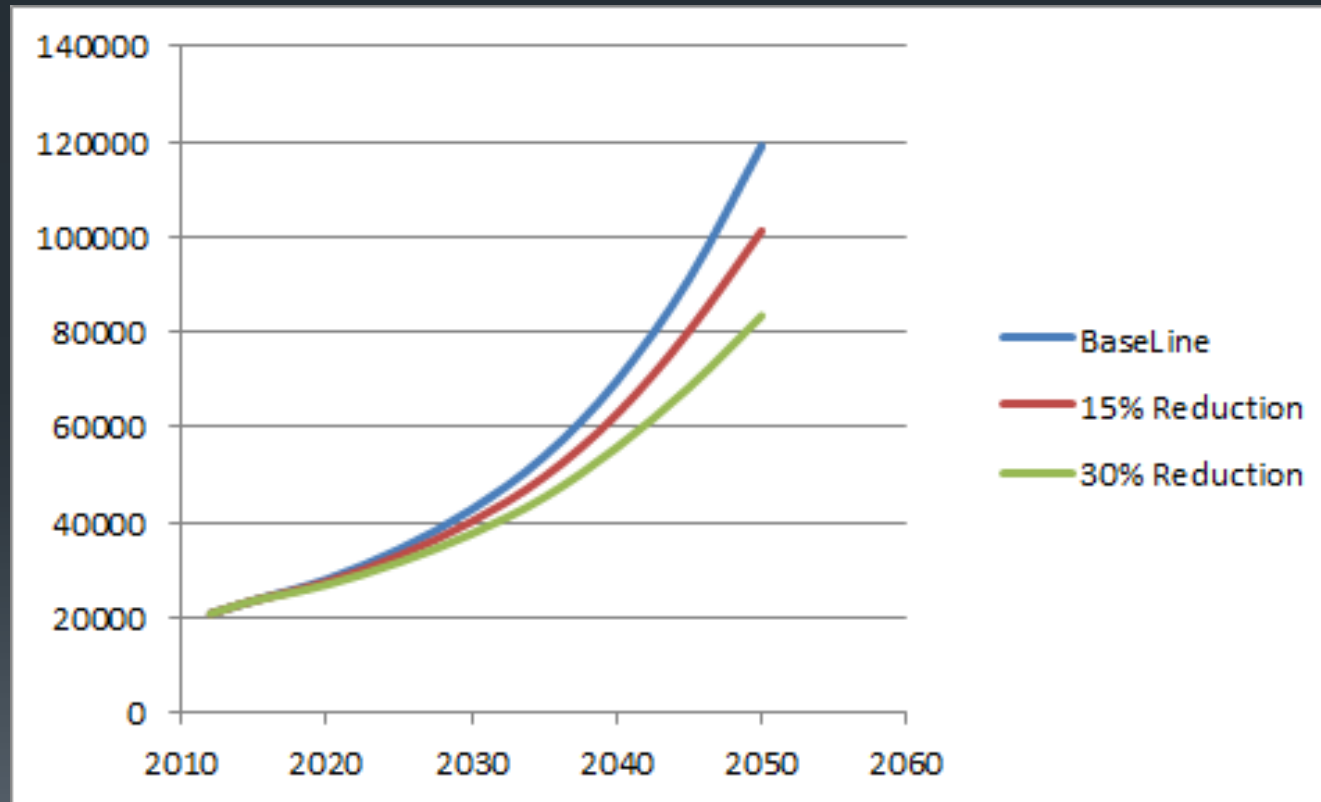
Possible Options for NDCs



Base Line emissions

Unconditional Reductions

Conditional Reductions

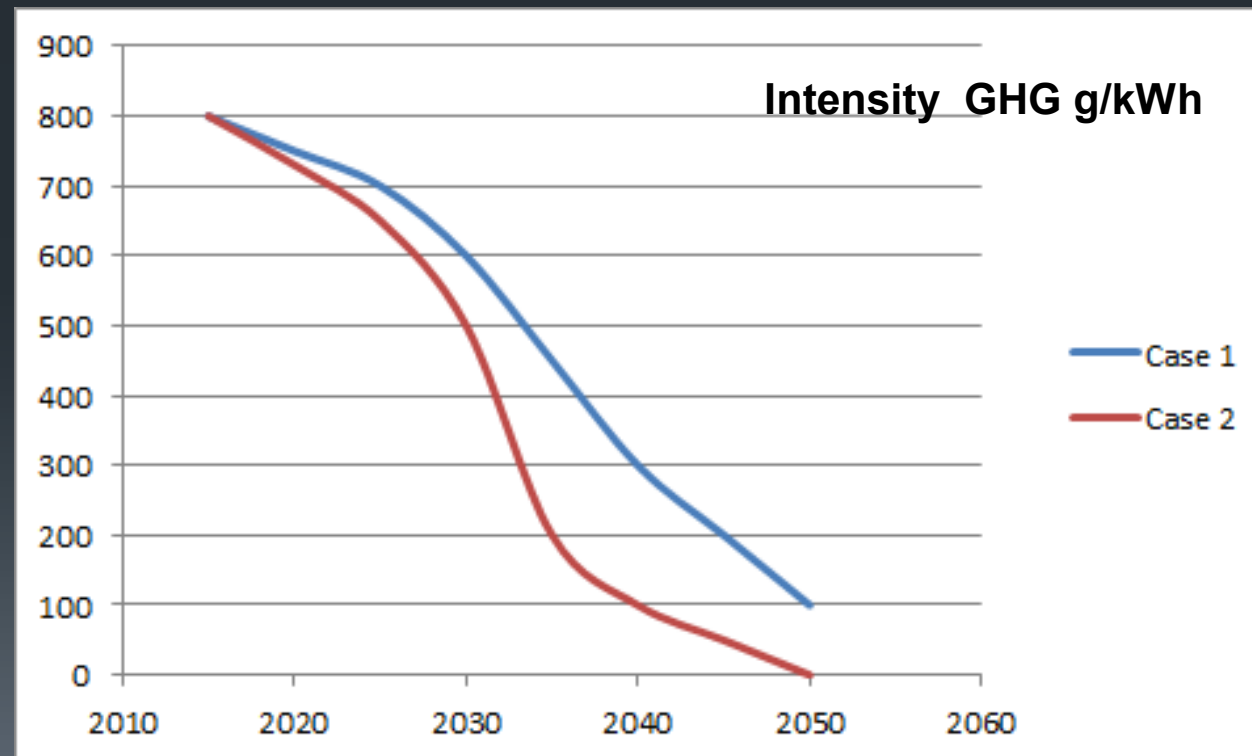


Possible Options for NDCs



Intensity Targets

Reduction in GHG per unit of electricity generation



Possible Options for NDCs

Intensity Targets

$$\frac{\text{total CO2 emissions}}{\text{total Generation}} \leq \text{Target value}$$

$$\frac{\left(\sum_{i=1}^{i=n} emf_i \times Gen_i\right)}{\left(\sum_{i=1}^{i=n} Gen_i\right)} \leq \text{Target value}$$



Thank You for Your Attention