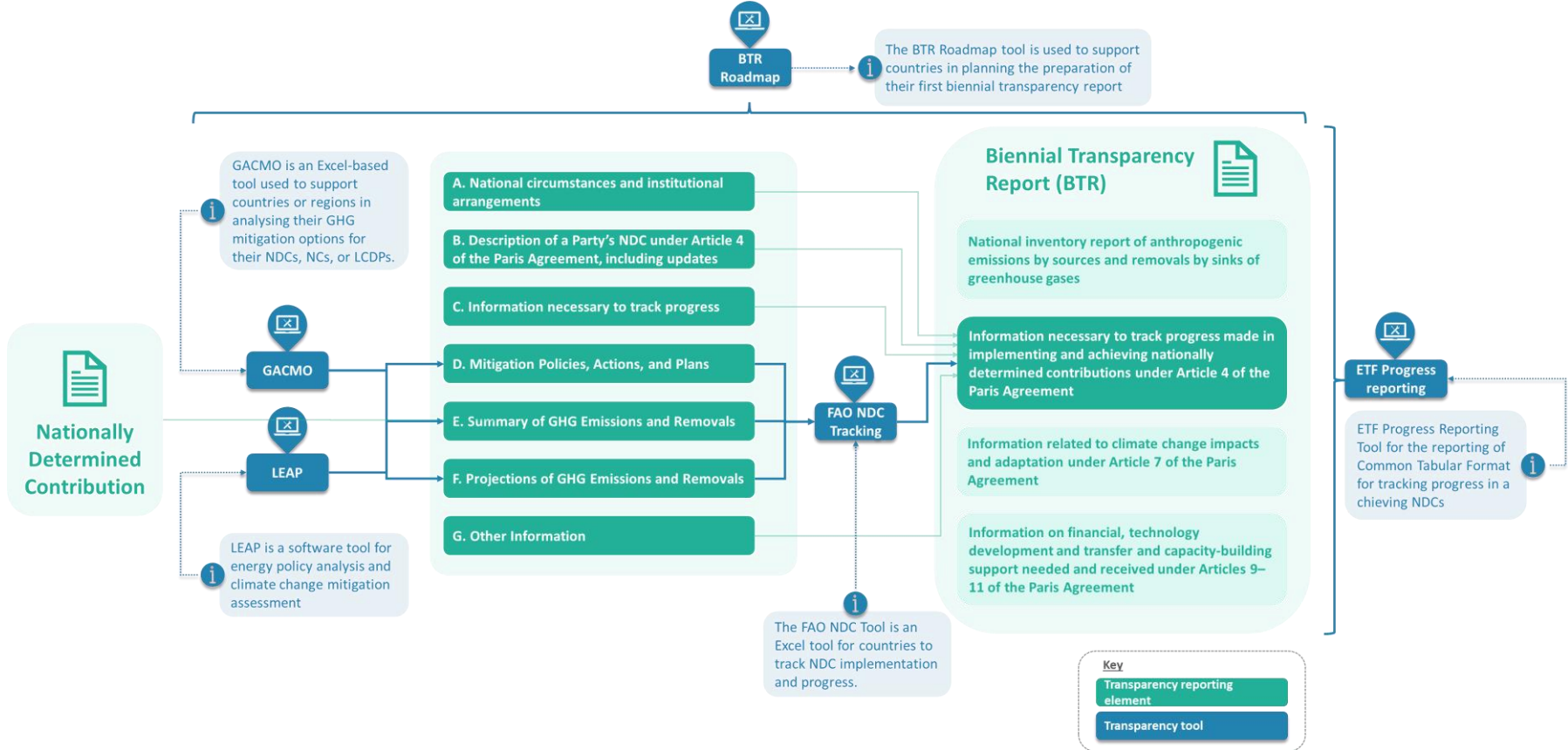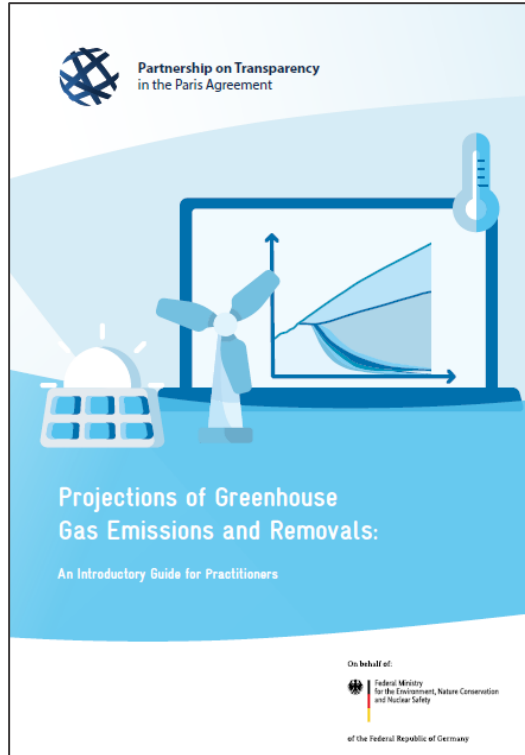# Tracking Progress of the Mitigation Commitments of Nationally Determined Contributions (NDCs)

Presentation: Projections and Mitigation tracking
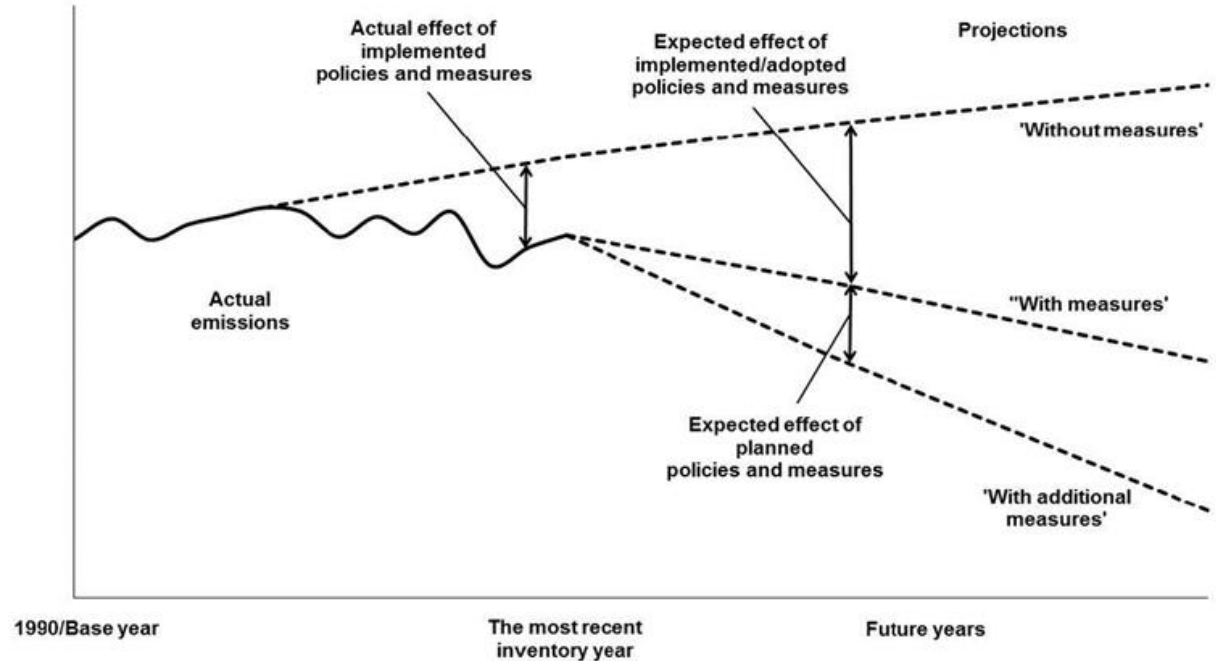
Dominic Sheldon

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Greenhouse Gas Inventory and Research Center

Partnership on Transparency in the Paris Agreement

CBIT-GSP CLIMATE TRANSPARENCY

Food and Agriculture Organization of the United Nations

BTR Roadmap

The BTR Roadmap tool is used to support countries in planning the preparation of their first biennial transparency report

GACMO is an Excel-based tool used to support countries or regions in analysing their GHG mitigation options for their NDCs, NCs, or LCDPs.

Nationally Determined Contribution

GACMO

LEAP

LEAP is a software tool for energy policy analysis and climate change mitigation assessment

A. National circumstances and institutional arrangements

B. Description of a Party's NDC under Article 4 of the Paris Agreement, including updates

C. Information necessary to track progress

D. Mitigation Policies, Actions, and Plans

E. Summary of GHG Emissions and Removals

F. Projections of GHG Emissions and Removals

G. Other Information

FAO NDC Tracking

The FAO NDC Tool is an Excel tool for countries to track NDC implementation and progress.

Biennial Transparency Report (BTR)

National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases

Information necessary to track progress made in implementing and achieving nationally determined contributions under Article 4 of the Paris Agreement

Information related to climate change impacts and adaptation under Article 7 of the Paris Agreement

Information on financial, technology development and transfer and capacity-building support needed and received under Articles 9–11 of the Paris Agreement

ETF Progress reporting

ETF Progress Reporting Tool for the reporting of Common Tabular Format for tracking progress in a chieving NDCs

Key
Transparency reporting element
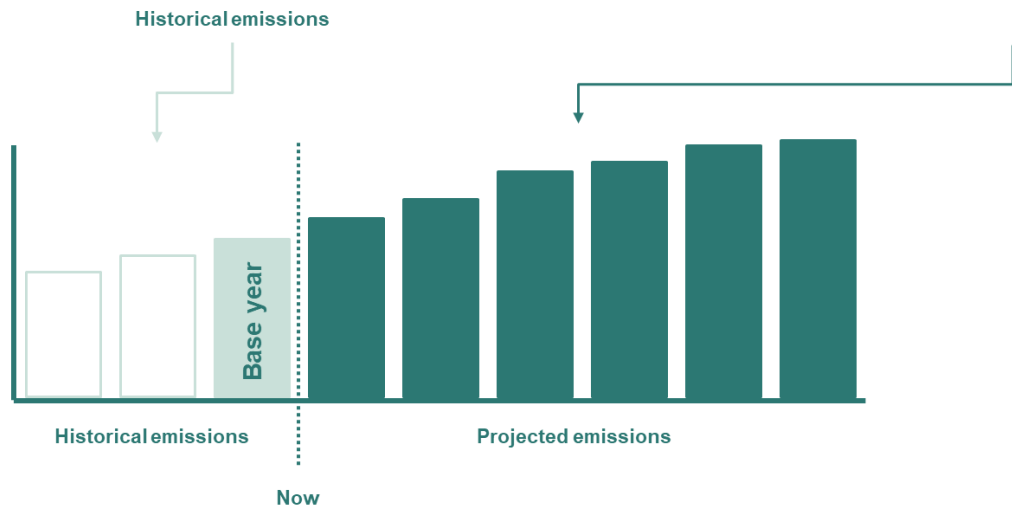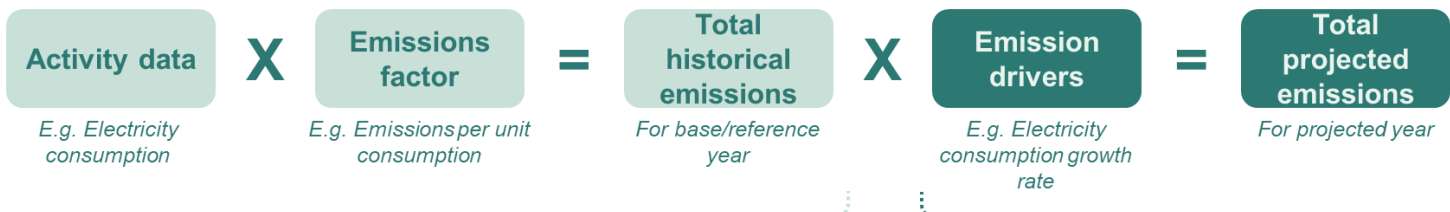Transparency tool

PATPA Publication on Projections

Contents

1) The importance of developing projections
2) Basic approach to developing GHG projections
3) Quality Assurance and Quality Control
4) Refining the projection´s approach over time

https://transparency-partnership.net/publications-tools/projections-greenhouse-gas-emissions-and-removals-introductory-guide

Projections

Activity data **X** Emissions factor **=** Total historical emissions **X** Emission drivers **=** Total projected emissions

E.g. Electricity consumption

E.g. Emissions per unit consumption

For base/reference year

E.g. Electricity consumption growth rate

For projected year

Historical emissions

Base year

Historical emissions

Now

Projected emissions

Scenarios for projections of greenhouse gas emissions and removals

Figure 7

Scenarios for projections of greenhouse gas emissions and removals

With measures
Encompasses currently implemented and adopted policies and measures ("shall requirement")

With additional measures
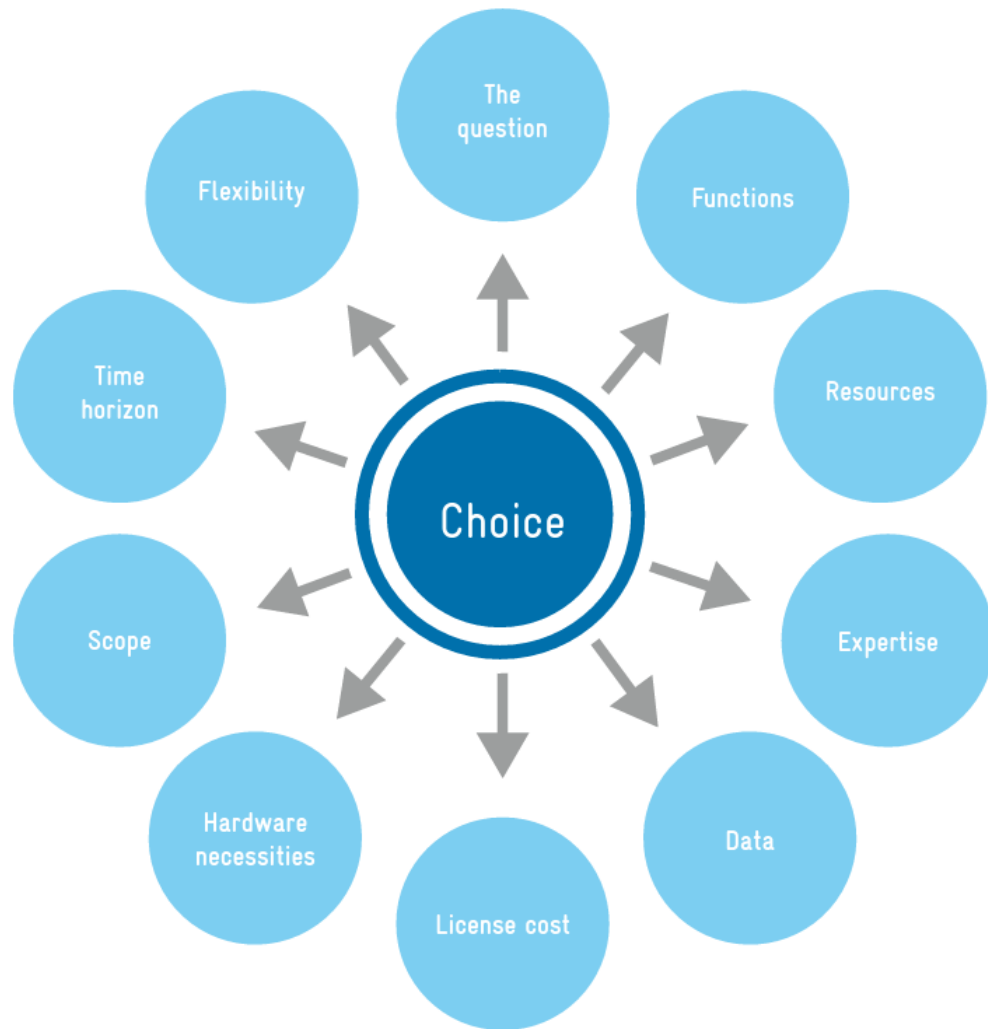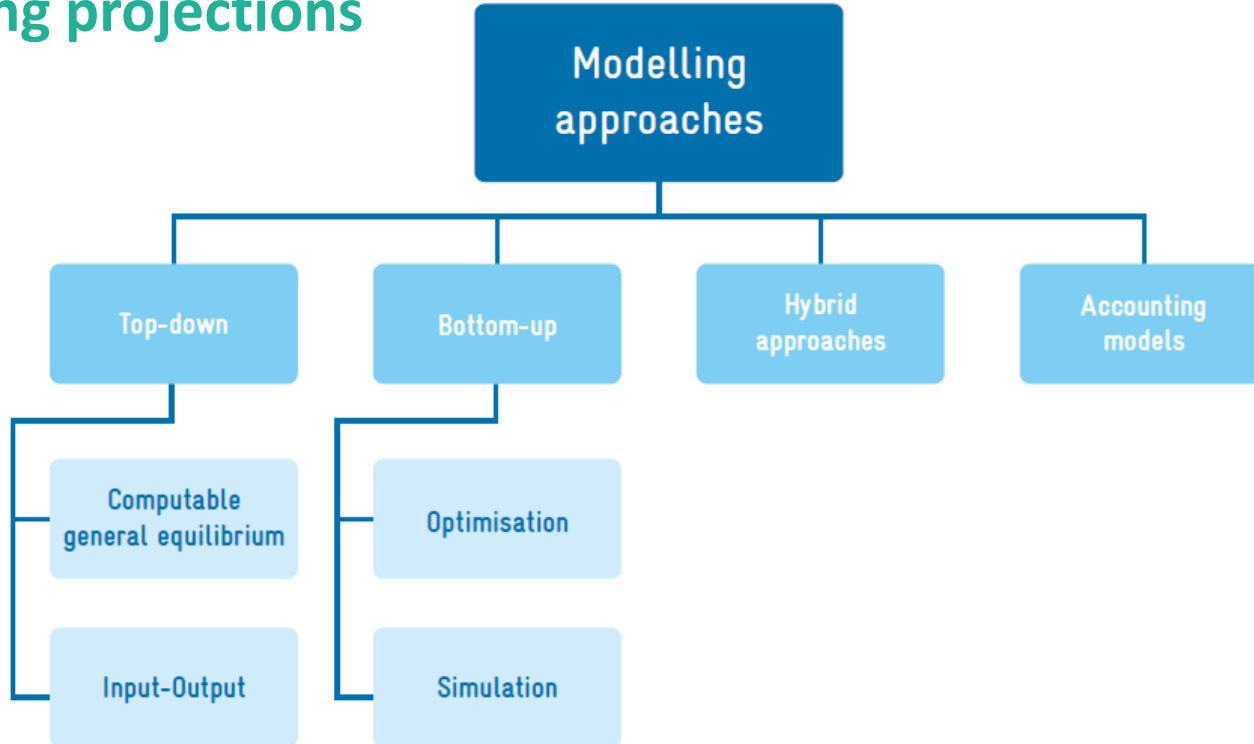Encompasses implemented, adopted and planned policies and measures ("may requirement")

Without measures
If provided, it excludes all policies and measures implemented, adopted and planned after the year chosen as the starting points for the projections ("may requirement")

Reporting projections: Scenario types

Scenario	Baseline scenario	Mitigation Scenario
'Without measures' (WOM)	If provided, it **excludes all policies and measures implemented, adopted and planned** after the year chosen as the starting points for the projections ("may requirement")	
'With existing measures' (WEM)	**Encompasses currently implemented and adopted** policies and measures ("shall requirement")	
'With additional measures' (WAM)		Encompasses implemented, adopted **and planned** policies and measures ("may requirement")
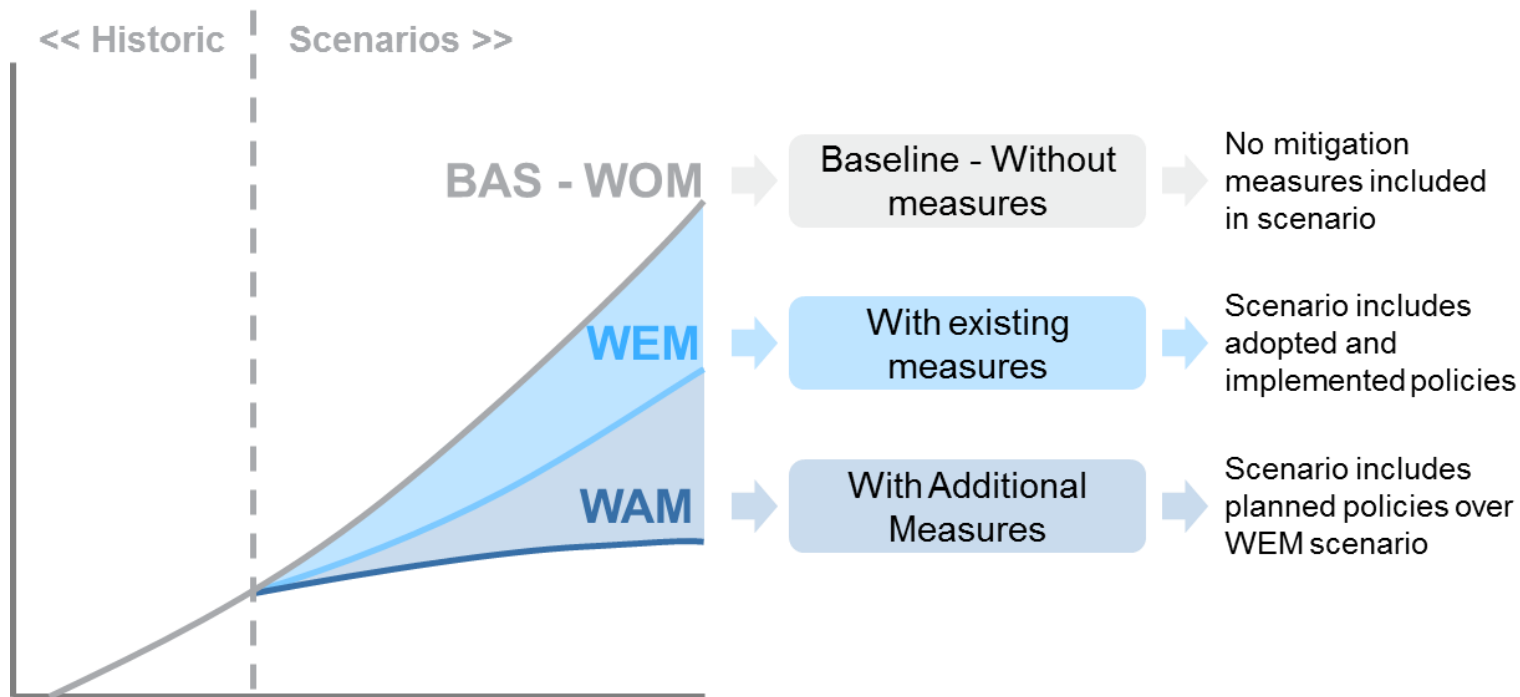
Developing projections

No standardised methodologies or tools exist to allow GHG projections to be calculated.

There are several modelling approaches/tools available which can help with this task.

Developing projections

Modelling approaches

- Top-down
  - Computable general equilibrium
  - Input-Output
- Bottom-up
  - Optimisation
  - Simulation
- Hybrid approaches
- Accounting models

Model evaluation table

Evaluation Dimensions	General Equilibrium (CGE) Models	Input–Output (I/O) Models	Simulation Models	Optimisation Models	Accounting Models
Scope of Analysis	Macro-economic	Sectoral	Sector-specific	Energy Systems	Energy Systems
Temporal Perspective	Long-term (Multi-year)	Short to Medium-term (5-15 years)	Short to Medium-term	Long-term (40-50 years)	Flexible
Behavioural Realism	Moderate	Low	High	Moderate	Low
Technological Detail	Low	Low	High	High	Moderate
Ease of Use	Complex	Moderate	Moderate	Complex	Simple to Moderate
Cost Consideration	Yes	Partial	Yes	Comprehensive	Yes
Policy Impact Sensitivity	High	Moderate	High	High	Moderate
Flexibility	Low	Low	Moderate	Moderate	High
Examples	EPPA, ICES	IOTA, REMI	POLES, AERO	MARKAL/TIMES, MESSAGE	LEAP, GACMO

Choosing a model type

Question	Suggested Model Type	Example of Model Type to Use
Impacts and costs of planned mitigation actions?	• All model types (for impacts) and some model types for costs	**E.g., Any listed model type**
Effects of mitigation actions on economic development/job creation?	• Top-down macro-economic models	**E.g., General Equilibrium Models**
Most cost-effective pathway to achieve target?	• Optimisation models	**E.g., TIMES**
Forecast of future emissions?	• Accounting models	**E.g., LEAP**
Evolution of emissions in a specific sector?	• Bottom-up simulation models	**E.g., POLES**
	• Sectoral accounting models	**E.g., EX-ACT**
Modeling a long-term target?	• Hybrid modelling tools	**Hybrid Models**
Quick assessment of mitigation actions with limited expertise/data?	• Simple accounting tools	**E.g., GACMO**
Using the same model over time with limited data/expertise?	• Accounting tools	**E.g., PROSPECTS+**

Developing projections

Inputs:

1. Historical Data

1. **Historical Drivers**: Economic indicators (like GDP), demographic data, energy usage trends, and changes in land use.

2. **Historical Emissions**: Activity data including energy and industrial activities, and respective emissions factors.

3. **Non-emissions Data**: Additional environmental data (e.g., deforestation rates) and socio-economic data.

2. Projected Data

1. **Drivers**: Predictions on economic growth, demographic changes, and energy price fluctuations.

2. **Policies**: Forthcoming government policies and industry standards regarding emissions reductions.

3. Tracking Data

1. **Assumptions**: Economic and technological predictions for the future.

2. **Definition of Indicators**: Criteria to gauge progress, such as GHG emissions reduction and energy efficiency improvement.

Outputs:

- **GHG Results**: Forecasts of total and sector-specific GHG emissions and trend analysis.

- **Non-GHG Results**: Evaluations of other environmental impacts and socio-economic outcomes.

- **Policy Evaluation**: Analysis of the potential impact of proposed policies on GHG emissions and suggestions for policy modifications or new strategies.

Reporting projections

The assessment of projections has only been reported by the developed countries as part of their National Communications/ Biennial Reports to the UNFCCC.

As indicated in the most recent UNFCCC reporting guidelines on national communications for Parties included in Annex I to the UNFCCC (Decision 6/CP25 of 2019), "the primary objective of the projections section of the national communication is to give an indication of future trends in GHG emissions and removals, given current national circumstances and implemented and adopted policies and measures, and to give an indication of the path of emissions and removals without such policies and measures."

Reporting projections under the ETF

Para MPGs	Type	Requirement
92	Shall / Encouraged	**Report projections** with flexibility for developing countries
93	Shall	Indicative of the impact of PaMs, **not for progress assessment** unless specified
94	Shall / May	Report '**with measures**' projection and optionally others
95	Shall	Projections to start from most recent year and **extend at least 15 years**, with flexibility for developing countries
96	Should	**Methodology** description including models, changes, assumptions, and sensitivity analysis
97	Shall	Provide projections of key **indicators** for NDC progress
98	Shall	Include **sectoral**, by **gas** and national **total** projections using a consistent metric
99	Shall	Present projections relative to actual inventory data
100	Shall	Provide emission projections with and without LULUCF
101	Shall	Present projections in graphical and tabular formats

Flexibility provisions available for developing countries for projections

REFERENCE IN THE MPGS (ANNEX TO DECISION 18/CMA.1)	PROVISION IN THE MPGS	FLEXIBILITY PROVISION FOR THOSE DEVELOPING COUNTRY PARTIES THAT NEED IT IN THE LIGHT OF THEIR CAPACITIES
Paragraph 92 **GHG emission and removals projections**	Each Party **shall** report projections	Those Parties that need flexibility are instead **encouraged** to report these projections.
Paragraph 95 **Projections extension**	Projections **shall** begin from the most recent year in the Party's national inventory report and extend at least 15 years beyond the next year ending in zero or five	Those Parties that need flexibility have the flexibility to instead extend their projections **at least to the end point of their NDC** under Article 4 of the Paris Agreement.
Paragraph 102 **Projections methodology or coverage**	See paragraphs 93 through 101 of the annex to decision 18/CMA.1	Those Parties that need flexibility can instead report using **a less detailed methodology or coverage**.

Reporting projections under the ETF

"102. Those developing country Parties that need flexibility in the light of their capacities with respect to paragraphs 93–101 above can instead report using a **less detailed methodology or coverage.**"

Reporting projections under the ETF

Para MPGs	Type	Requirement	FX
92	Shall / Encouraged	Report projections with flexibility for developing countries	FX
93	Shall	Indicative projections, not for progress assessment unless specified	FX
94	Shall / May	Report 'with measures' projection and optionally others	FX
95	Shall	Projections to start from recent year and extend at least 15 years, with flexibility for developing countries	FX
96	Should	Methodology description including models, changes, assumptions, and sensitivity analysis	FX
97	Shall	Provide projections of key indicators for NDC progress	FX
98	Shall	Include sectoral, by gas and national total projections using a consistent metric	FX
99	Shall	Present projections relative to actual inventory data	FX
100	Shall	Provide emission projections with and without LULUCF	FX
101	Shall	Present projections in graphical and tabular formats	FX

Thank you!

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