The PARIS REINFORCE project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 820846.

76th Semi-Annual ETSAP Meeting, CSIRO, Australia

The H2020 Project PARIS REINFORCE

Maurizio Gargiulo (E4SMA)

www.paris-reinforce.eu
<table>
<thead>
<tr>
<th><strong>Title:</strong></th>
<th>Delivering on the Paris Agreement: A demand-driven, integrated assessment modelling approach (PARIS REINFORCE)</th>
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</thead>
<tbody>
<tr>
<td><strong>Funding:</strong></td>
<td>European Union’s Horizon 2020 Research and Innovation Programme (H2020)</td>
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<tr>
<td><strong>Lifetime:</strong></td>
<td>June 2019 - May 2022 (36 months)</td>
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<tr>
<td><strong>Coordination:</strong></td>
<td>NTUA, Energy Policy Unit, National Technical University of Athens</td>
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<tr>
<td><strong>Participants:</strong></td>
<td>13 European partners; 5 international partners</td>
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<tr>
<td><strong>Call/Grant:</strong></td>
<td>H2020-LC-CLA-01-2018/820846</td>
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**Consortium**

<table>
<thead>
<tr>
<th>Consortium Member</th>
<th>Country</th>
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<tbody>
<tr>
<td>NTUA - National Technical University of Athens</td>
<td>GR</td>
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<tr>
<td>BC3 - Basque Centre for Climate Change</td>
<td>ES</td>
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<tr>
<td>Bruegel - Bruegel AISBL</td>
<td>BE</td>
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<tr>
<td>Cambridge - University of Cambridge</td>
<td>UK</td>
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<tr>
<td>CICERO - Cicero Senter Klimaforskning Stiftelse</td>
<td>NO</td>
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<tr>
<td>CMCC - Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici</td>
<td>IT</td>
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<tr>
<td>E4SMA - Energy, Engineering, Economic and Environment Systems Modelling Analysis</td>
<td>IT</td>
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<tr>
<td>EPFL - École polytechnique fédérale de Lausanne</td>
<td>CH</td>
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<tr>
<td>Fraunhofer ISI - Fraunhofer Institute for Systems and Innovation Research</td>
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<td>Grantham - Imperial College of Science Technology and Medicine - Grantham Institute</td>
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<td>HOLISTIC - Holistic P.C.</td>
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<td>IEECP - Institute for European Energy and Climate Policy Stichting</td>
<td>NL</td>
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<td>SEURECO - Société Européenne d’Économie SARL</td>
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<td>CDS/UnB - Centre for Sustainable Development of the University of Brasilia</td>
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<td>CUP - China University of Petroleum-Beijing</td>
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<td>IEF-RAS - Institute of Economic Forecasting – Russian Academy of Sciences</td>
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<td>IGES - Institute for Global Environmental Strategies</td>
<td>JP</td>
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<td>TERI - The Energy and Resources Institute</td>
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Objectives

Policy

- EU-level: next NDC, national level: NECPs
- Sectoral analyses for detailed EU 2050 roadmap
- All ten major emitters; other less emitting countries
- Forum for discussing game-changing topics

Society

- Co-creation: needs scenarios, assumptions
- Enhanced transparency & legitimacy
- Improved understanding of models

Research

- I²AM PARIS: open access, multi-modelling, data exchange platform
- New paradigm: modelling ensembles, robustness analysis, systems of innovation
- IPCC AR6 & other assessments: reviews, global analyses & inter-comparisons
PARIS REINFORCE consists of **four fully interconnected pillars**.
A set of **complementary**-in terms of mathematical structure, geographical, sectoral and focus coverage-**integrated assessment**, **energy system** and **sectoral models**

<table>
<thead>
<tr>
<th>Level</th>
<th>General Equilibrium</th>
<th>Partial Equilibrium</th>
<th>Macroeconometric</th>
<th>Energy System</th>
<th>Sectoral Focus</th>
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<tbody>
<tr>
<td>Europe Country Level</td>
<td>GEMINI-E3</td>
<td>GCAM</td>
<td>E3ME</td>
<td>JRC-EU-TIMES</td>
<td>ALADIN</td>
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<td>ICE5</td>
<td>ETSAP-TIAM</td>
<td>NEMESIS</td>
<td>MUSE</td>
<td>FORECAST</td>
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<td>Grantham-TIAM</td>
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<td>LEAP, MAPLE</td>
<td>CONTO</td>
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<td>MARKAL-India</td>
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<td>TIMES-CAC</td>
<td>SISGEMA</td>
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<td>Europe EU Level</td>
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<td>Global Level (MIPs)</td>
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<td>Major Emitting Countries</td>
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<tr>
<td>Other Less Emitting Countries</td>
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All **modelling activities**, including scenario inputs and assumptions, datasets, modelling outputs, and visualisation will be streamlined in an **open-access data exchange platform**.
Regarding the **public interface**:

- So far, we have worked on transparency of the models and presented a detailed documentation of the PARIS REINFORCE models.

- As modelling analyses are carried out, the second component of the platform will be implemented, including user-friendly presentation and visualisation of policy-relevant results and policy prescriptions, in response to co-created policy/research questions.
Regarding the **scientific interface**:

- We will create a **template** for all climate-economy and energy system modellers to provide us with **detailed documentation of their model(s)**, so that we can include it in our database, detailed and dynamic documentation. **[OPEN CALL]**

- Scientists will also have access to similar templates to provide us with the **topics** (research questions) they have addressed, as well as their modelling **inputs** and **results** to host in I²AM PARIS.
The I²AM PARIS Prototype

http://paris-reinforce.epu.ntua.gr/main

I²AM PARIS
Integrating Integrated Assessment Models

An open-access, data exchange platform to host the detailed documentation, and analyses carried out by means of the PARIS REINFORCE integrated assessment and energy system models.
The ongoing stakeholder engagement module, led in the project by Bruegel, orients on the Stakeholder Council, a broader body envisaged to encompass stakeholder groups, in line with the values of the Talanoa dialogue.

The Stakeholder Council

Enables stakeholders to influence and contribute to the scientific processes, in the PARIS REINFORCE co-creative structure.

- Driving modelling activities, by deciding on the policy questions that the project will take on, and expressing preferences that will help formulate the scenarios.
- Engaging in two series of regional and national workshops, as well as via bilateral communications.
- Representing societal, business, policy and science groups (policymakers, governments, industry representatives, academics, scientists, NGOs, civil society).
- Stored in a private, enhanced stakeholder database.
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Building **ownership** and ensuring **policy relevance**, through **co-creation**.

Two modelling iterations – two series of national/regional workshops (European and global)
Since June 2019, we have made progress on:

- Enhancing **transparency**: detailed, easy-to-digest description and documentation of all models to be used in the project, aimed at policymakers and other stakeholder groups
  - Policy brief on “What can our models do?” (hand-out)
  - I²AM PARIS platform prototype (link provided)
  - A series of detailed documentation reports of each model along with comparative assessments

- Enhancing **policy support** through:
  - stakeholder-driven climate (policy) risk analysis against multiple criteria, evaluating consensus, and policy/technological uncertainty assessment
  - socio-technical analysis for informing models, analysing robustness of modelling outcomes, and exploiting stakeholder knowledge.

Published Papers:


Key priorities for designing **scenarios for mid-century strategies** were defined **with stakeholders** across three axes: **global pathways; a Paris-consistent Europe; and implications for Sustainable Development Goals.**

- **Interviews with key stakeholders (EU Ministries, EC DGs CLIMA, ENER, RTD)**
- **Putting together a list of Research Questions (RQs)**
- **Preparing a set of modelling approaches for each RQ**
- **Discussing with stakeholders** the selected RQs at the policy event
- **Stakeholders voting on RQs for discussion at the policy event**
- **Stakeholders voting on RQs for the PARIS REINFORCE project to take on**
- **Integrating priority RQs with a “ratcheting up ambition” framework**
- **Global and EU-regional modelling runs, and model inter-comparisons**
The PARIS REINFORCE global scenarios for mid-century strategies will focus on the following dimensions:

**Potential failures of key technologies**
- How do mitigation costs, energy mix, and feasibility of ambitious mitigation targets change if selected technologies do not reach their full potential?

**Lifestyle and behavioural changes**
- What share of mitigation can realistically be achieved via changes to lifestyle and behaviour?

**Green new deal / Just transition**
- Is it possible to model a climate emergency or ambitious green new deal/package requiring net-zero emissions in 2030?
- If so, how can we ensure that the associated transitions are just for all societal groups?
The PARIS REINFORCE EU-regional scenarios for its NDC and 2050 strategy will focus on the following dimensions:

### Carbon Border Adjustment (carbon tax)
- Can losses/leakages be mitigated effectively by a CBA mechanism? What are alternative measures?
- What would the impact of CBA be on EU countries?

### Electrification
- How can we provide enough RE generation, storage and distribution capacity in an extreme electrification scenario? Under which conditions can electricity grids be able to manage this? What is the role of flexibility options?

### EU-internal taxation policies
- What is the scope for increasing ambition in terms of coverage of the ETS (incl. non-ETS, reduction of permits)?
- What are the potential implications of expanding the harmonisation of taxation across the EU in non-ETS sectors?
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The final global and EU scenarios will be coupled with considerations of selected **Sustainable Development Goals**

**Employment** and other socio-economic dimensions as a result of **removing public support on emission intensive energy sectors** (e.g. coal)

Evolution of employment in terms of **sectoral redeployment** and **skill requirements to support carbon-neutral economies**?

**Increasing ambition in NDCs** (ratcheting up parameters TBD)
Thank you!

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