PARIS
REINFORCE

25/11/2022

D8.13 – Proceedings of the Final Conference

WP3 – Continuous stakeholder engagement
v1.00

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EC Summary Requirements

1. Changes with respect to the DoA

Instead of one, according to the work described in the DoA, two final conferences were eventually held for the project, one in Athens, Greece and one in Paris, France.

2. Dissemination and uptake

This deliverable serves as documentation of the proceedings of the final conferences of the PARIS REINFORCE project. It reports particularly on the objectives, agenda, and summary. Links to all material (including summaries, photos, presentations) are provided for each of the two events. The report is targeted publicly to all relevant stakeholders to provide a better understanding of the practicalities behind the nature of PARIS REINFORCE efforts for ensuring ownership and relevance of the research process, and the final proceedings of this process.

3. Short summary of results (<250 words)

Two final conferences for the PARIS REINFORCE project were held, one at the Acropolis Museum, Athens on the 8th of November 2022, and another at Sorbonne University, Paris on the 15th of November 2022. The aim was to disseminate the knowledge co-produced throughout the 3.5 years of the project and stimulate a dialogue with the stakeholders on project findings. The event in Greece included nice sessions in total, among which a welcome note from the Deputy Minister of Environment and Energy, two keynote speeches, four sessions with presentations and panel discussions (on i. REPowerEU, ii. energy democracy, iii. businesses in climate action, and iv. the potential of renewables in EU and Greece), and one session on presenting the nation-wide poll results on the energy crisis and climate change. 393 people registered, while on the day more than 180 stakeholders joined the event. Regarding the second event in France, including opening remarks, five sessions with 11 presentations and four panel discussions took place. The sessions covered a range of research studies undertaken during the project, including on mitigation pathways compliant with the Paris Agreement goals with both a global and a regional perspective; on the trade-offs for the European energy transition based on modelling and stakeholder-driven methodologies; on the I^2AM PARIS platform; and on the impact of recent crises on long-term sustainability goals (COVID-19 recovery, gas supply crisis, and the impacts on the Fit for 55 goals). 83 people registered, while on the day more than 60 stakeholders joined.

4. Evidence of accomplishment

Online records of events and the documentation in this report.

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Preface

PARIS REINFORCE will develop a novel, demand-driven, IAM-oriented assessment framework for effectively supporting the design and assessment of climate policies in the European Union as well as in other major emitters and selected less emitting countries, in respect to the Paris Agreement. By engaging policymakers and scientists/modellers, PARIS REINFORCE will create the open-access and transparent data exchange platform I^{2}AM PARIS, in order to support the effective implementation of Nationally Determined Contributions, the preparation of future action pledges, the development of 2050 decarbonisation strategies, and the reinforcement of the 2023 Global Stocktake. Finally, PARIS REINFORCE will introduce innovative integrative processes, in which IAMs are further coupled with well-established methodological frameworks, in order to improve the robustness of modelling outcomes against different types of uncertainties.

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

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Executive Summary

Two final conferences for the PARIS REINFORCE project were held, one at the Acropolis Museum, Athens on the 8th of November 2022, and another at Sorbonne University, Paris on the 15th of November 2022. The aim of these events was to disseminate the knowledge co-produced throughout the 3.5 years of the project and stimulate a dialogue with the stakeholders on the project findings.

The event in Greece included nice sessions in total. After a short welcome note and a greeting from the Deputy Minister of Environment and Energy, a set of keynote speeches and discussion tackled the issue of the energy crisis vis-à-vis the climate crisis. The first discussion panel then took aim at the REPowerEU plan and its integration in Greece's strategy for eliminating its reliance on Russian fossil fuels. Another session looked at the value of energy democracy in climate action, while a third discussion panel explored the role of Greek businesses in environmental conservation and the energy and climate crises. A final discussion panel focused on the role and potential of renewables in Europe and Greece, before narrowing down to the much-debated role of wind power plants in the country. Then, the results of the project's poll on Greek citizens' perceptions on climate change and today's energy landscape were presented and discussed, before the PARIS REINFORCE project coordinator closed the conference. 393 people registered, while on the day more than 180 stakeholders joined the event.

As far as the second event in France is concerned, including opening remarks, five sessions with 11 presentations and four panel discussions took place. The sessions covered a range of research studies undertaken during the project. This included research on mitigation pathways compliant with the Paris Agreement goals, involving studies with both a global and a regional perspective. Explorations of the trade-offs for the European energy transition were also presented, with research using both modelling and stakeholder-driven methodologies. Enabling climate policy support was also discussed in the context of the development of the I^{2}AM PARIS platform, communicating the aims of this platform and its achievements. Finally, studies on the impact of recent crises on long-term sustainability goals were presented. These included investigating the COVID-19 recovery packages, the impact of the gas supply crisis on particularly vulnerable countries, and the effects of the energy crisis on the Fit for 55 goals. Stakeholders were invited to engage with the project partners after each presentation, as well as during panel discussions which followed each session. 83 people registered, while on the day more than 60 stakeholders joined.

Links to each presentation are provided in the final subsection of each section.

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

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

1 Final Project Conference in Athens, November 8, 2022

1.1 Overview

Recently, the European Union (EU) revisited its climate ambitions, aiming to achieve net zero emissions by 2050. It is also on the verge of harmonising its roadmap with this ambitious objective, with the first milestone being a -55% emissions reduction by 2030. With its recent Climate Law as a starting point, Greece will soon have to also revisit its national energy and climate plan, in this new European direction. At the same time, the EU's plan for responding to today's energy crisis and eliminating its dependency on Russian fossil fuels, since the Ukraine invasion in February 2022, explicitly mentions accelerating new renewable energy projects, diffusing energy efficiency measures, and diversifying its energy supply portfolio. However, many European leaders have so far sought solutions in currently available "grey" resources as well as in new fossil-fuel investments. In Greece, this translates to reprioritisation of lignite and bold investments into new fossil fuels, notably liquefied natural gas, opening many questions regarding the country's climate ambition in the near future.

Any effort to respond to these questions, regarding national climate action and green transition in the light of today's energy crisis, must be socially acceptable. Ideally, citizens should be given the stand to co-produce the national strategy, be informed and express their views on the alternatives, and co-own Greece's green transition.

In the context of PARIS REINFORCE, the project coordinator (National Technical University of Athens, NTUA) and the Society for the Environment and Cultural Heritage co-organised a national conference on "Climate change, the Energy Crisis and Greece's Net-Zero Transition", on Tuesday, November 8, 2022, giving the opportunity to stakeholders from industry, academia, government, and the civil society to get informed, discuss, raise concerns, and help decide the way forward.

The conference included four sessions, during which the consortium presented findings from the PARIS REINFORCE project and discussed issues regarding the national plan towards dealing with the energy price shocks, the value of energy democracy in the long-term transition, the role of business in today's energy crisis, and the potential lying in renewables (and especially wind energy) in a socially just and environmentally effective pathway to net-zero.

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1.2 Conference Agenda

The conference agenda is provided below:

Climate Change, Energy Crisis, and Greece's Net-Zero Transition: What are the options?

Tuesday 8 November 2022, Acropolis Museum

Media Sponsor

PARIS REINFORCE has received funding from the EU's Horizon 2020 Research and Innovation Programme (Grant No 820846).

A G E N D A

09:30-10:00 **REGISTRATION - COFFEE**

10:00-10:10 **INTRODUCTION**

Lydia Carras, President, ELLINIKI ETAIRIA Society for the Environment and Cultural Heritage (ELLET)

John Psarras, Professor NTUA, Director of Decision Support Systems Laboratory

10:10-10:20 **WELCOME**

Giorgos Amiras, Deputy Minister of Environment and Energy

10:20-11:00 **KEYNOTE SPEECHES & DISCUSSION**

Chair: **Argyris Demertzis**, Journalist, Ecopress

- **Athanasios Dagoumas**, President of Regulatory Authority for Energy (RAE)
- **Haris Doukas**, Associate Professor NTUA, Coordinator of "PARIS REINFORCE"

11:00-12:00 **Session 1: REPowerEU**

Chair: **Theodore Fortsakis**, Professor, Athens Law School

- **Dimitris Tsitouridis**, Policy Officer, DG Energy, European Commission
- **Kostas Andriosopoulos**, Professor of Energy Economics, Audencia Business School, President of the Energy Transition Council of the Hellenic Association for Energy Economics (HAEE)
- **Eva Papadionysiou,** *Director of the Market Monitoring & Analysis Department, Hellenic Energy Exchange (HEnEx)*
- **Nektaria Karakatsani**, Consultant to the Ministry of Environment and Energy
- **Agis Digkas**, Vice President, Renewable Energy Sources Operator & Guarantees of Origin (DAPEEP SA)

QUESTIONS

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12:00-13:00 **Session 2: Energy Democracy and Green Transition**

Chair: **Zoi Vrontisi**, *Director of Economic Impacts Assessments, E3Modelling S.A.*

- **Dimitris Kollias**, New Business Activities Department, PPC S.A.
- **Vassilis P. Bokos**, Attorney at Law, Energy Communities' energy counsel
- **Giorgos Stamtsis**, General Manager, Hellenic Association of Independent Power Companies
- **Alice Corovessi,** Managing Director, INZEB – Initialising Energy Balance towards Zero
- **Giorgos Theodorakis**, Vice President, Association of Energy Storage System Operators

QUESTIONS

13:00-14:00 **LIGHT MEAL**

14:00-15:00 **Session 3: Energy Crisis, Businesses, Environment**

Chair: **Ilias Bissias**, Attorney at Law, Director of the Magazine «Naftika Chronika»

- **Elias Papatheodorou**, Chair Of The Board Of Directors, Biotechnology Companies
- **Panagiotis Habesis**, Chief of Development Programmes, Financing & Sustainability, Hellenic Bank Association
- **Panos Kourkountis**, *Sea Traders SA, President of MARTECMA*
- **Anastasios Tossios**, Deputy CEO, EYDAP S.A. (Athens Water Supply and Sewerage Company)
- **Giannis Georgizas**, General Manager, "Sustainable City"

QUESTIONS

15:00-16:00 **Session 4: The diffusion of RES and the case of wind plants**

Chair: **Miltiades Lazoglou**, Spatial Planning and Development Engineer, Director of Energy Policy ELLET

- **Konstantinos Triantis**, CEO, Natural Environment and Climate Change Agency (NECCA)
- **Apostolis Kaltsis**, Preservation Programmes' Coordinator, Hellenic Ornithological Society
- **Alexandros Nikas**, Senior Researcher, NTUA, Project Manager of "PARIS REINFORCE"
- **Panagiotis Tsakiris**, Project Development Manager, Total Eren
- **Vasiliki Pougkakioti**, Member of ELLET's Energy Council
- **Ioanna Christopoulou**, *RES Legal Counsel – Development of Offshore wind*

QUESTIONS

16:00-16:30 **Attitudes and Perceptions on the Energy Crisis –Results from the 1st Survey in Greece**

Tasos Vasiliou, Commercial Director, Manager for Business Development & Communication, Prorata S.A.

Katerina Christofilidou, Journalist, ERT (Hellenic Broadcasting Corporation)

16:30-17:00 **CONCLUSIONS**

Haris Doukas, Associate Professor NTUA, Coordinator of "PARIS REINFORCE"

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1.3 Introduction & Welcome

First, the President of the Society for the Environment and Cultural Heritage, with whom the PARIS REINFORCE project co-hosted the event, addressed the audience, outlining the organisation's broader objectives as well as expectations from the event. Prof. John Psarras, from the project coordination's side (NTUA) and Director of the EPU lab, highlighted the importance of science in dealing with the disruptive uncertainties associated both with climate change and with the current energy landscape, which was formed amidst efforts to recover from the COVID-19 pandemic.

The Greek Deputy Minister for Environment and Energy, Giorgos Amiras, then presented the efforts that the government has been making since the start of the crisis as well as in respect to climate change, biodiversity preservation, and environmental protection. The minister also discussed the importance of and expectations from the policy processes at COP27 in Egypt that was, at the time, in its first week.

1.4 Keynote speeches and discussion

Prof. Athanasios Dagoumas, President of the Regulatory Authority for Energy in Greece, delivered a keynote speech on the trends of natural gas in wholesale markets, making a case for the Russian invasion being the key cause of the 2022 energy crisis. He also explained how the temporary mechanism for special taxation of parts of electricity market incomes has helped mitigate the price boom, further explaining that the national energy and climate plan should define the national marginal GHG abatement cost curve, also prioritising energy efficiency. Prof. Dagoumas then discussed the anticipated ten-year transmission grid development plan, notably regarding the interconnections among the mainland and island grids and the international interconnections for natural gas.

PARIS REINFORCE project coordinator, Prof. Haris Doukas, then delivered another keynote speech, discussing key findings of the project at the global and EU levels, before then explaining the links between the climate and the energy crisis. Prof. Doukas then discussed energy companies' windfall profits in Greece and worldwide, compared subsidies, inflation, and energy dependency between Greece and other EU countries, and contested the country's current trajectory towards a new lock-in into gas infrastructure. Finally, he made a case about the big RES projects vs. the limited capabilities for citizens to invest in small-scale projects, arguing in favour of energy democracy and discussing the grid saturation levels and the potential of hitherto underexplored renewable technologies and of energy efficiency in the country.

The two then had a discussion, moderated by Ecopress journalist Mr. Argyris Demertzis.

1.5 Session 1: REPowerEU

The first session saw a presentation from European Commission DG Energy Policy Officer, Mr. Dimitris Tsitouridis, on the Commission's side of things, concerning the bloc's strategy for eliminating the EU member states' reliance on fossil fuels imported from Russia (both natural gas and oil). Mr. Tsitouridis then joined a panel discussion with Prof. Kostas Andriosopoulos (Audencia Business School, and President of the Energy Transition Council of the Hellenic Association for Energy Economics), the Director of the market monitoring and analysis department of Hellenic Energy Exchange Ms. Eva Papadionysiou, Ms. Nektaria Karakatsani (consultant to the Ministry of Environment and Energy), and Vice President of the RES Operator Mr. Agis Digkas. The discussion, focusing on how the country can internalise and implement the EU strategy at the national level, was chaired and coordinated by Prof. Theodore Fortsakis of the Athens Law School (and member of the Society for the Environment and Cultural Heritage).

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1.6 Session 2: Energy Democracy and Green Transition

The second session and panel discussion, chaired and coordinated by Dr. Zoi Vrontisi (Director of Economic Impact Assessments in E3Modelling), took aim at why and how energy democracy is necessary and can contribute to the renewable energy transition in the country. Mr. Dimitris Kollias from the Public Power Corporation (PPC) first established some key notions about climate change and shared some overarching guidelines at the state and individual level, before discussing the initiatives that the PPC has taken in this direction. Ms. Alice Corovessi (Managing Director of Initialising Energy Balance towards Zero) then delivered a presentation on energy poverty statistics for Greece, relevant implications for livelihoods as well as captured perceptions and misconceptions among Greek citizens. They both joined a fruitful discussion with Mr. Vassilis Bokos (energy counsel to energy communities), Dr. Giorgos Stamtsis (General Manager of the Hellenic Association of Independent Power Companies), Vice President of the Association of Energy Storage System Operators Mr. Giorgos Theodorakis, and the audience.

1.7 Session 3: Energy Crisis, Businesses, Environment

The third session featured no presentations but a detailed discussion among the five participants on the role, obligations/responsibilities, and initiatives of Greek businesses/industry for the environment, climate action, and the energy crisis. These were Mr. Elias Papatheodorou (European Green Party, and Chair of the Board of Directors of Biotechnology Companies), Mr. Panagiotis Habesis (chief of development programmes, financing, and sustainability of the Hellenic Bank Association), Mr. Panos Kourkountis (president of MARTECMA, Sea Traders SA), Mr. Anastasios Tossios (deputy CEO of the Athens Water Supply and Sewerage Company), and Mr. Ioannis Georgizas (general manager of Sustainable City).

1.8 Session 4: The diffusion of RES and the case of wind plants

A fourth discussion panel was held, focusing on the role of renewables and especially wind power in the perceived green vs. green conflict in Greece. CEO of the Natural Environment and Climate Change Agency presented key aspects of this perception among Greek citizens, with a focus on how wind project installations may jeopardise the Natura 2000 network, with implications for the environment and biodiversity in the country. Mr. Apostolos Kaltsis of the Hellenic Ornithological Society made a case about wind plants' impacts on wildlife, and especially on bird populations.

Dr. Alexandros Nikas (NTUA) then presented and discussed work from the PARIS REINFORCE project, regarding the role of renewables in the green recovery from COVID and the green transition, in both the EU and Greece. He first highlighted how renewable energy is projected to expand in the EU, according to the project's model inter-comparison studies, under both current climate policies and the 'Fit for 55' package. Dr. Nikas also explained how the diffusion of solar, onshore wind, offshore wind, and biofuels in particular, prioritised from the green part of the RRF investments, can contribute to further emissions cuts, as well as to near- and longer-term employment gains in the energy sector. He then narrowed down his points to Greece, presented PARIS REINFORCE work on the country's stated national strategy, which is projected to further increase reliance on natural gas, before presenting research on how this can be avoided, in line with ambitious climate goals but also in a realistic, environmentally feasible, and economically viable manner. Dr. Nikas, finally, discussed what all these different trajectories would require in terms of land use, and how this can resonate with the objective of preserving the Natura 2000 network and other areas of high biodiversity importance. Finally, Ms. Vasiliki Pougkakioti (from the Society for the Environment and Cultural Heritage) discussed her organisation's key priorities in this respect, from energy efficiency and storage to renewables and spatial planning for wind power plants.

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The speakers then joined Mr. Panagiotis Tsakiris (project development manager of Total Eren) and Ms Ioanna Christopoulou (RES legal counsel for offshore wind development), in a heated discussion with the participation of the audience.

1.9 Attitudes and Perceptions on the Energy Crisis –Results from the 1st Survey in Greece & Conclusions

Finally, commercial director and manager for business development and communication of Prorata Mr. Tasos Vasiliou, alongside Ms. Katerina Christofilidou (journalist of the Hellenic Broadcasting Corporation), presented the results of the nationwide poll on citizens' perceptions that was conducted for PARIS REINFORCE (sample size: 1,026 Greek citizens) between 24 October and 2 November 2022. The presentation was followed by a very vivid discussion among the two speakers, PARIS REINFORCE researchers, and the audience.

1.10 Presentations

The presentations for the PARIS REINFORCE final conference in Athens can be found on the website, as follows:

Keynote speeches & Discussion

Athanasios Dagoumas (RAE - Regulatory Authority for Energy) - Climate change, energy crisis, and the green transition *(in Greek)*

Haris Doukas (NTUA - National Technical University of Athens) - Confronting the energy crisis *(in Greek)*

Session 2: Energy Democracy and Green Transition

Dimitris Kollias (PPC - Public Power Corporation) - Energy democracy and the green transition *(in Greek)*

Alice Corovessi (INZEB - Initialising Energy Balance towards Zero) - Energy poverty in Greece *(in Greek)*

Session 4: The diffusion of RES and the case of wind plants

Vassiliki Pougkakioti (ELLET - Society for the Environment and Cultural Heritage) - In principle *(in Greek)*

Alexandros Nikas (NTUA - National Technical University of Athens) - The role of RES in the green transition (and recovery) in Greece and the EU *(in Greek)*

Greek survey results

Tasos Vasiliou (Prorata) - Greek perceptions, attitudes, and behaviour on climate change and the energy crisis

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2 Final Project Conference in Paris, November 15, 2022

2.1 Overview

The final conference for the PARIS REINFORCE project took place at Sorbonne University on the 15th of November 2022. The aim of the final conference of the PARIS REINFORCE event was to disseminate the knowledge co-produced throughout the 3.5 years of the project. Stakeholders were invited to engage with the project partners after each presentation, as well as during panel discussions, which followed each session.

The knowledge co-produced was developed from research on a range of key areas in the energy and climate policy space. The opening remarks were delivered by the event co-hosts, Prof. Florent Pratlong (Université de Paris 1), Dr. Paul Zagamé (SEURECO), Mr. Jean-Eudes Moncomble (World Energy Council – France), and Prof. Haris Doukas (National Technical University of Athens). The first session presented research on mitigations pathways compliant with the Paris Agreement goals, involving studies with a global perspective presented by Dr. Shivika Mittal (Imperial College London) and a regional outlook presented by Dr. Lorenza Campagnolo (Euro-Mediterranean Centre for Climate Change). A panel discussion took place on the global mitigation outlook, chaired by Mr. Jean-Eudes Moncomble (World Energy Council – France) and including Dr. Glen Peters (CICERO), Dr. Xi Yang (Harvard University), Mr. Apostolos Petropoulos (International Energy Agency), Mr. Bruno Ladsous (Nos Energies - Occitanie Environnement), and the audience.

Explorations of the trade-offs for the European energy transition were then presented to the audience of stakeholders. Mr. Baptiste Boitier (SEURECO) presented a modelling approach, while Dr. Jakob Wachsmuth (Fraunhofer ISI) then presented stakeholder-driven methodologies. A panel discussion took place after this session, chaired by Dr. Alexandros Nikas (National Technical University of Athens), with Jean-Eudes Moncomble (World Energy Council – France), Yves Marignac (Negawatt), Dr. Philine Warnke (Fraunhofer ISI), and Dr. Alessandro Chiodi (E4SMA).

Enabling climate policy support was also discussed in the context of the development of the I^{2}AM PARIS platform, with Dr. Alevgul Sorman communicating the aims of this platform and its achievements. Dr. Alexandros Nikas (National Technical University of Athens), Dr. Georgios Xexakis (HOLISTIC), and Dr. Sorman then took part in a short panel chaired by Ms. Elin May (Cambridge University).

Finally, studies on the impact of recent crises on long-term sustainability goals were presented. Dr. Dirk-Jan van de Ven (Basque Centre for Climate Change) presented research investigating the COVID-19 recovery packages, before Dr. Georgios Xexakis (HOLISTIC) discussed work on the impact of the gas supply crisis on particularly vulnerable countries such as Greece and Italy. Dr. Marc Vielle (École Polytechnique Fédérale de Lausanne) delivered the final presentation on the effects of the energy crisis on the 'Fit for 55' goals. A panel discussion, chaired by Prof. Haris Doukas (National Technical University of Athens) and joined by Dr. Georg Zachmann (Bruegel), Dr. Ajay Gambhir (Imperial College London), Prof. Jean-Luc Gaffard (Université de Nice Sophia Antipolis – OFCE), and Mr. Sylvain Hercberg (Independent expert), concluded the conference.

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2.2 Conference Agenda

The conference agenda is provided below:

Delivering on the Paris Agreement in a fragmenting world

Final Conference of the PARIS REINFORCE project

Tuesday, November 15, 2022

Location: Sorbonne University (entrance: 17 rue de la Sorbonne, 75006 Paris, France)

Agenda

08:30 - 09:00	**Registrations**
09:00 – 09:15	**Session I, Welcome notes** • *Florent Pratlong (Université de Paris 1)* • *Paul Zagamé (SEURECO)* • *Jean-Eudes Moncomble (World Energy Council – France)* • *Haris Doukas (National Technical University of Athens)*
09:15 – 10:45	**Session II – Quantifying the road to Paris** *Session Chair: Jean-Eudes Moncomble (World Energy Council – France)* II.1 Where does the world stand and where does it need to be? (20') • *Shivika Mittal (Imperial College London – Grantham Institute)* II.2 Sustainable transitions in major economies (20') • *Lorenza Campagnolo (CMCC Euro-Mediterranean Center on Climate Change)* II.3 Panel discussion (50') • *Glen Peters (CICERO Center for International Climate Research), Xi Yang (Harvard University), Apostolos Petropoulos (International Energy Agency), Bruno Ladsous (Nos Energies - Occitanie Environnement)*
10:45-11:15	**Break**
11:15-12:45	**Session III – Towards Net Zero Emissions in the EU** *Session Chair: Alexandros Nikas (National Technical University of Athens)* III.1 Transforming Europe (20') • *Baptiste Boitier (SEURECO)* III.2 Bottlenecks to sectoral decarbonisation in Europe: national insights (20') • *Jakob Wachsmuth (Fraunhofer ISI)* III.3 Panel discussion (50')

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	• *Philine Warnke (Fraunhofer ISI), Alessandro Chiodi (E4SMA), Jean-Eudes Moncomble (World Energy Council – France), Yves Marignac (Negawatt)*
12:45–14:15	**Lunch Break**
14:15-14:35	**Session IV - Enabling climate policy support** *Session chair: Elin May (University of Cambridge)* IV.1 The I²AM PARIS Platform (20') • *Alevgul Sorman (Basque Centre for Climate Change)*
14:35–16:35	**Session V – Planning in the light of today's threats to sustainability** *Session Chair: Haris Doukas (National Technical University of Athens)* V.1 Walking out of a pandemic and into an energy crisis (20') • *Dirk-Jan van de Ven (Basque Centre for Climate Change)* V.2 Energy transitions following the Ukraine invasion: insights from Italy and Greece (20') • *Georgios Xexakis (HOLISTIC)* V.3 The cost of phasing out Russian fossil fuels (20') • *Marc Vielle (École Polytechnique Fédérale de Lausanne)* V.4 Panel discussion (60') • *Georg Zachmann (Bruegel), Ajay Gambhir (Imperial College London – Grantham Institute), Jean-Luc Gaffard (Université de Nice Sophia Antipolis – OFCE); Sylvain Hercberg (Independent expert)*
16:35–16:45	**Closing remarks**

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2.3 Session I – Welcome Notes

The co-hosts launched the final conference with their opening remarks. Prof. Florent Pratlong (Université de Paris 1) welcomed all event participants to Sorbonne and provided some contextual background details about the magnificent event space, the Salle Louis Liard de la Sorbonne. Dr. Paul Zagamé (SEURECO) further remarked on the excellence of the venue, before outlining his perspective of PARIS REINFORCE as a project partner. Mr. Jean-Eudes Moncomble (World Energy Council – France) gave an overview of the organisation of the event and the anticipated outputs from the conference.

After the introduction from the other hosts, Prof. Haris Doukas (National Technical University of Athens), project coordinator for PARIS REINFORCE, delivered his welcome notes. He noted the geographically diverse representation in the consortium and described the overall modelling ensemble made up of the models brought to the project by each partner. Prof. Doukas outlined the general structure and purpose of the PARIS REINFORCE project, highlighting the I^2AM PARIS public interface which was intended to enhance the transparency and robustness of the project modelling activities. The role of stakeholders and the many workshops held during the project was also emphasised. Prof. Doukas noted that over 1,000 stakeholders were engaged across the world, with 37 events held (among which 23 workshops with stakeholders co-creating the process). Prof. Doukas concluded by observing that the high-level outputs from PARIS REINFORCE (informing the global emissions pathway stocktake, exploring the enabling policies for a green COVID-19 recovery, and making sense of the energy crisis) were of strong policy relevance and that the project should be seen as a success of collaborative, stakeholder-driven modelling research.

2.4 Session II – Quantifying the road to Paris

The first session covered the necessary climate mitigation steps that are necessary to meet the Paris Agreement targets. It involved presentations of core results from the PARIS REINFORCE project, across global climate action, regional deep dives, and a stimulating panel discussion.

Dr. Shivika Mittal (Imperial College London) began the session with a presentation entitled 'Where does the world stand and where does it need to be?'. She outlined the aim of this aspect of the PARIS REINFORCE research, focused on exploring where emissions are heading under current mitigation ambitions. Dr. Mittal described the modelling suite (seven integrated assessment models) and the scenario design (which explored the gap between current policies and the Nationally Determined Contributions) used to investigate questions in this area. A significant implementation gap between the current stated policies and the emissions targets was highlighted in the research.

A comparison between the pre- and post-Glasgow COP26 commitments was then provided by Dr. Mittal. The modelling work showed that while the new national long-term emissions targets are consistent with well-below 2ºC trajectories, a sizeable gap remains between the current policies and reaching these targets. Dr. Mittal also discussed sectoral transmission pathways outlined in the research and the feasibility framework used to assess their real-world relevance. The macroeconomic implications of Paris agreement-consistent emissions pathways were then explored, with Dr. Mittal highlighting that the only model to show GDP gains from climate policy was the non-equilibrium E3ME model. This is in line with expectations based on the structure and solution philosophy of the models used. Dr. Mittal concluded her presentation by summarising that current policies and NDCs targets are still insufficient to meet Paris Agreement goals and that near-term emissions reduction is necessary to avoid overshooting 1.5ºC.

Dr. Lorenza Campagnolo (Euro-Mediterranean Centre for Climate Change) then covered the regionally specific

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outputs of this research stream. Dialogue with local stakeholders was foundational to the regionally specific work, with workshops held with stakeholders from India, Central Asia, Russia, the United States, China, Brazil, and Canada. Dr. Campagnolo provided details on the discussions that took place at the India workshop, including some results from polling that was done on the day of the workshop. These polled results were then translated into scenario targets for a first round of regional modelling. The modelling outputs suggested that there is a potential for deep emissions cuts across many regions, primarily driven by a rapid penetration of renewables, increasing electrification and efficiency gains across all sectors.

An SDG analysis was also carried out in this part of the PARIS REINFORCE research. Dr. Campagnolo explained the SDG framework, involving 32 indicators, 14 SDGs, and 8 regions. The key takeaways from this analysis were that the environmentally oriented SDGs converge towards a sustainable pathway in most regions but that trade-offs emerge when considering economic and social indicators. Specifically, economic indicators tend to worsen due to the cost of mitigation policy and similarly social indicators may worsen due to the reduction in wealth. Another piece of analysis presented by Dr. Campagnolo concerned game-changing technologies. This research was kicked-off with an online survey to understand from an expert perspective which innovations may be of fundamental importance for the energy transition. In summary, expert perceptions varied on technological innovations; notably, CCS and BECCS are concerned as valid mitigation options but simultaneously involve a risk of mitigation delay. Furthermore, technologies such as direct air capture and nuclear fusion were unlikely to be available before mid-century.

The panel discussion, chaired by Mr. Jean-Eudes Moncomble (World Energy Council – France), included a presentation from Mr. Apostolos Petropoulos of the International Energy Agency (IEA). Mr. Petropoulos covered the main takeaways of the IEA's World Energy outlook, noting that peak fossil fuel demand is arriving in this decade. Other indicators, according to Mr. Petropoulos, such as spectacular growth in EVs and announced plans to scale up clean energy manufacturing capacity, signalled that the energy transition is underway. However, to manage the transition, Mr. Petropoulos highlighted that a new energy security paradigm is required. This would mean managing the co-existence of both systems to continue to deliver vital energy services throughout the decarbonisation process. The IEA presentation concluded on an optimistic note that policy and technology progress has shaved off 1ºC of projected warming since 2015, but much more needs to be done to avoid severe climate disruptions.

Session II concluded with a vivid discussion between Dr. Glen Peters (CICERO), Dr. Xi Yang (Harvard University), Mr. Apostolos Petropoulos (International Energy Agency), Mr. Bruno Ladsous (Nos Energies - Occitanie Environnement), and the audience.

2.5 Session III – Towards Net Zero Emissions in the EU

The second session, "Towards Net Zero Emissions in the EU", focused on the European energy transition.

Mr. Baptiste Boitier (SEURECO) started the session with his presentation 'Transforming Europe', providing a deep-dive into European Paris-compliant pathways and the associated policy implications that were produced in the project. This modelling exercise mobilised seven different models. Mr. Boitier explained the scenario design process, using a current policies style scenario called 'Where are we heading?' and a Paris Agreement compliant scenario. The latter was further broken down into more detailed scenarios. The results of this analysis were provided in detail, with the headline output being that net zero emissions are reached in Europe in the electricity sector in all scenarios at some point between 2035 and 2045. However, decarbonisation is much slower in other sectors such as heating, and particularly in the transportation sector.

Other aspects of this strand of research were presented by Mr. Boitier, including an analysis of the burden sharing

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of emissions reductions between the EU-Emissions Trading Scheme and the ESR sectors, as well as the role of bioenergy with carbon capture and storage. Furthermore, it was highlighted that energy system models project no or little energy demand reduction, while macroeconomic models rely more on this approach. On the fuels used, in the net zero emissions scenarios, the share of fossil fuels unsurprisingly declines to around 25% in 2050 while nuclear increases slightly and hydro remains stable. The key takeaways from Mr. Boitier's presentation were that drastic reductions in emissions in all sectors were to be expected, while deep decarbonisation of power generation relies on bioenergy with carbon capture and storage, and that the role of energy saving should also be further explored.

The second presentation in Session III, 'Bottlenecks to sectoral decarbonisation in Europe: national insights', was delivered by Dr. Jakob Wachsmuth (Fraunhofer ISI), who offered a further focus on decarbonisation in Europe via an alternative, stakeholder-oriented system analysis methodology. As explained by Dr. Wachsmuth, the approach was to identify transition bottlenecks and co-create transformative policy mixes in collaboration with relevant stakeholders. The bottlenecks are derived from tensions between modelled scenarios and the present, expected innovation trajectories. Dr. Wachsmuth detailed the results of 5 case studies across various sectors in Europe, as well as Brazil and Canada. A central focus of this work was on industrial decarbonisation in Germany.

Dr. Wachsmuth provided a comprehensive account of the conceptual approach to co-creating policy mixes, going through the steps in preparation for workshops, the operation of those workshops and the ex-post evaluation of the workshop outputs. This process was able to identify the sectoral bottlenecks considered most relevant by stakeholders for sectors such as transportation and electricity. Dr. Wachsmuth listed learnings from this research, pointing out that tensions exist between modelled pathways and the real world and that there are commonalities across countries and sectors, such as infrastructure development, demand-side measures, and citizen dialogues.

The panel discussion, chaired by Dr. Alexandros Nikas (National Technical University of Athens), included a heated debate among Mr. Jean-Eudes Moncomble (World Energy Council – France), Dr. Yves Marignac (Negawatt), Dr. Philine Warnke (Fraunhofer ISI), and Dr. Alessandro Chiodi (E4SMA), while the Q&A with the audience offered a more interactive setting.

2.6 Session IV – Enabling climate policy support

Following the lunch break, Dr. Alevgul Sorman (Basque Centre for Climate Change) opened Session IV with a presentation called 'Enabling climate policy support', in which Dr. Sorman discussed the PARIS REINFORCE flagship knowledge exchange platform, I^{2}AM PARIS. Dr. Sorman set the PARIS REINFORCE project in the wider context of climate science and policy and explained how the I^{2}AM PARIS platform could play a valuable role. The aim of the platform is to improve communication between the public, users of climate and energy modelling information, and the climate experts themselves.

At the beginning of the PARIS REINFORCE project, the platform set out to meet 10 objectives, which were set out in detail by Dr. Sorman in her presentation. For example, the aim was to be *comprehensible* for non-experts, offer *transparency* to make the assumptions behind models visible, and develop a sense of *community* amongst the climate modelling field that included the users of information as well as the experts. Dr. Sorman further discussed co-creation/co-production, a fundamental tenet of PARIS REINFORCE, to clearly make the case for how the I^{2}AM PARIS platform can facilitate better stakeholder engagement in climate policymaking.

Also covered by Dr. Sorman were the challenges involved in building the platform, such as technical problems related to load times, for example. Especially important was managing the vast amount of information available on models and constructing a platform that concisely included the key information for non-experts to appreciate the essential concepts and tools in the field of climate and energy modelling. Other challenges related to

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conducting participatory research during COVID-19 and wartime. Dr. Sorman concluded her presentation by highlighting a key aim for her regarding climate and energy modelling, which is to connect the research to policy and people. This could be achieved by opening up conversations beyond Europe, giving a voice to a variety of experts, and most importantly providing a space for non-expert citizens to participate in the policymaking process.

Dr. Alexandros Nikas (National Technical University of Athens) and Dr. Georgios Xexakis (HOLISTIC) joined her in a short panel discussion on the platform's next steps, chaired by Ms. Elin May (Cambridge University). The platform will continue to be updated and maintained through other EU-funded integrated assessment modelling projects.

2.7 Session V – Planning in the light of today's threats to sustainability

The final session, "Planning in the light of today's threats to sustainability", was started with a presentation by Dr. Dirk-Jan van de Ven (Basque Centre for Climate Change), called 'Walking out of a pandemic and into an energy crisis'. The presentation by Dr. van de Ven connected the European COVID-19 green recovery packages with their implementation in the context of the energy crisis. Dr. van de Ven began by giving an overview of the Next Generation EU COVID-19 recovery packages and the designation of funds for meeting Green Deal objectives. He then covered the methodological approach to this piece of research, noting the models involved and their various characteristics, and the aims of the research to determine the impacts of the recovery packages on climate indicators such as emissions levels. Dr. van de Ven then set out some selected results of the models, such as the contribution of the green recovery packages to emission and employment gaps. The presentation concluded with a set of policy recommendations, foremost that the recovery packages in the EU and China can contribute significantly to the emissions and employment goals but that their impact in other regions has only incremental impacts and that the quick response to the crisis was key for the relatively effective recovery, which is a lesson for the energy crisis response.

The second presentation in the final session, called 'Energy transitions following the Ukraine invasion: insights from Italy and Greece', was delivered by Dr. Georgios Xexakis (HOLISTIC). The presentation explained the outputs of stakeholder-driven modelling exercises exploring the impact of today's war-driven energy crisis on the specific cases of Greece and Italy. Dr. Xexakis explained that, as Greece and Italy are highly dependent on Russian gas for their electricity supply, they are especially affected by the gas supply crisis.

Dr. Xexakis then discussed the Italy case study, outlining how the exercise investigated Italy's progress towards SDG7 in the light of the current crisis and how fuzzy cognitive maps were used to derive expert views on key policies and uncertainties in this space. The methodology and the specific design for the Italy case study were then covered in detail. Dr. Xexakis provided the headline results, noting that "large-scale RES diffusion" & "grid enhancement" were perceived as the most effective in contributing to SDG7. The case of Greece was then covered by Dr. Xexakis, going through a slightly different, mixed-methods modelling methodology to explore the role of natural gas in Greece's energy system. The research found that current policies increase gas use by 50% in 2030 compared to 2022.

The final presentation of the event, 'The cost of phasing out Russian fossil fuels' on the prospect and costs of phasing out Russian fossil-fuel imports, was delivered by Dr. Marc Vielle (École Polytechnique Fédérale de Lausanne). Dr. Vielle went through the steps of energy events in Europe related to the Ukraine invasion and also showed insights from other PARIS REINFORCE runs that demonstrate that the loss of Russian gas imports for Europe has a serious impact on the 'Fit for 55' targets. Therefore, the research question stated by Dr. Vielle was 'What are the impacts of cutting Russian fossil energy imports considering the fit for 55 Package?'. The GEMINI-E3 PARIS REINFORCE version was used for this question. Dr. Vielle then set out the scenario design, constituting five scenarios with different levels of embargoes on Russian gas imports. The main findings from this study were

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that the cost of the 5th and 6th EU energy restriction packages is substantial and that an embargo on natural gas doubles this cost, but that the restrictions have a more detrimental impact on Russia.

The final presentation was followed by a very interesting panel discussion among project members and external experts, in response to questions from the audience; this discussion was chaired by Prof. Haris Doukas (National Technical University of Athens) and joined by Dr. Georg Zachmann (Bruegel), Dr. Ajay Gambhir (Imperial College London), Prof. Jean-Luc Gaffard (Université de Nice Sophia Antipolis – OFCE), and Mr. Sylvain Hercberg (Independent expert). This closing session was an engaging and broad take on the current energy policy challenges and in particular on the question of how the response to the current crisis can be aligned with long-term decarbonisation.

2.8 Presentations

The presentations for the PARIS REINFORCE final conference in Paris can be found on the website, as follows:

I.1 Haris Doukas - A few words about PARIS REINFORCE

II.1 Shivika Mittal - Where does the world stand and where does it need to be?

II.2 Lorenza Campagnolo - Sustainable transitions in major economies

II.3 Apostolos Petropoulos - International Energy Agency

III.1 Baptiste Boitier - Transforming Europe

III.2 Jakob Wachsmuth - Bottlenecks to sectoral decarbonisation in Europe: national insights

IV.1 Alevgul Sorman - Enabling climate policy support: The I2AM PARIS platform

V.1 Dirk-Jan van de Ven - Walking out of a pandemic and into an energy crisis

V.2 Georgios Xexakis - Energy transitions following the Ukraine invasion: insights from Italy and Greece

V.3 Marc Vielle - The cost of phasing out Russian fossil fuels

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