

IAMC SWG National Scenarios Study 2

Call for national scenarios

1. Background

With rapidly shifting geopolitics, impact on global energy and food prices, and varying rates of climate (energy and other sectoral) policy implementation, countries need to reassess both their short term and long-term net-zero pathways.

The creation and communication of national net zero (NZ) pathways are essential not only for Nationally Determined Contribution (NDC) progress but also for the Second Global Stocktake (GST). This is because GST serves as a major link between near-term climate action and long-term global temperature goals. Under the Paris Agreement, the GST occurs every five years, which was commenced in 2023 to assess the collective progress towards holding the warming below 2C.

Recently, IPCC AR7 WGIII Chapter 03 informed that they will assess a broad and diverse range of quantitative and qualitative projected futures. To support this effort, they have put out a call for global, regional, national teams as well as community consortiums to submit their published, pre-prints, project/publication related scenarios data.

Sustainable development pathways focus on short-term and long-term climate strategies in addition to moving towards net-zero to emphasize decoupling emissions from economic growth. The correlation has been found to be dependent on the level of development, economic structure and technology used at global, regional and national level (IPCC AR6WGIII, Chapter 3 and Chapter 4, Vishwanathan et al. WIP).

Technical strategies to accelerate the pathways towards net zero can be similar (fossil fuel phase down) and/varied (uptake of non-fossil fuels, electrification) across countries (Pathak et al. under review).

In response to evolving geopolitical conditions, the dynamic implementation of policies at the national level, the gaps identified in our first study, and the feedback received from national modelling teams expressing interest in contributing, we propose a second study that call for NDCs, LTS, and multiple net-zero (NZ) scenarios.

2. Status of registration and submissions

Modelling teams interested: **130+** (National, Subnational, Regional, Global with specific countries)

Modelling teams registered: **96**

First study –number of teams that submitted scenario data: **57 models from 30+ countries.**

This will be a continuous process. We recommend the modellings teams who are new to the process to please register their models in the following links. Please inform me of the main contact of the study.

3. Purpose of the study – Research Questions and Objectives

In response to this effort, we would like to build on the work compiled in the first IAMC SWG National study (NMSF1). We would like to broaden and deepen our efforts in terms of scope focussing on current policies, NDCs, LTS and Net Zero pathways.

Following are the research questions that are the motivation behind the second study:

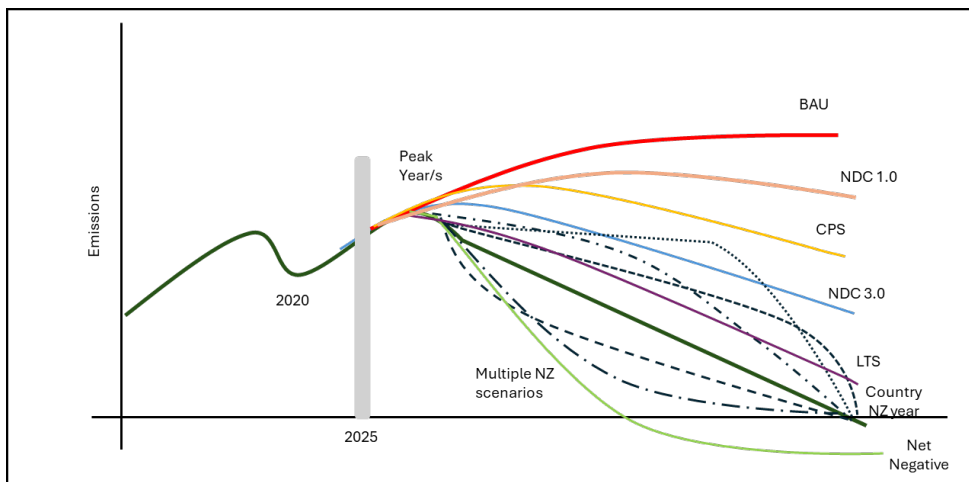
1. How does decarbonization/ net zero strategies impact emission and energy pathways across countries? What country-specific characteristics emerge from updating current policies, NDCs and multiple net-zero scenarios?
2. How feasible are the submitted national and sectoral pathways?
3. Which sectors need to reach net zero for the country to achieve its net zero?
4. What are the socio-economic, technology, and policy assumptions used in your model/s?
5. What are the gaps remaining in the representation of national pathways in the regional and global pathways?

The main objectives of the second exercise include but not limited to:

- i) Improve the scenario data evidence by expanding the coverage of scenarios (emissions, sectors, model types, scenario variables);
- ii) Collect multiple national net zero pathways along with CPS and NDC pathways at both economy-wide and sectoral level from national, subnational, regional and global teams;
- iii) Assess the national and regional net-zero pathways to explore the mitigation trends at economy-wide and sectoral levels;
- iv) Develop national benchmarks for energy and AFOLU transitions, sustainability and equity indicators at country level;
- v) Analyse the feasibility indicators to assess the challenges to move towards net zero at country level.

4. Scenario Protocol

The scenario protocol provides a scenario framework on the set of scenarios that need to be submitted in this exercise. We plan to collect model meta data, scenario input/output variables, and brief country narratives based on these scenarios.



Illustrative pathways

Scenario Description

Table 1 presents the tentative scenarios to be submitted under study 2. Modelling teams should try to submit at least three default scenarios. Teams can submit additional scenarios based on rate of decarbonization (early and delayed action) and technology dimensions (CDR, H2, Electrification, Renewables, Nuclear) and so on.

Table 1: Scenario description

TIER	Policy Dimension	Acronym	Definitions
I. Default scenarios			
TIER I	BAU	NMSF2-BAU	Also known as baseline/business as usual scenario. This scenario assumes policies or measures implemented before 2015. Baseline scenarios are not intended to be predictions of the future, but rather counterfactual constructions that can serve to highlight the level of emissions that would occur without further policy effort.

TIER	Policy Dimension	Acronym	Definitions
TIER I	CPS	NMSF2-CPS	Current policies are defined as <i>currently implemented policies</i> adopted by governments (through legislation) or non-binding targets backed by effective policy instruments and planned policies in the pipeline to be adopted. The current policies include on-going climate, energy, economic and sectoral policies that impact not only the emissions but also primary energy demand of the system, and final energy consumption of enduse sectors. The current policies scenario describes emission projections for the near-term period until 2030/2035/2040.
TIER I	NDC	NMSF2-NDC1 NMSF2-NDC2 NMSF2-NDC3	National Determined Contribution Scenarios (NDC) Scenario is defined as planned (climate, energy, economic and sectoral) policies that are yet to implement to achieve NDCs by 2020 (NDC1), by 2030 (NDC2) and by 2035 or 2040 (NDC3).
TIER I	LTS	NMSF2-LTS	Each country's modelling team can submit their version/s of their long-term strategy. The LTS scenario captured the planned policies ³ , ratcheted implemented policies in addition to policies mentioned in each country's Long-Term Strategies (LTS) documents. Scenarios following current policy trends until a certain year before transitioning to more ambitious climate targets (2C and 1.5C). This could include early actions, delayed actions, and/or high-overshoot pathways. The country may not necessarily reach net zero under this scenario.
TIER I	LTS	NMSF2-LTS-early	The LTS scenario assumes immediate, gradual, and predictable emission reductions aligned with long-term climate targets, lowering transition shocks and avoiding extreme reliance on speculative negative emissions. The country may not necessarily reach net zero under this scenario.

TIER	Policy Dimension	Acronym	Definitions
TIER I	LTS	NMSF2-LTS-delay	The LTS scenario assumes postponing stringent mitigation policies near-term, requiring sharp, disruptive, and costly emission cuts later relying on technologies such as CDR. The country may not necessarily reach net zero under this scenario.
TIER I	NZS	NMSF2-NZS	Each country's modelling team can submit their version of how the country will reach its Net-Zero target. The NZ scenario could capture the planned policies ³ , ratcheted implemented policies in addition to policies mentioned in each country's Long-Term Strategies (LTS) and/or Net Zero plans.
TIER I	NZS	NMSF2-NZS-early	The NZS scenario assumes immediate, gradual, and predictable emission reductions aligned with long-term climate targets, lowering transition shocks, and avoiding extreme reliance on speculative negative emissions. The country may reach net zero under this scenario.
TIER I	NZS	NMSF2-NZS-delay	The NZS scenario assumes postponing stringent mitigation policies near-term, requiring sharp, disruptive, and costly emission cuts later relying on technologies such as CDR. The country may reach net zero under this scenario.
II. Technology Dimension			
TIER II	NZS	NMSF2-NZS-Elec	The NZS scenario focuses on shifting to electrification across all sectors. The share of electricity demand in final energy is more than 50%.
TIER II	NZS	NMSF2-NZS-Ren	The NZS scenario focuses on renewables. The share of renewables in the electricity generation mix is more than 50%.
TIER II	NZS	NMSF2-NZS-Nuc	The NZS scenario focuses on nuclear being used as an alternative to fossil fuels as baseload fuel. The scenario will have a high nuclear share in installed capacity.
TIER II	NZS	NMSF2-NZS-H2	The NZS scenario focuses on shifting to hydrogen and synthetic fuels. Share of hydrogen and synthetic fuels is about 5-20%
TIER II	NZS	NMSF2-NZS-TechCDR	The NZS scenario focuses on CCU, CCS, DACCS and other technology focussed CDR technologies. The share of CDR

TIER	Policy Dimension	Acronym	Definitions
			based technology is more than 50%, however, this is not mandatory.
TIER III	NZS	NMSF2-NZS-LandCDR	The NZS scenario focuses on land-based CDR technologies such as afforestation, soil organic carbon (SOC), biochar and so on. The share of CDR based technology is more than 30%, however, this is not mandatory.

5. Scenario Template

We have shared the first version of the scenario template for review and feedback based on the shared survey.

6. Timeline (tentative)

Table 2: Tentative timeline for the study

	Tasks	Deadline
1	Webinar – IAMC SWG on national scenarios	July 2026
2	Feedback on national scenario protocol version 0	July/August 2026
3	Call for national scenarios based on finalized national scenario protocol	August 2026
4	For teams who have not participated in Study 1 or registered before: Please fill in the forms below Model Information: Link Model registration: Link	Continuous process
5	Initial deadline of national scenarios	November 30, 2026
6	Feedback and discussion country modelling teams	December 2026
7	Presentation of progress of the work – Information on IAMC 2026 study, Call reminder at IAMC 2027	November 2026
8	Final deadline to submit national scenarios	January 2027
9	First draft of the paper/s shared with co-authors for review and feedback	March 2027
10	Submission of feedback by co-authors	April 2027
11	Final drafts submitted to journal (tentative)	May 2027

7. Data Licensing and Rights

The national scenarios database adopts the following principles for scenario submission and public release:

1. **Public release of the scenario data:** Scenario data submitted to the Scenario Compass Initiative will be accessible under community-standard licensing terms (similar to the AR6 ensemble), where data can be reused in scientific analysis, but redistribution is restricted. By transferring their work to the Scenario Compass database, researchers agree that their data will be made available under these terms.
2. **Submission to the Scenario Compass Sandbox:** Scenarios must first be submitted to the Scenario Compass Sandbox, where scenarios are only accessible to the responsible modelling team and are not shared publicly. This allows modellers to evaluate their scenarios with the SCI validation and feasibility/sustainability flagging criteria and use post-processing workflows including the climate-assessment categorization. Modelling teams can then choose to transfer their scenarios from the Sandbox to the public Scenario Compass database (see 1).
3. **Full rights retained:** Modelling teams retain full rights over their own data. Submission to the Scenario Compass Initiative does not restrict any use, sharing, or publication of the data by the original producers.
4. **Preliminary data handling:** Preliminary data that has not yet been published may be shared with AR7 authors in advance of public release, consistent with the IPCC's procedures for handling unpublished literature. Scenario authors may request that preliminary data not be made publicly available until the associated publication is accepted. Once the scenario is in its final published form, it will be released as part of the public Scenario Compass database.
5. **Attribution:** All users of scenario data from the Scenario Compass Initiative are expected to cite the original data source (model, team, and associated publication) and the Scenario Compass Initiative.

For SCI National Scenarios data, the data will remain confidential until the papers are published. The shift to the public release of relevant scenarios and variables upon acceptance of a corresponding manuscript or publication of a report follows the recommendations for transparency, reproducibility, and broad scientific engagement.

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