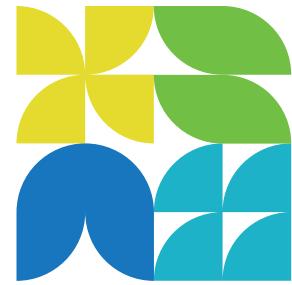


# 12<sup>th</sup> Clean Energy Ministerial Outcomes Report



**CEM12/MI·6**  
CHILE 2021





# **CEM12 Final Outcomes Report**

## **Message From The Host**

The 12<sup>th</sup> Clean Energy Ministerial Meeting (CEM12), proudly hosted by the Republic of Chile and convened from May 31 to June 6, 2021, was held at a critical moment for the clean energy transition, as it strengthens its role in supporting and bolstering the global energy transformation towards zero-emission societies and economies.

The virtual, purpose-built platform ensured a digital, diverse and dynamic event, delivering a unique and absolutely innovative user experience to the whole CEM Community worldwide. Pursuing a positive, inclusive and balanced event, the main topics were the intersection of social, economic and climate challenges that our Community is facing after the pandemic and throughout the recovery process.

The gathering was a place of convergence between the work of both CEM and MI and convened high representatives from more than 30 Countries and International Organizations.

This unprecedented number was supported by an impressive array of content and events. Beside the openly accessible Ministerial Plenary focused on the upcoming 3rd phase of the CEM and the launches of the four new workstreams, CEM12 featured 31 side-events, a virtual exposition with more than 50 exhibitors, an open-access library with 200 documents and a networking tool available 24/7 for all registered users.

As never before, CEM12 showed the deep and authentic commitment of our growing and determined community to achieve carbon neutrality by 2050 or even earlier.

The Clean Energy Ministerial (CEM) is a high-level global forum to promote policies and programmes that advance clean energy technology, to share lessons learned and best practices, and to encourage the transition to a global clean energy economy. Initiatives are based on areas of common interest among participating governments and other stakeholders. The Framework for the Clean Energy Ministerial, reaffirmed at the twelfth Clean Energy Ministerial in 2021, defines the CEM governance structure and outlines the mission statement, objectives, membership, and guiding principles.

## **12th Clean Energy Ministerial (CEM12)**

The Twelfth Clean Energy Ministerial (CEM12), convened at a critical moment to determine the medium and long-term role of clean energy in supporting the economic recovery from the COVID-19 pandemic, building momentum towards the commitment to cut emissions ahead of COP26 taking place in November 2021, and continuing the shift towards cleaner economies, raising ambition and accelerating clean energy transitions.

The theme of CEM12 was “Ambition into Action-- Turning a Year of Ambition into a Decade of Delivery”.

### **Imperative to Act**

The world is on the cusp of a clean energy revolution. Some new technologies can help provide clean energy by harnessing the power of the sun, wind, and other renewable resources. Other technologies can enable more efficient use of energy in buildings, industry, and vehicles. These technologies, when coupled with supportive policies, can significantly reduce carbon pollution from traditional fossil fuels, improve local air quality, create jobs, enhance energy security, and provide improved access to energy around the world. Yet barriers to the adoption of clean energy technologies abound, and the cost of some technologies remains high. By working together, governments and other stakeholders can overcome barriers and advance the adoption of clean energy technologies.

### **Origins**

At the United Nations Framework Convention on Climate Change conference of parties in Copenhagen in December 2009, U.S. Secretary of Energy Steven Chu announced that he would host the first Clean Energy Ministerial to bring together ministers with responsibility for clean energy technologies from the world's major economies and ministers from a select number of smaller countries that are leading in various areas of clean energy. By working together, these governments can accomplish more than by working alone. The CEM's initiatives build on Technology Action Plans that were released by the Major Economies Forum Global Partnership in December 2009, which laid out best practice blueprints for action in key technology areas.





# Summary of outcomes

# General Outcomes

The 12<sup>th</sup> Clean Energy Ministerial (CEM12) was hosted by the Republic of Chile and chaired by the honourable Juan Carlos Jobet, Chile's Minister of Energy. CEM12 focused on the theme of "ambition into action – turning a year of clean energy ambition into a decade of delivery" bringing CEM's global clean energy community together to show leadership through insight, inspiration, and impact. All members took the opportunity to reaffirm their commitment to CEM's next phase (CEM3.0) and its mission to step up ambition and supercharge the clean energy transition through increased focus on massive scale, expanded sectors, and socio-economic inclusion.

Although in virtual format and carried out under extraordinary circumstances, CEM12 convened 150 000 people from more than 100 countries engaging in an amazing week of CEM12/MI-6 events. CEM12 hosted our biggest-ever clean energy events programme – more than 40 clean energy events (featuring over 250 high-level speakers from more than 40 countries), as well as Trigger Talks from prominent global leaders. The events featured topics and insights spanning the clean energy spectrum, with excellent participation from governments, companies, and a range of international experts, achieving its aim of being digital, dynamic, and diverse.

The centrepiece of CEM12 was an excellent ministerial plenary meeting. In a meeting open to all, CEM Members and Observer organisations showcased their clean energy actions, highlighted their clean energy priorities, and made a host of new announcements. Importantly, Members announced a new, more ambitious phase of the CEM. With Poland and Portugal joining as new members, CEM membership now includes 29 leading economies, representing 83% of global CO2 emissions and 81% of clean energy investment.

On the workstream level, CEM12 saw the launch of three important new CEM workstreams – the Industrial Deep Decarbonisation Initiative, Empowering People Initiative, and the Biofuture Campaign. CEM12 also saw a major new Global Hydrogen Ports Coalition (launched under the CEM's Hydrogen Initiative), with around 50 signatories to date. There were major evolutions of existing CEM workstreams on Long-Term Energy Scenarios, Super-Efficient Equipment Appliance Deployment (SEAD), and Power System Flexibility.

The CEM's Drive to Zero Campaign kicked off the CEM12 events programme by launching a new Call to Action and global MOU on zero-emission commercial vehicles. The CEM's popular Electric Vehicle Initiative welcomed several new members and launched a Call to Action on Zero-Emission Vehicles, while the CEM's SEAD initiative promoted its COP26 Call to Action on Product Efficiency. The winners of the popular Smart Grid Excellence Awards were announced, and the process was launched for the CEM's Energy Management Awards.

CEM12 saw ten major clean energy report launch events, including the Energy Transition Factbook (BloombergNEF), EV Cities Casebook and Policy Guide 2021 (Urban Foresight/IEA), Global EV Outlook 2021 (IEA), Hydrogen in North-Western Europe – A Vision Towards 2030 (IEA/CIEP), Nuclear Innovation Report on Pathways to Net-Zero Emissions (NICE Future), Reaching Net-Zero Industry through Public-Private Partnerships (LeadIT/GTC), Regulatory Sandbox 2.0 Project (ISGAN), Unlocking a Renewable Energy Future (World Resources Institute/Ørsted), and World Energy Investment 2021 (IEA).

CEM12 made an important contribution to the global discussions on the clean energy transition, especially in the run-up to COP26. Moving ahead, the next two Ministerials will be hosted by the US and India as G20 host.

## Outcomes Numbers

**3 NEW WORKSTREAM LAUNCHES**

**2 NEW MEMBER COUNTRIES**

**10 HIGH-LEVEL REPORTS LAUNCHED**

**MORE THAN 40 EVENTS**

**MORE THAN 250 EXPERT SPEAKERS FROM 40 COUNTRIES**  
PARTICIPATED IN EVENTS

**+ 125.000 VIEWS TO THE WEBSITE**

**+ 120 DIFFERENT COUNTRIES**

**+ 8.000 REGISTERED**  
THROUGHOUT THE ENTIRE EVENT

**+60 HOURS OF TRANSMISSION**



**CEM12/MI·6**  
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# Table Members participations



## KEY

Co-Lead/ Co-leading Member



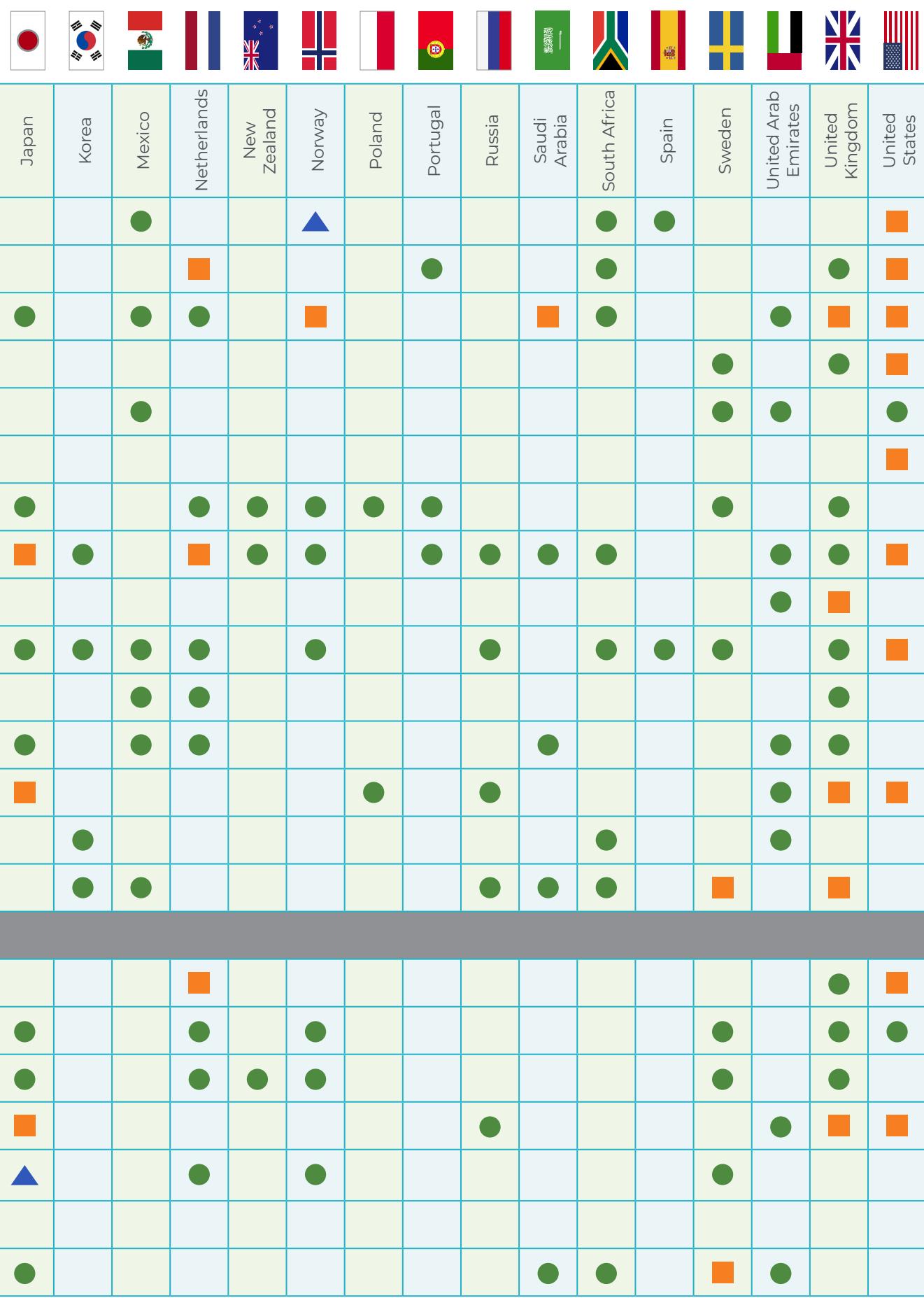
Participating Member



Workstream Observer

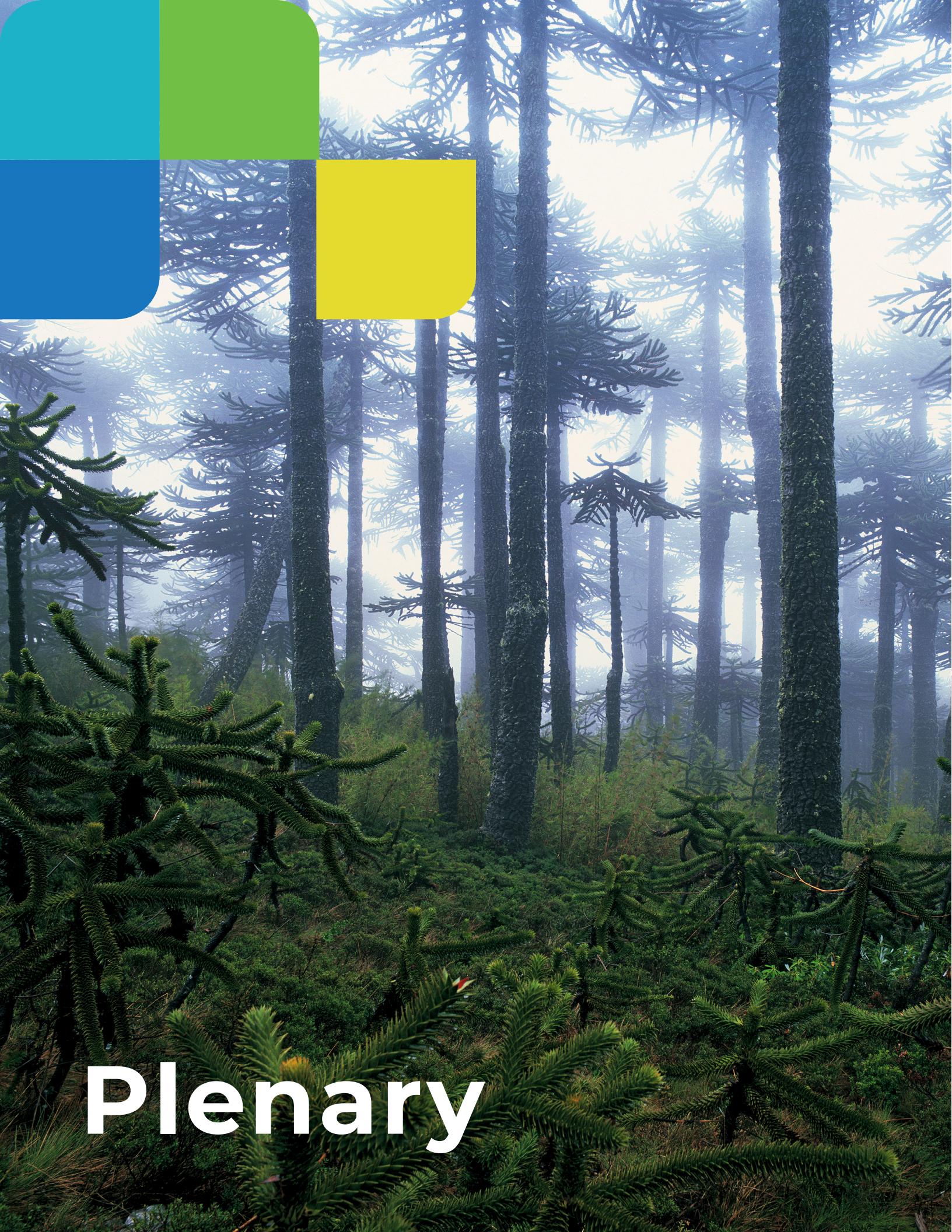


	Australia	Brazil	Canada	Chile	China	Denmark	European	Finland	France	Germany	India	Indonesia	Italy
INITIATIVES													
21 Century Power Partnership		■			●	●		●			■		
Biofuture Platform Initiative		■	■		●	●		●	●		■	●	
Carbon Capture, Utilization, and Storage Initiative	●		●		●		▲				●		
Clean Energy Education and Empowerment	●			■	●			●	●	●	●		■
Clean Energy Solutions Center	■				●						●	●	●
Empowering People Initiative				■	●		■						
Electric Vehicles Initiative				■	●	■		●	●	●	●	●	
Hydrogen Initiative	●	●	■	●			■			●	●		▲
Industrial Deep Decarbonisation Initiative					●						●	■	
International Smart Grid Action Network	●	▲	●			●	●	●	●	●	●	●	■
Investment and Finance Initiative		●	●				■				■	●	
Long-Term Scenarios for the Energy Transition	●	●	●				■		●		■	●	
Nuclear Innovation: Clean Energy Future	●		■							●			
Regional and Global Energy Interconnection Initiative					●	■			●				
Super-efficient Equipment and Appliance Deployment Initiative	●	●	●	●	●	●	■			●	■	●	
CAMPAIGNS													
Biofuture Campaign		■	■					●			■		
Equal by 30			■					●	●	●			●
EV 30@30			■	●	■			●	●	●			
Flexible Nuclear Campaign		■							●				
Global Commercial Vehicle Drive to Zero Campaign		■	●	■				●		●			
Hydrogen Ports						■							
Power System Flexibilty		●	●	●	●	●		●		■	■		●





**KOMA**  
**CEM12 / MI·6**  
CHILE 2021



# Plenary



## Statement by the Members of the Clean Energy Ministerial

3 June 2021 | 12<sup>th</sup> Clean Energy Ministerial (CEM12)

Members renew their commitment to the Clean Energy Ministerial (CEM) as an important platform for international collaboration, acknowledging that clean energy progress will move further and faster if they work together. They affirm the CEM's mission to accelerate clean energy transitions, stating that clean energy is a vital driver of economic growth, emissions reductions, energy access, and energy security. They recognise the unique role that the CEM can play within the global clean energy institutional architecture to help its Members and the broader world implement their self-determined clean energy goals, and achieve emissions reductions consistent with the global fight against climate change.

In recognising its role as a pivotal leadership forum for clean energy collaboration, Members agree that it is time to set a bold course for the next phase of the Clean Energy Ministerial. In its next phase, the CEM will target a major acceleration in clean energy deployment, consistent with achieving the goals of its Members and putting the world on track to achieve clean, affordable, reliable energy for all. To achieve this, Members underscore that the CEM must use all of its key levers – its work programme, its secretariat and its annual ministerial meeting – to help supercharge three key shifts in the clean energy landscape:

- Scale: The pace of clean energy deployment this decade must outpace the last decade, moving rapidly from niche- to mass- to massive-scale adoption across a wide range of technologies.
- Sectors: While the power sector will remain critical to clean energy transitions, the focus must keep evolving from one sector to every sector of the economy (and cross-sectoral integration of energy systems).
- Society: An inclusive, whole-of-society approach must emerge that looks from the role of governments and companies all the way through to the role of consumers and citizens.

Members instruct the CEM Secretariat to support them in delivering an ambitious, impactful clean energy agenda in the next phase. They also thank the International Energy Agency (IEA) for continuing to host the Secretariat. Members agree to extend the CEM Framework Document for a further five years and accompanying Administrative Arrangements for a further three years respectively, and commit to provide adequate and predictable resources to the CEM to fulfil these ambitions. Members also call on the entire CEM community – Observers, Partners, and Participants – to strengthen their engagement with the CEM, to the benefit of all.

Members express their deep gratitude to the Government of Chile for hosting the 12th Clean Energy Ministerial, and look forward to their 13th Ministerial Meeting, to be hosted by the Government of the United States in 2022, and their 14th Ministerial Meeting, to be hosted by the Government of India in 2023.

# Family Photo Plenary 2021

Moderator



Keynote Speaker



CEM Members



Observer Organizations



IEA



IRENA



UNIDO



SEforALL

Head of CEM



**CEM12 / MI·6**  
CHILE 2021



Host Guest



WEC

UNEP

WORLD BANK



**CEM12 / MI·6**  
CHILE 2021

# Country Profile **2021**

The information on the following pages was provided by Chile in their role as CEM12 host and drawn from country submissions for the CEM12 Website.



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## Angus Taylor

Minister for Energy and  
Emissions Reduction,  
Australia

Australia has set its first list of low-emissions technology economic targets which cover energy, industry and land sector (\$ in AUD):

- Clean hydrogen under \$2 per kilogram.
- Energy storage – electricity from storage for firming under \$100 per MWh – this would enable firmed wind and solar at or below today's average wholesale electricity pricing.
- Low carbon materials – low emissions steel production under \$900 per tonne, low emissions aluminium under \$2,700 per tonne.
- Carbon capture and storage (CCS) – CO<sub>2</sub> compression, hub transport, and storage under \$20 per tonne of CO<sub>2</sub>
- Soil carbon – soil carbon measurement under \$3 per hectare per year.

### INITIATIVES



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**Bento Albuquerque**  
Minister of Mines and  
Energy, Brazil

- Brazil has an economy-wide NDC with an ambitious -43% reduction in 2030 when compared to 2005 level of carbon emissions. Additionally, the Brazilian Government has announced in April 2021 its ambition to reach carbon neutrality by 2050.
- Policies focused on clean energy and efficiency have been formulated and implemented, or are under implementation, having in mind the need for increasing energy supply for social and economic development.
- As part of CEM, we aim at collaborating with other members to strengthen these policies and accelerate the adoption of new ones, so that energy infrastructure, supply and demand are in line with Brazil's NDC.

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#### CAMPAIGNS



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**Seamus O'Regan**  
Minister of Natural  
Resources, Canada

- Committed to reducing greenhouse gas emissions by 40% to 45% below 2005 levels by 2030.
- Committed to net-zero emissions by 2050.
- Federal targets for zero-emissions vehicles: 10% of new light-duty vehicle sales per year by 2025, 30% by 2030, and 100% by 2040.
- Committed to achieving 90% zero-emitting electricity by 2030. Presently, renewable and non-emitting energy sources make up 82% of Canada's electricity, with conventional unabated coal-fired electricity is set to be phased out by 2030.
- Goal to ensure 100% of the electricity used in state buildings and operations will be from renewable energy by 2025.

#### INITIATIVES

##### biofuture platform

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##### CARBON CAPTURE UTILIZATION & STORAGE INITIATIVE

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##### C3E INTERNATIONAL

ADVANCING GENDER EQUALITY TOGETHER

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##### EMPOWERING PEOPLE

SKILLS & INCLUSIVITY FOR JUST TRANSITIONS

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##### HYDROGEN INITIATIVE

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##### CLEAN ENERGY SOLUTIONS CENTER

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##### ELECTRIC VEHICLES INITIATIVE

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##### INDUSTRIAL DEEP DECARBONISATION

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##### ISGAN INTERNATIONAL SMART GRID ACTION NETWORK

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##### LTES LONG-TERM SCENARIOS FOR THE ENERGY TRANSITION

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##### SEAD SUPER-EFFICIENT EQUIPMENT & APPLIANCE DEPLOYMENT

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##### CLEAN ENERGY INVESTMENT AND FINANCE

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##### NICE NUCLEAR INNOVATION: Future CLEAN ENERGY

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#### CAMPAIGNS

##### biofuture campaign

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##### EQUAL-30 GENDER EQUALITY IN THE CLEAN ENERGY SECTOR

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##### EV30//30 INCREASING UPTAKE OF ELECTRIC VEHICLES

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##### GLOBAL COMMERCIAL VEHICLE DRIVE TO ZERO

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##### FNC FLEXIBLE NUCLEAR CAMPAIGN FOR NUCLEAR-RENEWABLES INTEGRATION

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##### POWER SYSTEM FLEXIBILITY

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**Juan Carlos Jobet  
Eluchans**  
Minister of Energy  
and Mines, Chile

- Chile aims to reach carbon neutrality by 2050.
- By 2030 Chile will emit a maximum of 95 million tons of CO<sub>2</sub>eq.
- Between 2020 and 2030, Chile will cumulatively emit a maximum of 1,100 million tons of CO<sub>2</sub>eq.
- The peak of emissions will be 2025.
- National Energy Policy Goals:
- High penetration of renewable energies in the electrical matrix: 2030: 70% Improve the energy efficiency of vehicles and their operation: 2025: 100% marketed ground transportation vehicles have an energy efficiency label. 100% new public transportation vehicles include energy efficiency criteria in the evaluation. 100% new state road transportation vehicles include energy efficiency criteria in the evaluation. There are energy efficiency standards for new lightweight vehicles. 2050: Chile has adopted the highest international standards on energy efficiency in the different ways of transportation: ground, air, sea and rail.
- Electromobility Strategy Goals: 2050: 40% of private vehicles are electric. 2040: 100% of urban public transport are electric.
- Green Hydrogen Strategy Goals: 2025: 5 GW of electrolysis capacity under development by 2025. 2030: Chile produces the cheapest green hydrogen on the planet. 2040: Chile is one of the 3 main green hydrogen exporting countries.
- Goals Energy Efficiency Law: A global goal was established for the preparation of the Energy Efficiency Plan, to reduce the national energy intensity by at least 10% by 2030, compared to 2019.
- Non-Conventional Renewable Energies Law Goal: 20% of the generated national electricity must come from Non-Conventional Renewable Energy sources by 2025.

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**Wang Zhigang**

Minister and Secretary of  
Ministry of Science and  
Technology of the People's,  
Republic of China

- Aim to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060.
- By 2030, Chile will lower its carbon dioxide emissions per unit of GDP by over 65% from the 2005 level.
- By 2030, China will increase the share of non-fossil fuels in primary energy consumption to around 25 percent.

#### INITIATIVES



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**Ren Jingdong**  
Vice Administrator of  
the National Energy  
Administration,  
Republic of China

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#### INITIATIVES



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POWER PARTNERSHIP**  
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**CARBON CAPTURE**  
UTILIZATION & STORAGE INITIATIVE  
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**CLEAN ENERGY  
SOLUTIONS CENTER**  
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**ELECTRIC VEHICLES  
INITIATIVE**  
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**ISGAN INTERNATIONAL  
SMART GRID ACTION NETWORK**  
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**REGIONAL & GLOBAL  
ENERGY INTERCONNECTION**  
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**SEAD SUPER-EFFICIENT  
EQUIPMENT & APPLIANCE DEPLOYMENT**  
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#### CAMPAIGNS



**EV30//30 INCREASING  
UPTAKE OF ELECTRIC VEHICLES**  
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**GLOBAL COMMERCIAL VEHICLE  
DRIVE TO ZERO**  
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**POWER SYSTEM  
FLEXIBILITY**  
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**Dan Jørgensen**  
Minister for Climate,  
Energy and Utilities,  
Denmark

- Since, 1990, Denmark has reduced its greenhouse gas emissions from energy consumption by 33% while more than doubling its GDP from 138 billion DKK in 1990 to 306 billion DKK in 2016.
- For many years, Denmark has been one of the leading international players in the development of clean energy solutions. Public-private partnerships on renewable energy have been a contributing factor as the government and leading companies have cooperated to ensure the continuous development of wind energy, now meeting over 47% of Denmark's final electricity consumption. Denmark's green energy transition rests on balanced energy prices, export potential, and greenhouse gas emissions reductions.
- One of the world's highest levels in the security of supply has been reached in Denmark's power sector, partly due to the regional integration of the Nordic power systems. This creates a framework for a flexible, integrated, and modern energy system with increased electrification of all sectors.
- Denmark's clean energy transition is safeguarded through ambitious political objectives with the primary goal of independence from fossil fuels in 2050 and a goal of 50% of Denmark's aggregated energy consumption to come from renewable sources by 2030. This transition is aimed at maintaining energy security, economic growth and jobs, and greenhouse gas reductions in accordance with the Paris Agreement's ambitious goals. This is, in part, secured through the Clean Energy Ministerial, where best practices can be exchanged for a mutual assurance of an international clean energy transition.

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## CAMPAIGNS



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**Kadri Simson**

European Commissioner  
for Energy

- The EU aims to be climate-neutral by 2050 – an economy with net-zero greenhouse gas emissions. This objective is at the heart of the European Green Deal and in line with the EU's commitment to global climate action under the Paris Agreement.
- The EU has a binding target to reach a net domestic reduction of at least 55% in greenhouse gas emissions by 2030.

#### Main clean energy national policies

- The European Green Deal (COM/2019/640 final)
- The 2030 Climate Target Plan (COM/2020/562 final)
- Powering a climate-neutral economy: An EU Strategy for Energy System Integration (COM/2020/299 final)
- A hydrogen strategy for a climate-neutral Europe (COM/2020/301 final)
- A Renovation Wave for Europe (COM(2020) 662 final)
- An EU Strategy to harness the potential of offshore renewable energy (COM(2020) 741 final)

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#### CAMPAIGNS

#### HYDROGEN PORTS



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**Mika Lintilä**  
Minister of Economic Affairs, Finland

- Climate neutrality by 2035
- Phase-out of energy use of coal by 2029 and halving energy usage of peat by 2030
- Exceeded a legally binding renewable energy target of 38% of final energy consumption in 2020.

#### Main clean energy national policies

- Finland is fast-tracking the decarbonization of its economy with a 2035 net-zero target. The country has made good progress thanks to large shares of renewables and nuclear energy. Fossil fuel use has decreased greatly in the past years. Taking into account cold climate, long distances, energy-intensive industries and low-carbon electricity production mix, Finland continues to advance sector integration and electrification to reduce fossil fuel consumption in heating, industrial processes and transport.

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SCENARIOS FOR THE ENERGY TRANSITION

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#### CAMPAIGNS



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GLOBAL COMMERCIAL VEHICLE



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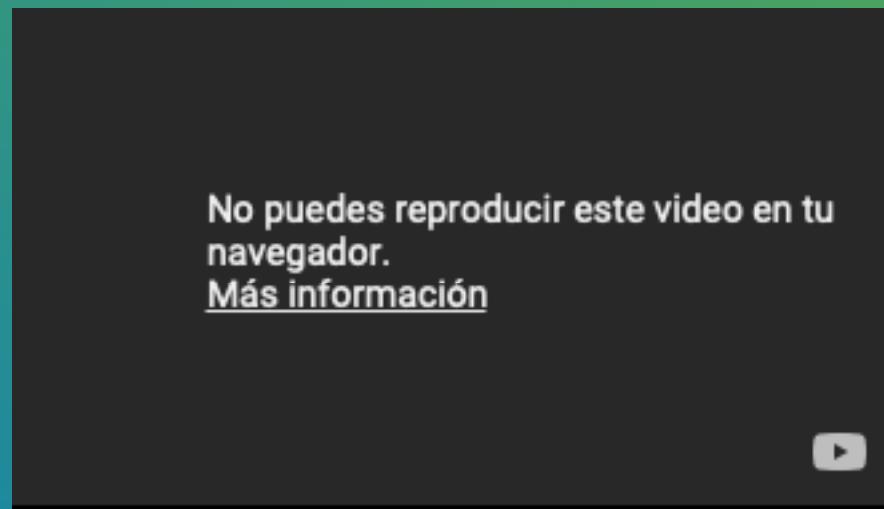


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## Laurent Michel

Director General for  
Energy and Climate,  
Ministry of Ecological  
Transition and Inclusive  
Transition, France

### Main clean energy national policies

France's main objectives for a transition to a more efficient energy system are:

- 40% reduction of greenhouse emissions between 1990 and 2030 and carbon neutrality by 2050.
- 50% decrease in final energy consumption between 2012 and 2050 and 20% decrease by 2030.
- 40% less fossil fuel consumption by 2030 compared to 2012.
- By 2030: 33% renewable in the final energy consumption.
- Decrease the share of nuclear to -50% of the power generation by 2035.

To achieve these goals, the Pluriannual Energy Plan established by the French energy transition law for green growth defines the government's strategic priorities in terms of energy policy.

Moreover, the French clean energy objectives are defined in coherence with the European objectives. Thus, they will be reviewed in the near future to take into account the recently upgraded European targets in terms of GHG emissions reduction and which will be rolled out in the coming months by a new set of European

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## Andreas Feicht

State Secretary, Federal Ministry for Economic Affairs and Energy, Germany

Set a target for 40-45% of its energy mix to be from renewable energy by 2025 and 80% by 2050.

### Main clean energy national policies

- Germany initiated the Energiewende, a major plan for making its energy system more efficient and sustainable, supplied mainly by renewable energy sources. At the same time, the Energiewende is supposed to provide the economy and industry new opportunities to create additional value added. Germany has, therefore, adopted a strategy for an energy pathway to 2050, which includes an accelerated phase-out of nuclear power by 2022 as well as a phase-out of coal-fired power generation by 2035 or 2038 at the latest. The Energiewende is not solely a German effort, rather it is embedded in European energy policy and has meanwhile taken root all over the globe.

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**ELECTRIC VEHICLES INITIATIVE**  
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**HYDROGEN INITIATIVE**  
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**INDUSTRIAL DEEP DECARBONISATION**  
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**CLEAN ENERGY INVESTMENT AND FINANCE**  
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**LTES → LONG-TERM SCENARIOS FOR THE ENERGY TRANSITION**  
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**EV30/30 INCREASING UPTAKE OF ELECTRIC VEHICLES**  
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**Alok Kumar**  
Secretary of Power,  
India

## Main clean energy national policies

- India is now working on integrating higher shares of variable renewable energy into the energy mix. For the period 2016-2018, the share of solar PV and wind doubled in the electricity generation mix from 4% to 8%. Energy efficiency increases have enabled the avoidance of an additional 15% of energy demand and 300 MtCO<sub>2</sub> emissions over the period 2000-2018.

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**Vannia Gava**

Undersecretary of the  
Ministry of Ecological  
Transition, Italy

- Has already surpassed its 2020 renewable energy target of 17% of its energy mix coming from renewable sources.
- Has set a 2030 target of 28% of its energy mix to come from renewable sources.

#### Main clean energy national policies

- National Plan Energy and Climate, Italian Hydrogen Strategy

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**Kiyoshi Ejima**  
State Minister of  
Economy, Trade and  
Industry, Japan

- Committed to achieving a 22-24% renewables share target by 2030 (currently under review.)

#### Main clean energy national policies

- Strategic Energy Plan
- Green Growth Strategy through achieving Carbon Neutrality in 2050

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**Hohyeon Lee**

Director General for  
Energy Innovation Policy,  
Ministry of Trade, Industry  
and Energy, Korea

Committed to raising the share of renewable energy in power generation up to 30-35% by 2040 and achieving carbon neutrality by 2050.

#### Main clean energy national policies

- Committed to advancing the country's energy transition by gradually phasing out coal and nuclear while increasing the share of renewable energy and improving energy efficiency through demand-side management

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## Megan Woods

Minister of Energy and Resources, New Zealand

- Transitioning to a low-emissions energy sector will make a significant contribution towards New Zealand's target, but it is important to ensure the transition is managed in a way that maintains security of energy supply, and ensures that energy remains affordable and accessible for all New Zealanders.
- Priorities for decarbonisation include accelerating renewable electricity generation, decarbonising process heat, improving energy efficiency, and considering the role of low emissions fuels such as biofuels, biomass and hydrogen. There is also work underway to address energy hardship and affordability issues, including community energy schemes for low income and Māori households.

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## Lars Andreas Lunde

State Secretary at the  
Ministry of Petroleum and  
Energy, Norway

- Norway is committed to reduce emissions by at least 50% and towards 55% by 2030 compared to 1990. We will continue to reduce emissions of CO<sub>2</sub> in a way that promotes green growth.
- Norway has already 73% renewables in the overall energy mix, and 98 % of the electricity production come from renewable energy sources. Norway has a high share of electric vehicles, and the goal is for 100% of sales of new vehicles to be electric by 2025.

### Main clean energy national policies

- The Norwegian government has recently presented a climate action plan, giving priority to electrification, decarbonisation and market-based solutions, with an emphasis on carbon pricing.
- Increasing the use of renewable electricity for new purposes and in various sectors will be important in the coming years. We believe both electrification and use of gaseous fuels should play a significant role in decarbonisation efforts.

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**Michał Kurtyka**

Minister of Climate and Environment, Poland

- By 2030 targeting to achieve at least 23% of renewable energy sources in gross final energy consumption and at least 32% of RES in electricity generation
- By 2040, approx. 11 GW of installed capacity in offshore wind farms
- In 2033 first nuclear power plant (1-1.6 GW) and further development to achieve 6-9 GW of installed capacity in nuclear generating units till 2043
- By 2030, energy efficiency target of reduction of primary energy consumption by 23% compared to PRIMES2007 projections.
- By 2030, zero-emission public transport in cities with more than 100,000 residents.
- By 2030, one million of renewable energy prosumers.
- By 2030 reduction of fossil fuels in electricity generation (from current 70 % - to 56%)

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**João Galamba**  
Deputy Minister and  
Secretary of State for  
Energy, Portugal

- Carbon neutrality by 2050
- 45% to 55% reduction in GHG emissions by 2030 (compared with 2005), 80% in 2050
- 47% of renewable sources in final energy consumption by 2030 (30.6% in 2019)

#### Main clean energy national policies

- 2050 Carbon neutrality roadmap (rnc2050)
- National energy and climate plan 2021-2030 (pnecc 2030)
- National hydrogen strategy (en-h2)

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## Pavel Snikkars

Deputy Minister of Energy,  
Russia

### Policy goals:

- Increase the share of electricity generated jointly with thermal energy
- Higher electricity generating efficiency
- Less pollution from power plants
- Provision of e-mobility with accessible charging stations

### Clean energy vision for the next decade:

- Higher energy efficiency, carbon capture with better forest treatment and capture and storage technologies, low-pollution urban heat and electricity generation

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**His Royal Highness Prince Abdulaziz Bin Salman Al Saud**, Minister of Energy  
Saudi Arabia

Saudi Arabia plans to transform its power generation energy mix to 50% from renewables by 2030.

#### Main clean energy national policies

- Circular Carbon Economy National Program, Saudi Energy Efficiency National Program, and National Renewable Energy Program.

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**Teresa Ribera**

Deputy Prime Minister  
and Minister for the  
Ecological Transition  
and the Demographic  
Challenge of Spain

To reduce greenhouse gas emissions in the Spanish economy as a whole by at least 23% by 2030 compared to 1990.

- Specifically, to reduce emissions in diffuse sectors, 39%.
- To achieve a penetration of renewable energies in final energy consumption of at least 42% by 2030.
- To achieve an electricity system with at least 74% of generation from renewable energy sources by 2030.
- To improve energy efficiency by reducing primary energy consumption by at least 39.5% compared to the baseline following EU regulations by 2030.
- Final target of 100% renewable power sector, almost 100% renewable energy mix and net-zero emissions by 2050.

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**Anders Ygeman**

Minister for Energy and  
Digital Development,  
Sweden

- 2030: GHG emissions in the transport sector is to be 70 % lower than in 2010.
- 2030: Energy use is to be 50 % more efficient than in 2005.
- 2040: 100 % of the electricity generation to be renewable. This target is not a deadline for banning nuclear power.
- 2045: No net emissions of GHG; thereafter, negative emissions.
- Sweden is to become one of the world's first fossil-free welfare nations.

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**Sandor Gaastra**  
 Director General for  
 Climate and Energy  
 Ministry of Economic  
 Affairs and Climate Policy ,  
 Netherlands

The National Climate Agreement and the Climate Law stipulates a 95% CO2 reduction in 2050 compared to 1990. In the climate agreement was agreed that is means for 2030:

- 49% CO2 reduction compared to 1990
- 70% of electricity is renewable (offshore wind, solar)
- 1.5 million existing houses made more sustainable
- Phasing out coal in power plants by 2030
- 100% zero-emission new passenger cars sold
- Zero-emission zones in 30-40 largest cities

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CO<sub>2</sub> UTILIZATION & STORAGE INITIATIVE

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**H.E. Sharif Al Olama**  
Undersecretary and  
Minister of Energy and  
Infrastructure, United  
Arab Emirates

Share of clean energy in electricity production reaches 50% in 2050.

#### Main clean energy national policies

- UAE National Energy Strategy 2050. In 2017, the UAE launched 'Energy Strategy 2050', which is considered the first unified energy strategy in the country that is based on supply and demand. The strategy aims to increase the contribution of clean energy in the total energy mix from 25 per cent to 50 per cent by 2050 and reduce carbon footprint of power generation by 70 percent, thus saving AED 700 billion by 2050. It also seeks to increase consumption efficiency of individuals and corporates by 40 per cent.
- National DSM Program 2050.

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**Anne-Marie Trevelyan**  
Minister of State,  
Department for Business,  
Energy and Industrial  
Strategy, United Kingdom

- Net-zero by 2050
- Decarbonised power system in the 2030s

#### Main clean energy national policies

- 40GW offshore wind (including 1GW floating offshore wind) by 2030
- 5GW low-carbon hydrogen by 2030
- Phase-out of domestic coal use in the power sector by 2024
- Ban sale of new petrol and diesel cars by 2030

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FLEXIBLE NUCLEAR CAMPAIGN FOR NUCLEAR-RENEWABLES INTEGRATION

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## Jennifer Granholm

Secretary of Energy, US  
Department of Energy,  
United States

President Biden has announced two overall climate goals for the United States:

- A 50-52 percent reduction from 2005 levels in economy-wide net greenhouse gas pollution in 2030 and
- Net zero emissions economy-wide by no later than 2050.

To accomplish these climate goals, the U.S. aims to:

- Reach 100 percent carbon pollution-free electricity by 2035,
- Cut emissions and energy costs by supporting efficiency upgrades and electrification in buildings,
- Reduce carbon pollution from the transportation sector,
- Reduce carbon pollution from industrial processes by supporting carbon capture as well as new sources of hydrogen,
- Invest in innovation, and
- Support good jobs and improve equity through the pursuit of these objectives.



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CEM12 / MI·6  
CHILE 2021



# Launches

## LAUNCH OF THE CEM INDUSTRIAL DEEP DECARBONIZATION INITIATIVE

The industrial sectors of CEM member countries consumed 23% of the total global energy supply, representing 81% of the energy consumed by global industry. CEM members are therefore well-positioned to catalyse a step-change in optimizing industrial energy use and to capitalize the opportunity to decarbonize. There are gaps in governmental policies to stimulate the demand for low carbon industrial products and systems for benchmarking these products including the data infrastructure for embodied carbon. India and the UK put up a new horizontal workstream on industrial deep decarbonization aiming to create the market demand to drive additional actions for the deep decarbonization of energy-intensive industrial sectors such as steel and cement. The initiative is gaining interest of many CEM members and was launched at the twelfth Clean Energy Ministerial.



## HYDROGEN PORTS COALITION LAUNCH EVENT

As highlighted by the IEA Future of Hydrogen report, coastal industrial hubs that are co-located near ports are of particular interest for the hydrogen value chains development, for the following reasons:

- The demand for hydrogen is already existing at coastal hubs for nearby industrial applications (refining, steelmaking, ammonia and methanol production).
- Presence of nearby sites for offshore wind and solar PV, for the production of renewable hydrogen
- Proximity with oil and gas operations and potential CO<sub>2</sub> storage sites, for the production of low carbon hydrogen
- Potential to use port facilities to support international hydrogen trade by ship

Therefore ports offer a significant opportunity to scale up and accelerate the deployment of clean hydrogen production and the adoption of hydrogen in new technologies (such as new industrial uses or heavy transport).

Global Ports Coalition will be a project within the Hydrogen Initiative of the CEM.



## EMPOWERING PEOPLE INITIATIVE LAUNCH EVENT

The Empowering People Initiative, was launched by Canada and the EC.

The panel highlights areas of work to be explored in the year to come, alongside best practices by leaders in the field. The intent of the Empowering People Initiative is to build on and complement existing CEM work streams that already promote equity and inclusivity, such as C3E and the Equalby30 Campaign, while leveraging initiatives that could benefit from exploring skills and workforce issues. As such, the panel presented an opportunity to present early partnerships with other areas of work under CEM (NICE Future Initiative, 21CPP, Solutions Center, Biofuture Platform, CCUS Initiative).

The event helped to launch an initiative intended to highlight the socioeconomic dimension of the low carbon energy transition, in particular as it relates to skills, inclusivity and workforce development – an area of work currently underemphasized by the technology oriented nature of many CEM initiatives and campaigns. Building a diverse and inclusive workforce of tomorrow will be critical to accelerating a push to a net-zero future.



## BIOFUTURE CAMPAIGN LAUNCH EVENT

This event was the formal launch of the Biofuture Campaign, which falls under the Biofuture Platform Initiative. The campaign aims to enable the reduction of GHG emissions and foster a circular economy by showcasing pathways by which countries, companies, and consumers can substitute sustainable bio- and waste-based Fuels, Chemicals, and Materials for their fossil equivalents. Efforts in hard-to-abate sectors of the economy, such as aviation, construction, maritime, mining, and road transport, will be strongly promoted in close cooperation and partnership with the private sector.





  
**CEM12 / MI·6**  
CHILE 2021

An aerial photograph of a massive solar power facility, likely a parabolic trough system. The solar panels are arranged in large, circular patterns across a vast, arid landscape. In the upper left corner of the image, there are four overlapping colored squares: a green square at the top, followed by a yellow square, a blue square, and a cyan square at the bottom. These squares partially overlap the solar panel arrays.

# Side Events

## CEM12: A MINISTERIAL FIRESIDE CHAT ON CCUS STRATEGY AND POLICY

Carbon capture, utilisation and storage (CCUS) is a vital technology in a portfolio of solutions allowing to reach net-zero targets. CCUS is getting more attention across many countries and industries, as there is an ever-wider recognition that progress must be accelerated. In this official CEM-12 side-event, brought to you by the CEM CCUS Initiative, several ministers and industry leaders give their perspectives on why CCUS is important and what progress they are making to accelerate deployment.

**Jarad Daniels** Director, US Department of Energy - MODERATOR.

**Khalid Abuleif** Chief Climate Negotiator, Saudi Arabia

**Vicki Hollub** CEO, Occidental Petroleum

**Zoe Knight** MD, Group Head, HSBC Centre of Sustainable Finance

**Anders Hoffmann** Deputy Permanent Secretary, Ministry of Climate,  
Energy and Utilities, Denmark

**Jennifer Granholm** Secretary of Energy, United States

**Suhail Al Mazrouei** Energy Minister, United Arab Emirates



## CEM12: BUSINESS EXECUTIVES' FACTBOOK OF CLEAN ENERGY TRANSITIONS FOR CEM MEMBERS

The Energy Transition Factbook was prepared exclusively for the 12th Clean Energy Ministerial by Bloomberg Philanthropies and BloombergNEF. This short video features a conversation between H.E. Juan Carlos Jobet, Minister of Energy, Chile and Nat Bullard, Chief Content Officer for BloombergNEF. They discussed the key findings from energy transitions in electricity, transportation, industry and global capital markets and its relevance for the Clean Energy Ministerial. This short video summary and the Factbook itself will serve as the guidepost and signpost for the executives from the governments, businesses and financial sectors of the CEM community on clean energy transitions to net zero by mid-century.

**Nathaniel Bullard**      Chief Content Officer for Bloomberg NEF. - MODERATOR.

**Juan Carlos Jobet**      Minister of Energy of Chile



## CEM12: CALL FOR ACTION ON PRODUCT EFFICIENCY

The Super-Efficient Equipment and Appliances Deployment (SEAD) initiative has 18 member governments from around the globe, including many G20 members and important regional leaders. The UK government has placed SEAD at the centre of the UK IEA call to Action on Product Efficiency, one of their priority initiatives leading up to COP 26 and beyond, highlighting the critical role of product energy efficiency in achieving climate and sustainability goals. This event will bring together leaders from government, industry, and International Standards Organisations to discuss how they can collaborate to achieve the potential of product energy efficiency in a prosperous and just clean energy transition.

<b>Katherine Dixon</b>	Chief Counsellor, Transitions and Partnerships, International Energy Agency - MODERATOR.	
<b>HE Anne-Marie Trevelyan</b>	Minister of State for Business, UK Energy and Clean Growth HM Government	
<b>Philippe Metzger</b>	IEC General Secretary and CEO	
<b>Sergio Mujica</b>	Secretary-General, International Organisation for Standardisation	
<b>Mariana Garcia</b>	Head of Regulatory Affairs, MABE, Mexico	
<b>Özlem Ünlüer</b>	Sustainability Manager, Arçelik, Turkey	
<b>Francisco José Martinez-Conde Del Campo</b>	Head of the Regulatory Support Unit, Ministry of Energy, Chile	
<b>Kofi Agyarko</b>	Director, Renewable Energy, Energy Efficiency, & Climate Change (REEECC), Energy Commission, Ghana.	
<b>Robert Andrén</b>	Director-General, Swedish Energy Agency	

## CEM12: CCUS 101: HOW IS CO<sub>2</sub> CAPTURED AND STORED?

If you are interested in knowing how carbon dioxide can be captured and safely stored, this event is for you! Join our top-expert speakers from IEA, IEAGHG and the Global CCS Institute who explain why carbon capture is needed, how the capture and storage processes really work, and where we are today with industrial-scale carbon capture projects globally. This event was organised by the CEM CCUS Initiative.

**Stig Svenningsen** Ministry of Petroleum and Energy, Norway - MODERATOR.

**Brad Page** CEO of the Global CCS Institute since 2011

**Samantha McCulloch** Head of the CCUS Unit at the IEA

**Tim Dixon** General Manager, IEAGHG



## CEM12: CEM12 AND GENDER EQUALITY/YOUTH PARTICIPATION: EMPOWERING WOMEN AS KEY DRIVERS FOR THE TRANSITION TOWARDS LOW CARBON ECONOMIES

The current pandemic has highlighted that the energy transition needs to happen much faster in this decade of action. With the lack of energy access and gaps in employment, women are usually the hardest hit. However, addressing the gender gap has the opportunity to tremendously advance this sector.

This event showcases the CEM's focus on gender equality and fosters intergenerational dialogue/ exchange on the matter. Ministers and youth representatives exchange thoughts and ideas on the importance of equality for the energy sector.

For the first time C3E international and the SDG7 Youth Constituency worked together to highlight the importance of women and youth in the transition to clean energy. Having intergenerational dialogue on the matter will provide a fruitful ground for new ideas and discussions. It will also table the gender aspects and the similarities that can be drawn from multigenerational perspectives.

**Cherop Soy**

SDG7 Youth Constituency - MODERATOR.

**Jennifer Granholm**

Secretary of Energy, DOE, USA

**Annette Holla**

C3E Chair

**Hon. Seamus O'Regan Jr**

Minister of Natural Resources, Canada

**Sabina Agustina Diaz**

Project Manager, HD Fotovoltaica

**Mechthild Wörsdörfer**

Director, Sustainability, Outlooks

and Technologies, International Energy Agency

**Rt. Hon. Anne-Marie Trevelyan**

UK Minister for Business, Energy and Clean Growth

**Norah Magero**

Co-Founder and Chief Executive, Drop Access

**Davina Ngei**

Communications Manager, Global Women's Network

for the Energy Transition (GWNET)

**Loreto Rivera Torteroglio**

Stakeholders Manager, RWE Renewables Chile;

C3E International Ambassador

**Grace Young**

Global Community Coordinator, Student Energy

**Fatih Birol**

Executive Director International Energy Agency, Paris





## CEM12: CLEAN ENERGY AND GREEN HYDROGEN FOR INDUSTRIAL HEAT

Even as clean electricity becomes more readily available worldwide, emissions are still projected to continue - and rise - in difficult to decarbonize sectors, such as industry, aviation and shipping.

This side event explores opportunities to target these hard-to-abate sectors with advanced heat sources and hydrogen-enabled synthetic fuels to accelerate cost-effective transitions to zero-emissions energy systems.

<b>Anj Chadha</b>	Co-founder and chief executive of Top Tier Impact Strategies (TTIS) MODERATOR.	
<b>Josh Freed</b>	Leader, Third Way	
<b>Rachel Maclean</b>	Parliamentary Under-Secretary of State at the Department for Transport	
<b>Nobuo Tanaka</b>	Chair of the Steering Committee of the Innovation for Cool Earth Forum	
<b>Dr. Ing. Erwin Plett</b>	Green Hydrogen Ambassador for Chile	
<b>Seth Grae</b>	CEO, Lightbridge Corporation	
<b>Kirsty Gogan</b>	Co-Founder of TerraPraxis	
<b>Dr. Rita Baranwal</b>	Vice President of Nuclear and Chief Nuclear Officer at the Electric Power Research Institute	
<b>Yasushi Fukuizumi</b>	Executive Officer & Senior Executive Fellow at Mitsubishi Heavy Industries	
<b>Carlos Leipner</b>	Director Global Nuclear Energy Strategy, Clean Air Task Force	
<b>Eri Nakatan</b>	Acting Director for Nuclear Technology, Ministry of Economy, Trade and Industry of Japan	

## CEM12: CLOSING THE GAP- AN EVI CALL TO ACTION

Leaders from governments around the world will gather later this year at COP26 in Glasgow to accelerate action towards the goals of the Paris Agreement, with the aim to limit global warming to well below 2, aiming for 1.5 degrees Celsius. Several governments have in the lead up to COP26, raised their long-term energy and climate objectives, including pledged goals for net-zero emission or carbon neutrality, which brings momentum to collective efforts to tackle climate change. To achieve the objectives under the UNFCCC framework, a raised ambition within the transport sector will be crucial as almost 25% of the global energy-related emissions come from this sector. Electrification of various transport modes and integrating vehicles with the grid to improve overall system flexibility, resilience, and cost reductions, provides an unparalleled opportunity to progress toward a sustainable and secure energy future. EVI members today join forces with partners to share with the world their collective and individual efforts to close the gap to 2030, and to get the world on track to long-term climate and energy targets, including net-zero emissions pledge.

**Mechthild Wörsdörfer**

Director, Sustainability, Outlooks and Technologies  
International Energy Agency MODERATOR.

**Dr. Fatih Birol**

Executive Director, International Energy Agency

**David Turk**

Deputy Secretary of Energy, United States

**Claire O'Neill**

Managing Director for Climate and Energy,  
World Business Council on Sustainable Development

**Mollie Johnson**

Assistant Deputy Minister, Natural Resource Canada

**Chen Linhao**

Deputy Director-General, Ministry of Science and Technology,  
China





## CEM12: DRIVE TO ZERO – ACCELERATING ZERO-EMISSION MEDIUM- AND HEAVY-DUTY VEHICLES

This event, part of the Drive to Zero Campaign aimed to accelerate the adoption of zero-emission medium- and heavy-duty vehicles (ZE-MHDVs), convenes selected leading countries to voice their support for ambitious targets for ZE-MHDVs through a Global Memorandum of Understanding (MoU) ahead of COP-26. The Global MoU for ZE-MHDVs is being co-led by the Netherlands and CALSTART, the operating agent of the Drive to Zero campaign. That support is much needed. Freight emissions are on the rise and not in line with the ambition of the Paris Agreement. A widely-supported Global MoU aims to accelerate the ZE-MHDV market, which will not only advance technology innovation and generate clean technology jobs, but also improve energy security, deliver tangible climate benefits, lower air pollution, and deliver associated health benefits. This event kicks off a process in which the Global MoU gains more traction leading to its signing by the widest group of signatories at COP26.

<b>Stientje van Veldhoven</b>	State Secretary for Infrastructure and Water Management, Netherlands
<b>Francisco Javier López</b>	Undersecretary of Energy, Ministry of Energy, Chile
<b>Cristiano Façanha</b>	Global Director, CALSTART
<b>Angela Hultberg</b>	UK Climate Champion
<b>Gereon Meyer</b>	Head of Department European and International Business Development, VDI/VDE Innovation, Germany
<b>Sebastian de Toro</b>	State Secretary of Ministry of Infrastructure, Sweden
<b>Knut Arild Hareide</b>	Minister of Transport, Norway
<b>Jared Blumenfeld</b>	Secretary for Environmental Protection, CalEPA
<b>Rachel Maclean</b>	Parliamentary Under-Secretary of State, UK

## CEM12: EVI: EV CITIES CASEBOOK LAUNCH

New forms of micro-mobility and smartphone-based transport systems have grown in popularity. Cities have broken new ground in these innovative technologies and new policy ideas. However, in order to meet our climate targets this progress needs to be sustained.

This is now the third EV City Casebook and Policy guide. The report is a joint collaboration between EVI and the Hybrid & Electric Vehicle Technology Collaboration Programme (HEV TCP). It is a showcase of cities building better, cleaner mobility through electric vehicles – designed to inspire others to move towards mass electric mobility. The casebook looks at global case studies of EV innovation along with policy guidance, an analysis of common challenges and lessons learned in order to foster global uptake of electric vehicles in urban areas.

**Thierry Spiess** Senior Manager and Policy Advisor at Natural Resources Canada

**Carol Burelle** Chairperson of the Hybrid and Electric Vehicles Programme

**Kate Palmer** Intelligent Mobility Consultant, Urban Foresight

**Gordon Hector** Principal Consultant, Urban Foresight



## CEM12: EXPERT DISCUSSION ON POLICIES AND MARKET STRUCTURES TO DRIVE NET-ZERO EMISSIONS ENERGY SYSTEMS

This event examines holistic approaches to designing and implementing policies and market structures that drive transitions to net-zero-emission energy systems. The session covers all elements of the energy system across power, buildings, transport, and industry. Both straightforward decarbonization solutions (e.g. transport electrification) and more challenging areas (e.g. aviation) are addressed. Panelists will discuss best practices and barriers to consider in taking a whole-system approach toward decarbonization in the energy sector.

**Charles Kutscher** Fellow, Renewable and Sustainable Energy Institute

**Priya Sreedharan** Program Director, GridLab

**Rana Choneim** Chief, Energy Systems and Infrastructure Division, UNIDO

**Rodrigo Garcia Palma** Founder and Managing Director, ImplementaSUR



## CEM12: FLEXIBLE NUCLEAR FOR NUCLEAR-RENEWABLES INTEGRATION

The NICE Future initiative is in year 2 of its Flexible Nuclear Campaign for Nuclear-Renewables Integration. We will expand on nuclear technology's system flexibility benefits, presenting new applications that target hard-to-abate sectors and enable re-use of existing infrastructure without emissions, including the opportunity to cost-competitively repower coal fleets to make them cleaner and more flexible than today. Seeking to raise the profile of the NICE Future campaign and shining a light on the transformative potential for nuclear energy to accelerate decarbonization and the just transition.

**Rich Powell** Executive Director of ClearPath- MODERATOR.

**Maria Korsnick** President and CEO of the Nuclear Energy Institute

**Rumina Velshi** President and CEO of the Canadian Nuclear Safety Commission

**Shannon Bragg-Sitton** Lead, Integrated Energy Systems at Idaho National Laboratory

**Diana Musyoka** Environmental Scientist at Nuclear Power Energy Agency  
(NuPEA) Kenya

**Stephane FEUTRY** Senior Advisor for Operation at EDF

**Staffan Qvist** Consultant at Qvist Consulting Limited.

**Zbigniew KUBACKI** Advisor to the Minister at Ministry of Climate of Poland

**Eric Ingersoll** Co-Founder of TerraPraxis

**Kirsty Gogan** Co Founder of TerraPraxis

**Lauren Lathem** Research Engineer at Southern Company

**Carol Gregoris** Project Director for Darlington New Nuclear Project at Ontario Power Generation

**Jessica Lovering** Co-Founder of Good Energy Collective

**Isabelle Boemeke** Nuclear energy influencer and fashion model.



## CEM12: GLOBAL EV OUTLOOK 2021 LAUNCH

The IEA's Global EV Outlook (GEVO) annual series is the flagship publication of the Electric Vehicle Initiative. GEVO 2021 looks at the latest EV trends and main drivers for road transport sector electrification around the world. The report provides an overview of recent government policies to accelerate the deployment of EVs and actions taken to shield EV markets from the impact of the Covid-19 pandemic. It also includes an outlook for EV and charging infrastructure deployment up to 2030 and analyses the implications of EV uptake on electricity demand, greenhouse gas emissions, battery production volumes and government tax revenues. During the webinar, the authors will present and discuss the main findings of the report.

**Araceli Fernandez Pales**

Energy Technology Policy Analyst,  
International Energy Agency

**Jacopo Tattini**

Energy Technology and Transport Modeller,  
International Energy Agency

**Christopher Lowans**

Analyst (Intern), International Energy Agency

**Leonardo Paoli**

Energy Analyst - Clean Energy Technologies,  
International Energy Agency

**Jacob Teter**

Energy Technology and Transport Analyst,  
International Energy Agency

**Elizabeth Connelly**

Energy Technology and Transport Analyst,  
International Energy Agency



## CEM12: GOVERNMENTS AND INTERNATIONAL THINK TANKS ON FEATURES OF NET-ZERO SCENARIOS

This event explores national perspectives on the most critical energy transition features and how governments use LTES to spur the discussion and articulate the pathways to achieve carbon neutrality. The panelists discuss finding common threads on the most critical features for the energy transition, which must be accounted for in national scenario planning, and the non-regret decisions available today for policymakers.

**Dolf Gielen** Director, IRENA - MODERATOR.

**Asami Miketa** Senior Programme Officer, IRENA

**Thiago Barral** Executive President of EPE

**Jeremy Allen** Head of the Energy Portfolio Office, Department for Business, Energy & Industrial Strategy, United Kingdom

**Jesse Scott** Director of International Programmes, Agora Energiewende, Germany

**Mika Ohbayashi** Director, Renewable Energy Institute, Japan

**Bruce Raw** Chief Strategy Officer, Green Cape, South Africa

**Fabby Tumiwa** Executive Director, Institute of Essential Services Reform, Indonesia



## CEM12: GREEN H2: ACCELERATING DECARBONISATION IN DEVELOPING COUNTRIES

The event highlights green hydrogen opportunities in developing countries across different sectors (transport, power, industry, agriculture), as well as deployment challenges and roles for public intervention (developing strategies, supporting pilot projects, introducing policies & standards, and building capacity). It also presents perspectives from two countries pursuing green hydrogen plans, explaining their vision of how green hydrogen can play a role to accomplish their decarbonization goals and development objectives, and the elements required to scale up green hydrogen production and use sustainably.

**Demetrios Papathanasiou** Global Director, World Bank Energy and Extractives

**Francisco Javier López** Undersecretary of Energy, Ministry of Energy, Chile

**Andrea Meza Murillo** Minister of Environment and Energy of Costa Rica



## CEM12: H2 IN NW EUROPE: UNLOCKING OPPORTUNITIES THROUGH REGIONAL COOPERATION

In this event, the International Energy Agency and the Clingendael International Energy Programme present their study entitled 'Hydrogen in North-Western Europe. A vision towards 2030'. This study aims to inform the activities for regional cooperation undertaken in the North-West Europe Working Group of the Clean Energy Ministerial Hydrogen initiative. After the presentation of the study, several high senior officials of the involved governments react to the study and give their visions about how regional cooperation can accelerate the development of a hydrogen market in the region that can contribute to the decarbonisation goals of the countries in North-West Europe.

### Dan Dorner

Head of the Clean Energy Ministerial Secretariat  
MODERATOR.

### Niels Kastelein

Director Climate Policy, Ministry of Economic Affairs and Climate Policy, the Netherlands

### Mechthild Wörsdörfer

Director, Sustainability, Outlooks and Technologies, International Energy Agency

### Jose M. Bermudez

Energy Technology Analyst.Hydrogen and alternative fuels, International Energy Agency

### Coby van der Linde

Director, Clingendael International Energy Programme

### Bjørn Haugstad

Director General, Ministry of Petroleum and Energy, Norway

### Laurent Michel

Director General, Ministry of Ecology Transition, France

### Ulrich Benterbusch

Deputy Director-General, Federal Ministry for Economic Affairs and Energy, Germany

### Stefanie Murphy

Director, Department for Business, Energy and Industrial Strategy, the United Kingdom

### Jane Glindvad Kristensen

Head of Division, Danish Energy Agency

### Jan Hensmans

Head of Unit, Federal Public Service for Economy, Belgium

### Tudor Constantinescu

Principal Adviser to the Director-General for Energy, European Commission

### Noé van Hulst

Chair, International Partnership for Hydrogen and Fuel Cells in the Economy



## CEM12: INDUSTRY ROUNDTABLE ON ELECTRICITY TRANSMISSION

From new frontiers for high voltage undersea, underground, and overland transmission lines, to cybersecurity on the transmission grid, grid stabilization technology, and platforms for cross-border electricity trade, new technologies are facilitating greater international interconnection of the world's power systems. This RGEI roundtable brings together industry leaders to discuss how cutting-edge transmission and grid management technologies can contribute to international electricity system integration.

<b>Phillip Cornell</b>	Principal, The Economist Group; Senior Fellow, Atlantic Council Global Energy Center; RGEI Acting Coordinator - - MODERATOR
<b>Dr Yanqiu Bi</b>	Division Director, GEIDCO
<b>Gerhard Salge</b>	CTO, Hitachi-ABB
<b>Dr Zhao Jing</b>	Chief Strategy Officer, TBEA
<b>Olivier Grabette</b>	Senior EVP, European Industrial Affairs, RTE
<b>Jochen Kossman</b>	VP, Business Development, Siemens Energy



## CEM12: INTERGENERATIONAL PARTNERSHIP FOR HYDROGEN: ROADMAP FOR 2050

The event aims to discuss and evaluate how to enable a successful clean hydrogen transition, which is inclusive of youth. The future of clean hydrogen technologies not only requires the knowledge of the senior experts and leaders in the energy field, but also the creativity, enthusiasm and radical innovation of young professionals and students. In fact, it is key to understand that the youth will be leading the hydrogen sector by 2050.

**Kate Power** Young Associate at the OECD - Moderator

**Max Correa** Head of the Fuels and New Energy Division, Ministry of Energy, Chile

**Brais Armiño** Co-founder of “El podcast del hidrógeno” (Hydrogen Podcast) and Co-founder of atlantHy

**Brittany Bright** Communication Strategist at Next Hydrogen Corp.

**Davine Janssen** Project Manager at WatersofNet



## CEM12: LAUNCH EVENT FOR THE IEA WORLD ENERGY INVESTMENT 2021 - POST-COVID-19: BUILDING MOMENTUM IN FINANCING CLEAN ENERGY TRANSITIONS BY MOBILISING INSTITUTIONAL CAPITAL AT SCALE.

There is an urgent need to unleash major new clean energy investments to put the world on track to meet the goals of the Paris Agreement and eventually achieve net-zero emissions. In order to avoid higher emissions from rising energy demand across the globe, this new investment will be required at scale in both advanced and emerging economies. The public sector support in fostering clean energy is critical to lead market dynamics, provide clear policy signals and play a catalyst role to crowd-in private sector investment, which will provide the majority of the funds.

This year's edition of the World Energy Investment Report presents key findings in global energy investment trends and the role of recent climate pledges by major economies and private sector stakeholders, sustainable stimulus packages and policy supports in clean energy transitions. The report presents two key questions: (1) whether momentum on the policy and the finance side is translating into an actual uptick in capital expenditures on clean energy projects and (2) whether the investment response will be broad-based or if some geographies and vulnerable parts of the world's population will be left behind.

Based on the findings from this new analysis, as well as from a joint report by IEA and Imperial College Business School on "Clean Energy Investment: a Global Comparison of Investment Returns"<sup>1</sup>(supported by the CEM IF initiative), this event highlights the challenges and opportunities to finance clean energy transitions by mobilizing institutional capital at scale, and will bring together experts from governments, investors and the financial community.

**Bella Tonkonogy** Associate Director, Climate Policy Initiative - Moderator

**Mechthild Wörsdörfer** Director, Sustainability, Outlooks and Technologies,  
International Energy Agency

**Michael Waldron** Head of Investment Team, IEA

**Anders Hoffmann** Deputy Permanent Secretary, Ministry of Climate,  
Energy and Utilities of Denmark

**Thorsten Herdan** Director General, German Federal Ministry for Economic Affairs  
and Energy

**Jon Johnsen** CEO, PKA

**Deirdre Cooper** Co-Head of Thematic Equity, Ninety One  
**Maria S. Jelescu** CEO, Ardinall Investment Management



## CEM12: MOBILIZING GLOBAL FINANCE TO EXPAND CLEAN ENERGY MARKETS

This Clean Energy Ministerial side event explores how governments can accelerate clean energy adoption with new frameworks, how public-private collaboration can reduce risk to scale investment, and how partnerships like the International Solar Alliance can mobilize clean energy finance. New, relevant research is released from World Resources Institute and Ørsted presenting recommendations on how governments can unlock private investment.

### **Helen Mountford**

Vice President, Climate & Economics, World  
Resources Institute -Moderator



### **Francisco Javier López**

Undersecretary of Energy, Ministry of Energy, Chile



### **Tomas Anker Christensen**

Climate Ambassador, Denmark

### **Dr. Ajay Mathur**

Director-General, International Solar Alliance

### **Jennifer Layke**

Director, Global Energy Program, World Resources Institute

### **Filip Engel**

Vice President, Sustainability, Public Affairs & Branding, Ørsted

### **Elbia Gannoum**

CEO, ABEEólica; Vice-Chair, Global Wind Energy Council



## CEM12: NET ZERO EMISSIONS PATHWAYS WITH NUCLEAR INNOVATION

Many countries have announced ambitious net-zero goals. Join ministers and energy leaders to hear about diverse national and multi-national pathways to net zero. Join the launch of a NICE Future publication, featuring minister-level perspectives on nuclear innovation's roles in these pathways and offering new solutions. Learn how flexibility and integration maximize the full potential of clean, reliable, and affordable power systems. Additional benefits are production of heat, hydrogen, drinking water, and more.

**Kirsty Gogan** Founder & Managing Director, TerraPraxis -Moderator

**Dr. Jill Engel-Cox** Director of the Joint Institute for Strategic Energy Analysis (JISEA) at the U.S. National Renewable Energy Laboratory (NREL)

**Rich Powell** Executive Director, Clear Path

**Josh Freed** Leader, Third Way

**Seamus O' Regan** Member of Parliament, Minister of Natural Resources, Canada

**Anne-Marie Trevelyan** Minister of State for Business, Energy and Clean Growth at the Department of Business, Energy and Industrial Strategy, UK

**David Turk** Deputy Secretary, Department of Energy, United States

**Kiyoshi Ejima** State Minister of Economy, Trade and Industry of Japan

**Michał Kurtyka** Minister of Climate and Environment, Poland

**Collins Juma** Chief Executive Officer of the Nuclear Power and Energy Agency

**Dr. Sama Bilbao y León** Director-General at the World Nuclear Association

**Rafael Mariano Grossi** Director-General of the International Atomic Energy Agency (IAEA)

**William D Magwood, IV** Director-General of the OECD - Nuclear Energy Agency

**Dr. Fatih Birol** Executive Director of the International Energy Agency



## CEM12: OPPORTUNITIES FOR UNLOCKING DECARBONIZATION INVESTMENT AT SCALE: APPLYING LESSONS FROM CORPORATE RE PROCUREMENT TO SUPPORT RE ADOPTION BEYOND POWER

Over the past several years, corporate renewable energy markets have advanced significantly, with corporate power purchase agreements alone reaching nearly 20 GW by 2019. But the bulk of this procurement has taken place in North America and Europe. Supply chain energy demand - especially in manufacturing - is just beginning to be addressed in emerging economies in Asia, Latin America and elsewhere. Over 300 companies have set RE100 targets representing an aggregated demand of more than 315 TWh/yr, which is larger than Italy's total energy demand. More than 1,100 businesses and 45 of the biggest investors have committed to net zero emissions by 2050. For these increasingly ambitious climate and clean energy targets to be achieved, particularly in emerging markets, an array of additional financial, market, policy, and technology solutions will need to be scaled dramatically and urgently, particularly for emerging economies

This event, organized by the Clean Energy Investment Accelerator features speakers from RE100, World Wildlife Fund, the Ren mx initiative in Mexico, and Clean Energy Investment Accelerator Indonesia program. The discussion focused on voluntary clean energy investments by commercial and industrial end-users. Specifically, we look at how corporate renewable energy procurement approaches can be replicated to emerging markets through a greater variety of contracting and technology choices and improved enabling environments, as well as how lessons from renewable electricity can be applied to other energy needs to enable greater decarbonization of the manufacturing sector, including through new opportunities that are starting to emerge like clean thermal. This session builds off the CEM Corporate Sourcing of Renewables campaign by extending the discussion to a broader array of technologies and business models required to support manufacturing decarbonization for energy use beyond just power.

**Michelle Murphy Rogers**  
**Marty Spitzer**

Senior Director (CEIA) - MODERATOR  
Marty Spitzer, Senior Director, Climate and Renewable Energy, WWFUS

**Sam Kimmins**  
**Luli Pesqueira**  
**Gina Lisdiani**

Sam is the Head of the RE100 with the Climate Group.  
Executive Director, Ren mx.  
is the Indonesia Country Director for Allotrope Partners and Indonesia Co-Lead of the Clean Energy Investment Accelerator (CEIA)



## CEM12: PODCAST DISCUSSIONS ON KEY CLEAN ENERGY POLICY SUBJECTS

In this talk, Thiago Barral discuss with three guests the solutions to integrated large shares of variable renewable electricity into the grid.

**Thiago Barra**

Executive President of EPE - (Moderator)



### EPISODE 1

#### **Priya Sreedharan**

Program director at GridLab



#### **Karim Karoui**

Technical director at ENGIE Impact



#### **Luiz Barroso**

CEO of PSR Energy Consulting



### EPISODE 2

#### **Ilan Cuperstein**

C40 Deputy Regional Director for Latin America



#### **Martina Wikström**

Research and innovation programme manager at the Swedish Energy Agency



#### **Matteo Muratori**

Senior Engineer at NREL



### EPISODE 3

#### **Barbara Jinks,**

Programme Manager

#### **Cédric Philibert**

Energy and Climate Change Analyst



#### **Rachel Crouch**

Project Finance Senior Associate at Norton Rose Fullbright



## CEM12: POLICY MESSAGES FROM THE ISGAN REGULATORY SANDBOX 2.0 PROJECT

This event shares the key findings from an international deep-dive knowledge exchange within the International Smart Grid Action Network (ISGAN) on the topic of Regulatory Experimenting, such as Regulatory Sandboxes, which can be used as levers to accelerate the energy transition. The Policy Messages presented are the result of an inclusive and transparent co-creation process, building on the experiences and lessons learned by policy makers, regulatory bodies and research actors in 15 countries.

**Helena Lindquist**

Knowledge sharing specialist

**Dierk Bauknecht**

Prof. Dr.

**Magnus Olofsson**

Dr. and ISGAN national expert

**José Pablo Chaves Ávila**

Dr. and research professor

**Kari Mäki**

Research Professor, Smart Energy Systems

**Luca Lo Schiavo**

Deputy Director of the Infrastructure Regulation Department at the Italian Regulatory Authority for Energy (ARERA)

**Jennifer Hiscock**

Deputy Director of the Smart Grid & Renewable Energy portfolio for Natural Resources Canada's Office of Energy R&D

**Urban Peyker**

Programme Manager at the Austrian Research Promotion Agency

**Klaus Kubeczko**

Dr. and Senior Expert Advisor at the Austrian Institute of Technology



## CEM12: STAKEHOLDER TESTIMONIES: HOW CAN MY ORGANISATION ACCELERATE CCUS?

Carbon capture, utilisation and storage, or CCUS, is a vital emission reduction technology that has applications across many sectors and industries. Interest in CCUS is growing, as many companies develop carbon capture solutions, as part of their broad emission reduction portfolios. This side-event shares viewpoints from a variety of organisations: Asian Development Bank, International CCS Knowledge Centre, Port of Rotterdam, Global Cement and Concrete Association and BHP.

**Allard Castelein** President and Chief Executive Officer of the Rotterdam Port Authority since 2014



**Claude Loréa** Cement Director at the Global Cement and Concrete Association



**Fiona Wild** Vice President of Sustainability and Climate Change at BHP.



**Hamoud Otaibi** Senior Advisor for Climate Change Agreements at Saudi Arabia's Ministry of Energy



**Dr. Yongping Zhai** Chief of Energy Sector Group of the Asian Development Bank (ADB)



## CEM12: THE 7TH ISGAN AWARD OF EXCELLENCE CEREMONY, 2021: RECOGNIZE EXCELLENCE IN INNOVATION, INTEGRATION AND TRANSFORMATION OF SMART-GRID SYSTEMS

The ISGAN Award of Excellence seeks to leverage leadership and innovation in smart grids to accelerate the global exchange of best practice and promote replication or adaptation of proven concepts in other markets, countries, and regions.

By showcasing examples in the global smart grid community, ISGAN Awards ceremony promotes a shared global understanding of the value that smarter electricity systems can bring, address gaps in related knowledge and tools, and create opportunities for more peer-to-peer learning and engagement.

**Luciano Martini** Chair of International Smart Grid Action Network (ISGAN)

Director of RSE S.p.A." (Moderator)

**Francisco Javier Lopez** Energy Undersecretary, Chile

**Amanda Wilson** Director General, Office of Energy Research and Development,  
Natural Resources, Canada

**Reji Kumar Pillai** Chair of Global Smart Energy Federation, President of India  
Smart Grid Forum

**Kevin Colvey** Director of Saint John Energy, Canada

**Maik Staudt** R&D Coordinator of MITNETZ STROM, Germany



## CEM12: THE GLOBAL YOUTH ENERGY OUTLOOK: A YOUTH-LED PERSPECTIVE ON THE GLOBAL ENERGY TRANSITION AT CEM12

Student Energy presents and showcases the world's first global dataset of youth perspectives on the energy transition: the Global Youth Energy Outlook (GYEO) through an intergenerational program that provides a first glimpse into the final report, set to launch at COP26, by featuring key early insights that will highlight how various stakeholders at CEM12 can begin working with youth to accelerate the clean energy transition.

**Jackie Bastianon** Global Youth Energy Outlook Digital Engagement Coordinator.

**Helen Watts** Senior Director of Global Partnerships, Student Energy

**Paola Flores Carvajal** Regional Coordinator for Latin America, Student Energy

**Tianna Philippot** Regional Coordinator for North America, Student Energy

**Linette Knudsen** Regional Coordinator for Europe, Student Energy





## CEM12: THREE YEARS OF POWER SYSTEM FLEXIBILITY

Launched at CEM9, the Power System Flexibility campaign has grown to a public-private network of experts sharing experiences on various policy and technology questions for increased flexibility in power systems. These short videos present the experiences of some of our partners and what they have learned through the campaign.

<b>Therese Hindman Persson</b>	Chief Economist, Swedish Energy Markets Inspectorate
<b>Francisco Martinez</b>	Head of Unit, Regulatory Support in the Sustainable Energy Division, Energy Ministry Chile
<b>Renato Haddad</b>	Empresa de Pesquisa Energetica, Brazil
<b>Dr. Claudia Weise</b>	Project Director of International Affairs, VGB PowerTech, Germany
<b>Dr. Andreas Feldmueller</b>	Director Expanded Scope Solutions of Siemens Energy Global GmbH & Co. KG



## CEM12: VIRTUAL PHOTO EXHIBITION AND ENERGY PORTRAITS: ENERGY ACCESS CHALLENGES THROUGH THE PHOTOGRAPHIC LENSE

The Energy Portraits project strives to document the Sustainable Development Goal number 7 (SDG7) challenge to “ensure access to affordable, reliable, sustainable and modern energy for all”. To complement the documentation of SDG7, WAME has launched a call for “Energy Messages” from people from all spheres of life and all geographical locations. Students in high-schools and university, ministers, immigrants, factory workers and industry stakeholders, absolutely everyone has an “Energy Message” or “Energy Wish” and WAME will collect these and bring them to COP26 in Glasgow so that the voices of everyone can be heard at this critical event for humanity and the planet we live on. We want the decision-maker to know what is important to the people, the obstacles they are confronting, and the solutions they are designing.

Marco Garofalo , Photographer



## CEM12: WHAT'S NEXT FOR POWER SYSTEM FLEXIBILITY

This event wraps up for the activities of the Power System Flexibility Campaign and ISGAN. Over the last three years, the PSF has hosted a set of technical events and high-level discussions aimed at drawing a bridge between the needs for public sector policy-making and the needs for improved flexibility and non-governmental organizations. The PSF looks at flexibility resources through three pillars, market design, digitalisation and sector-coupling. The event focuses on solutions that have been deployed and the gaps that need to be filled. The event highlights areas of critical importance to improve power system flexibility, stressing the link between research projects and policy-making.

**Alejandro Hernandez** Head of Unit Renewables Integration and Secure Electricity (RISE)- MODERATOR

**Keisuke Sadamori** (Opening remarks) IEA, Deputy Executive Director

**Luciano Martini** (Presenter) Director, Transmission and Distribution Technologies, RSE (Italy)

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**Sandoval Feitosa** Co-chair Grids and Systems, ETIP SNET

**Antonio Iliceto** President and CEO, RAP

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**Agnes M da Costa** Chief Technology and Strategy Officer, Siemens Energy  
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**Marco Peirano**

**Vera Silva**

**Vinod Philip**

**Sushanta Chatterjee**





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# Acknowledgements



The 12<sup>th</sup> Clean Energy Ministerial (CEM12), hosted by the government of Chile, was an exceptional virtual meeting in extraordinary circumstances. The success of the event is down to a committed global community of clean energy actors from governments, industry, international organisations, think tanks, research institutions, and beyond. Our thanks go to our whole CEM community for their efforts and engagement.

Our huge gratitude and congratulations goes to our hosts Chile for a highly successful CEM12. To Minister Jobet and the Ministry of Energy for his leadership. To Javiera Aldunate, co-Chair of the CEM Steering Committee, for her commitment in leading this dedicated team in delivering an exceptional CEM12. The team included Charlotte Pertier, Mijal Brady, Federico Bernardelli, Catalina Machicao and Felipe Garcia. All involved illustrated dedication, hard work and professionalism to bring us a truly innovative CEM12. You should be very proud of what you have achieved.

We thank the Ministers and other Heads of Delegation for coming together and showcasing your clean energy actions and highlighting clean energy priorities. And importantly to country Sherpas and their colleagues for their tireless work behind the scenes to make sure that CEM12 delivered. Thank you to our CEM Steering Committee – Chile, Canada, China, Denmark, European Commission, India, Mexico, Saudi Arabia, United Kingdom and the United States – for their guidance and leadership.

Thank you to all CEM observer organisations, who are an essential part of the CEM family and play such an important role in the delivery of the CEM work programme, as well as CEM12: the International Energy Agency (IEA), International Renewable Energy Agency (IRENA), United Nations Industry Development Organization (UNIDO), UN Environment, World Energy Council, Sustainable Energy for All, World Bank/ESMAP.

CEM12 delivered our biggest ever clean energy events programme, with more than 40 clean energy events. Massive thanks to our events organisers for their huge efforts in delivering such high-quality events that are such an essential part of our CEM programme.

Our thanks to Melinda Crane for her excellent moderating of the CEM12 plenary session.

A special word of thanks to Student Energy and the SDG7 Youth Constituency for bringing us the results of their youth survey in a series of excellent presentations during the CEM12 plenary.

Huge thanks to the technical teams in Chile. We could not have done this without you! And also to the technical teams around the world for their behind-the-scenes work to deliver a very smooth virtual meeting.

Our friends and colleagues in the Mission Innovation Secretariat – congratulations on delivering a highly successful MI-6 and for the launch of MI2.0.

Finally, thanks to the staff of the CEM Secretariat for their hard work and dedication: Dan Dorner, Cassie Etter-Wenzel, Ellina Levina, Sarbojit Pal, Melisande Liu, Rachael Briggs, Eva Stepniewska-Wells, Susannah Nash, Denise Goward and Jane Barbière. Our congratulations to Rachael Briggs for the birth of her daughter.

The Clean Energy Ministerial is all about international collaboration in action. And when we look at the members of our global community that have come together to deliver this exceptional CEM12, we feel energised to take our work programme forward over the next year and begin the journey to CEM13, hosted by the United States.

CEM Secretariat

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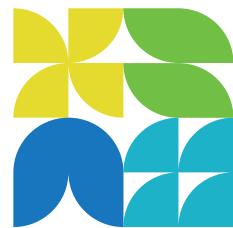
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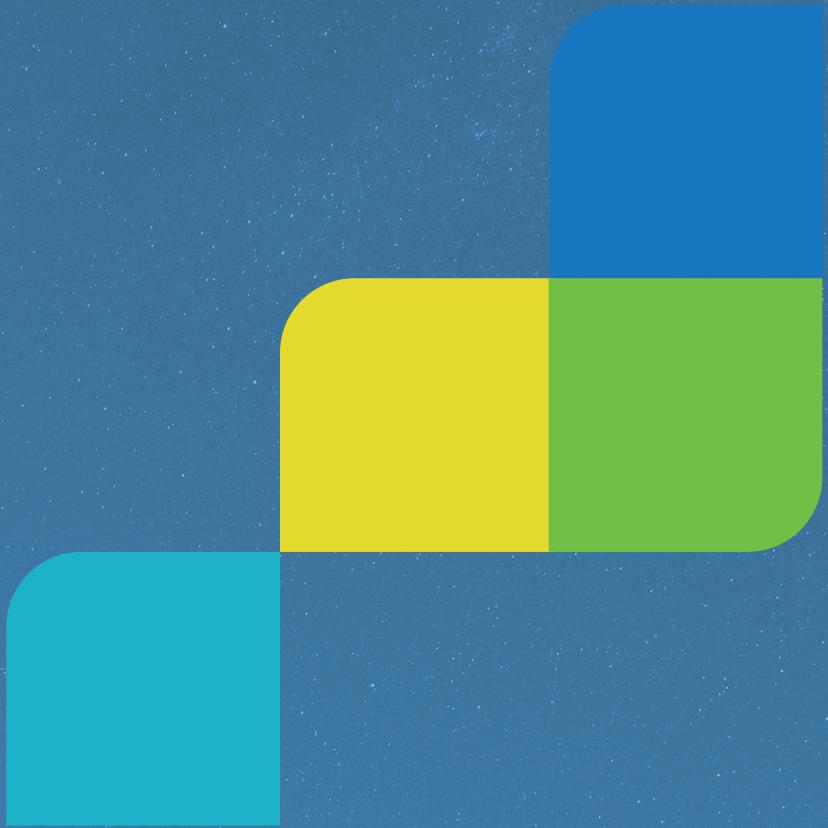
Mathias Veganzones



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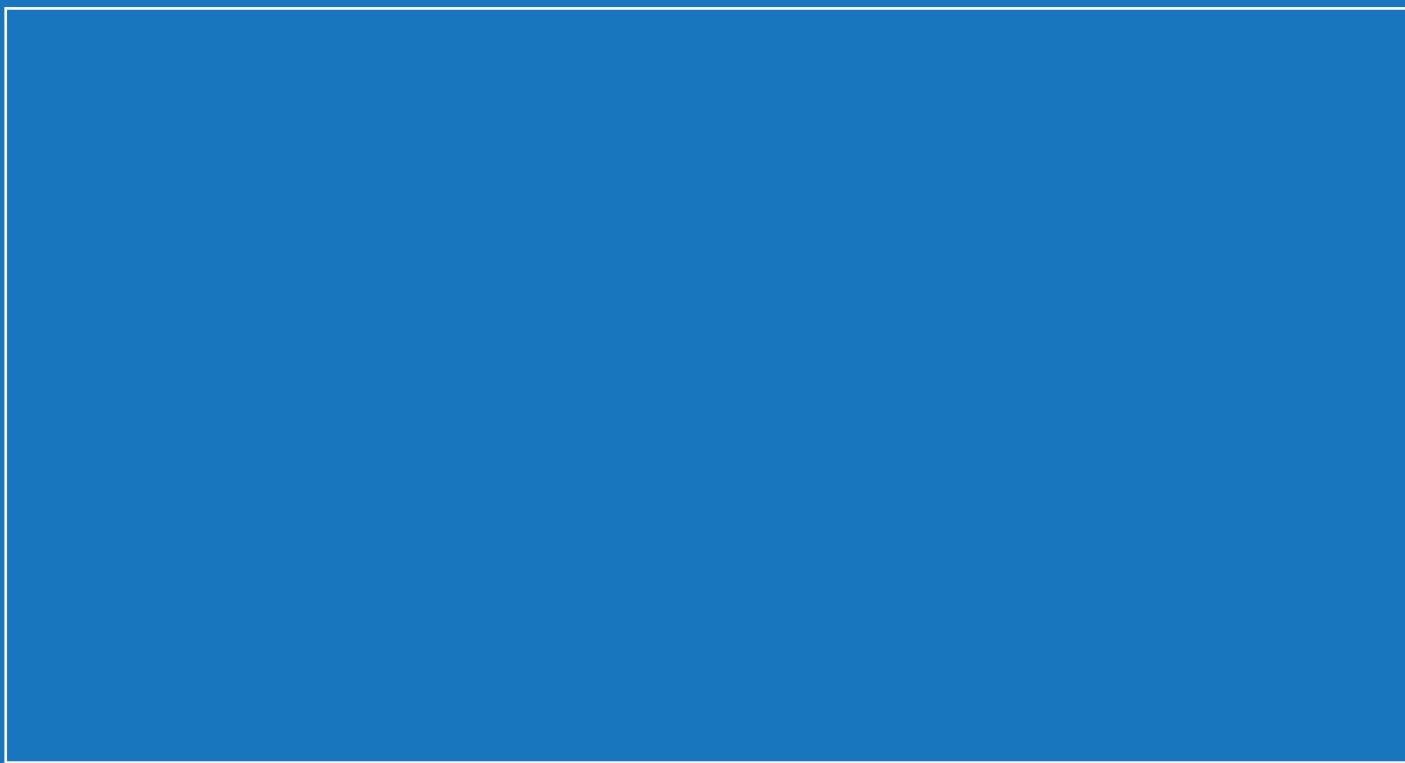


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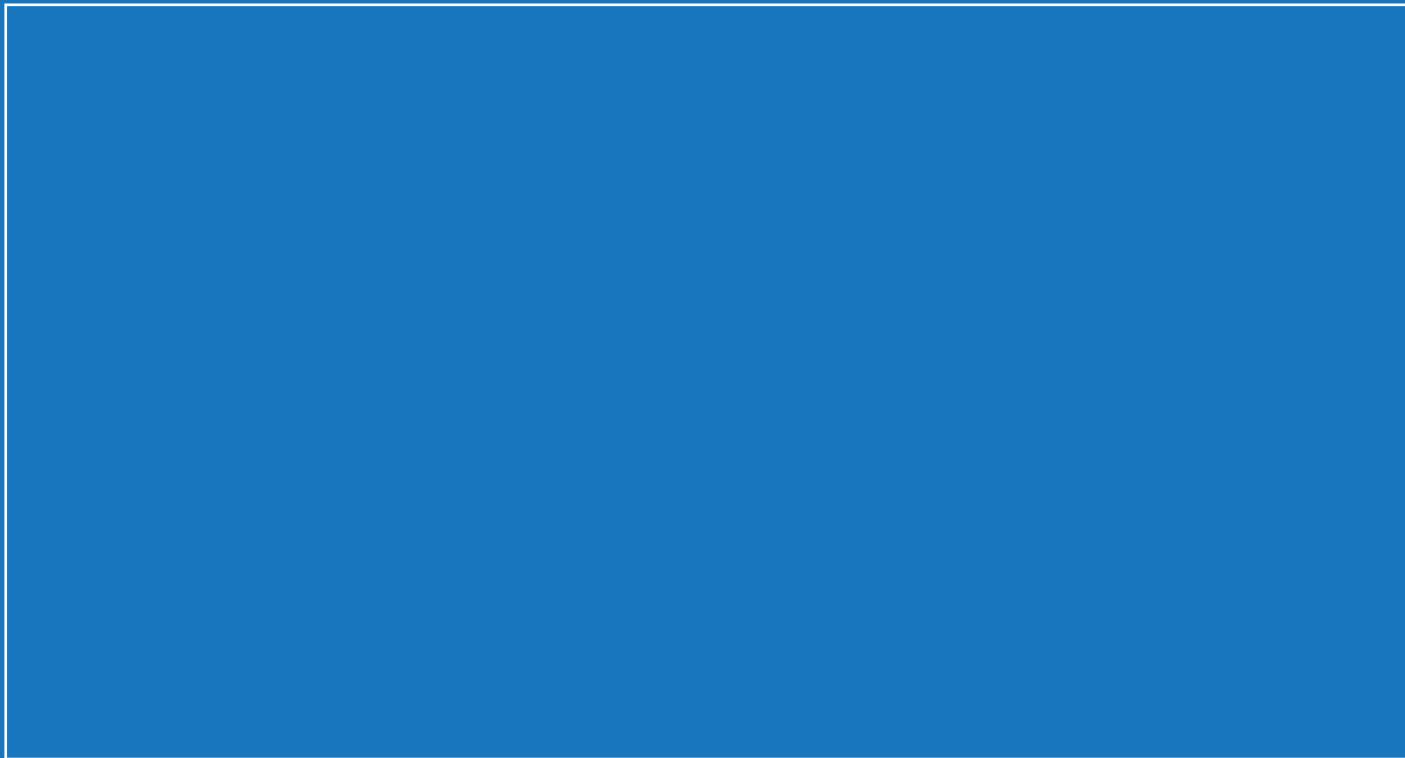


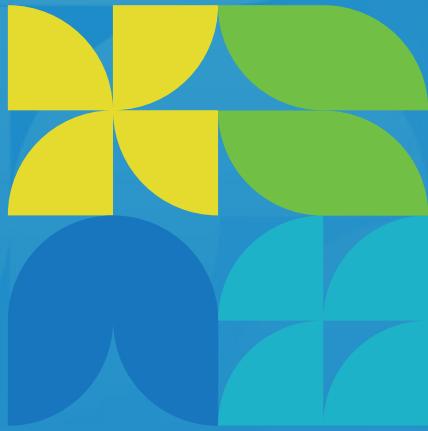
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## **A message from the CEM12 Host**



## **Road To CEM13**





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