



ADVANCING CLEAN ENERGY TOGETHER



THE CLEAN ENERGY MINISTERIAL
DELIVERING INSIGHTS, INSPIRATION, AND IMPACT

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INTRODUCTION

Clean energy adoption this decade must far outpace the last. Unfortunately, we don't have a magic switch we can flip to go from niche- to massive-scale deployment.

What we do have is the Clean Energy Ministerial.

Bringing together a powerful community of the world's largest and leading countries, companies and international experts, the Clean Energy Ministerial (CEM) is on a mission to accelerate clean energy transitions.

Launched in 2010, CEM represents the world's largest and leading clean energy economies, accounting for around 90% of the world's installed clean power generation capacity, 81% of clean energy investments, and the vast majority of public R&D in clean energy technologies.

A bottom-up, member-led initiative, CEM has earned its reputation for being a proven and popular forum for impactful collaboration – collaboration that has developed new technologies, built new industries and increased the speed of clean energy deployment.

IMPACTFUL COLLABORATION IN ACTION

Whether it be by leading, convening, capacity building, elevating, including or acting, in the following pages we put the spotlight on what impactful collaboration looks like in practice.

For example, we look at how CEM was at the vanguard of the rapid transition to energy efficient lighting – a transition that not only achieved a global commitment of 14 billion energy saving lighting products, but also inspired a number of national energy efficient lighting initiatives. Thanks in part to this leadership on lighting, LEDs are expected to account for 81% of all light sources by 2030.

CEM also played a leading role in the rapid uptake in electric cars. With an estimated 26 million electric vehicles on the road, EVs now account for nearly 18% of all new car sales worldwide.

But why stop there?

With the electrification of medium- and heavy-duty vehicles being the next frontier in electric mobility, CEM is leveraging the experience and success it gained in the general EV market to help electrify commercial trucks.

CONVENING AND CAPACITY BUILDING

As an international platform for convening, CEM facilitates collaboration both amongst governments and between the public and private sectors. For proof, just take a look at the work being done by the recently launched Transforming Solar Supply Chains initiative.

With a focus on the solar PV manufacturing value chain, the initiative aims to support countries in developing resilient supply chain capacity and foster links among global trading partners. To do so, it is bringing industry into the conversation.

We'll also look at how, through its Ask an Expert service, CEM helps build capacity in developing countries and emerging economies. Since its launch in 2011, the service's network of international experts has responded to more than 300 requests from 90 countries, island nations and regional organisations.

One of those countries is South Africa, where this collaboration allowed the country to skip the common mistakes and the trial-and-error approach that often impede clean energy initiatives and instead implement a policy with a good chance of success.

Capacity building also means ensuring that employees have the right skills and knowledge needed to perform the clean energy jobs of tomorrow. Through its Empowering People Initiative, we'll see how CEM helps governments, employers, educators, communities and labour organisations develop more holistic and integrated workforce preparation and just transition policies and programmes.

ELEVATING AND INCLUDING

As a global platform, CEM is well positioned to elevate a topic's place within the clean energy conversation – with hydrogen being a case in point. Prior to the launch of the Hydrogen Initiative, only three countries had established strategies for using hydrogen. Today, 17 governments have H2 strategies, with an additional 20 currently working on developing such strategies.

The net impact of these numbers is that low-emission hydrogen is now expected to grow sixfold, meeting 10% of total final energy consumption by 2050.

Another topic CEM is passionate about elevating is inclusivity. Knowing that to be successful the clean energy transition must be an inclusive transition, CEM is dedicated to bridging the sector's gender gap – no small task for an industry long known for being heavily male-centric.

Through its Equal by 30 Campaign, CEM is actively engaging with public and private sector organisations to work towards equal pay, equal leadership and equal opportunities for women in clean energy by 2030. In the five years since its launch, nearly 200 energy companies and organisations, along with 14 countries, have signed the Equal by 30 pledge – including all G7 member countries.

The campaign is already getting results. According to CEM data, signatories have higher average rates of female participation in three important indicators: total number of female employees, women in management and women on boards of directors.

TRANSLATING COLLABORATION INTO ACTION

Last but not least, we'll look at how collaboration is a two-street, with Brazil serving as a case study of the benefits that can be derived when a country and CEM act together.

As a member of the 21st Century Power Partnership (21 CPP) workstream, Brazil was introduced to experts doing similar work. Realising that they weren't alone in these challenges, the country gained a new sense of confidence in their own energy planning – a confidence that they translated into direct action. Today, the country's energy grid is based on the large-scale integration of the distributed generation model, a model it adopted thanks in part to its collaboration with CEM.

CEM and its members have also gained from this collaboration, particularly from the expertise that Brazil brings to the global clean energy dialogue – showing how CEM's biggest impact lies in its proven ability to advance clean energy together.

CHALLENGE ACCEPTED – AND SURPASSED

The very successful Global Lighting Challenge is clear proof of CEM's ability to galvanise public-private partnerships to mobilise change, have a far-reaching and long-lasting impact and, most importantly, drive the clean energy transformation.

When CEM first launched in 2010, the lightbulb was seen as a sort of low hanging fruit. That's because, at the time, lighting accounted for 15% of the world's electricity consumption and 5% of all global greenhouse gas emissions.

This was also the time when LED lighting options were first coming onto the scene. Not only are LED lights up to 80% more efficient than their fluorescent and incandescent counterparts, they also last up to six times longer. LED lights have the additional advantage of using less energy to produce more light, all of which means a decrease in light-related greenhouse gas emissions. In fact, CEM estimated that if the entire world switched to highly efficient LED lighting, it could avoid 801 million tonnes of CO₂ equivalent. That's comparable to displacing 684 coal-fired power plants!

Seeing the potential for an early win, CEM decided to take direct action to help accelerate the transition to energy-efficient lighting.

Enter the Global Lighting Challenge.

SETTING THE BAR HIGH

Launched in 2015, the Global Lighting Challenge (GLC) set the bar high: a cumulative global roll-out of 10 billion high-efficiency, high-quality, affordable lighting products.

To clear it, the challenge was designed as a public-private partnership aimed at generating ambitious commitments from national and subnational governments, big and small businesses, and retailers, amongst others. Energy ministers, CEOs, mayors and funders who announced major commitments to the GLC and/or achieving exceptional energy savings were invited to share their stories at such high-profile international events as the COP21 climate conference in Paris and the CEM7 meeting in San Francisco.

The response was overwhelming, with CEM member countries from around the world making major commitments. For example, India committed to nearly one billion LED products, while China committed to seeing five billion LED products

“When compared to the outdated lighting sources these LEDs replaced, the energy savings achieved are equivalent to the energy generated by 30 medium-sized coal-fired power stations and the CO₂ reductions achieved are equivalent to the emissions produced by 12 million cars. The impact is real and measurable.”

Harry Verhaar
Head of Government Affairs
Signify

sold on its domestic market. Sweden, meanwhile, was inspired to launch its own lighting challenge, adapting the GLC to help the country meet its energy efficient lighting goals.

Seeing a moral obligation to becoming more efficient, even the Vatican – one of the world’s largest property owners – got in on the challenge.

The GLC also garnered strong endorsements from large multilateral organisations.

AN IMMEDIATE SUCCESS WITH A LONG-LASTING IMPACT

Said simply, the Global Lighting Challenge was a resounding success. In three short years, it didn’t just achieve its 10 billion goal – it surpassed it, and by leaps and bounds. During the 9th Clean Energy Ministerial in Copenhagen, it was announced that the challenge had achieved a commitment of 14 billion energy saving lighting products.

While the challenge itself may be over, its impact continues to be felt. First and foremost, it elevated the concept of energy efficient lighting, bringing it from relative obscurity to being a nearly ubiquitous feature in many homes and buildings. Thanks in part to this awareness raising aspect of the GLC, LEDs are expected to account for 81% of all light sources by 2030.

Beyond these numbers, the Global Lighting Challenge also had an indirect impact on the development and implementation of various national energy efficient lighting initiatives, including the EU’s energy labelling and eco-design requirements. Some of these initiatives have since been expanded to or adapted for other measures, such as appliances, electronics and building design – demonstrating CEM’s long-reaching ability to galvanise public-private partnerships as a means of mobilising change and driving the clean energy transformation.

GLOBAL LIGHTING CHALLENGE BY THE NUMBERS

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Number of member countries involved

10 billion

Number of high-efficiency, high-quality, affordable lighting products the campaign aimed to achieve

14 billion

The final tally of energy saving lighting products committed to

81%

LEDs are expected to account for 81% of all light sources by 2030



ACCELERATING THE ELECTRIC VEHICLE REVOLUTION

Nothing captures the rapid acceleration towards a clean energy economy better than the electric car.

Just think, back in 2012, only 120,000 electric cars were sold worldwide. Today, that many cars are sold every week. In fact, 2022 saw a record-breaking 10 million EVs sold. With 2023 sales forecasted to be around 14 million, EVs could soon represent an 18% share of all new car sales, a significant increase from the 6% share recorded in 2021.

Not only are there more EVs on the road, there are also more types of electric vehicles available on the market. Consumers can now choose between nearly 500 different types of EV models – approximately twice the choice they had back in 2018.

While this EV success story is being driven by multiple factors, at its vanguard is the CEM Electric Vehicle Initiative (EVI).

GROWING EV'S MARKET SHARE

Launched in 2010, EVI is a multi-government policy forum dedicated to accelerating the introduction and adoption of electric vehicles worldwide.

The initiative and its 16 member countries have played a crucial role in the drastic progress already made in electro-mobility. Through such actions as the EV30@30 Campaign, it will also play a key role in making sure this progress continues.

Established by EVI members during the 8th Clean Energy Ministerial in 2017, the campaign pledged a collective target of at least a 30% market share of EVs by 2030. In doing so, the campaign sent a strong signal to the market about how governments see their clean energy transitions progressing.

“It’s been a decade since the founding of EVI, and we look forward to the 2020s. Let us work together towards making it the decade of the electric drive. China remains committed.”

H.E. Chen Linhao
Deputy Director-General
Ministry of Science and Technology, China

Furthermore, through the International Energy Agency (IEA) Global EV Outlook (GEVO), EVI provides crucial data and insight to help inform and shape the policies that are sure to further grow electric vehicle’s market share.

CLOSING THE GAP

Thanks in part to CEM’s leadership, there are now an estimated 26 million electric vehicles on the world’s roads.

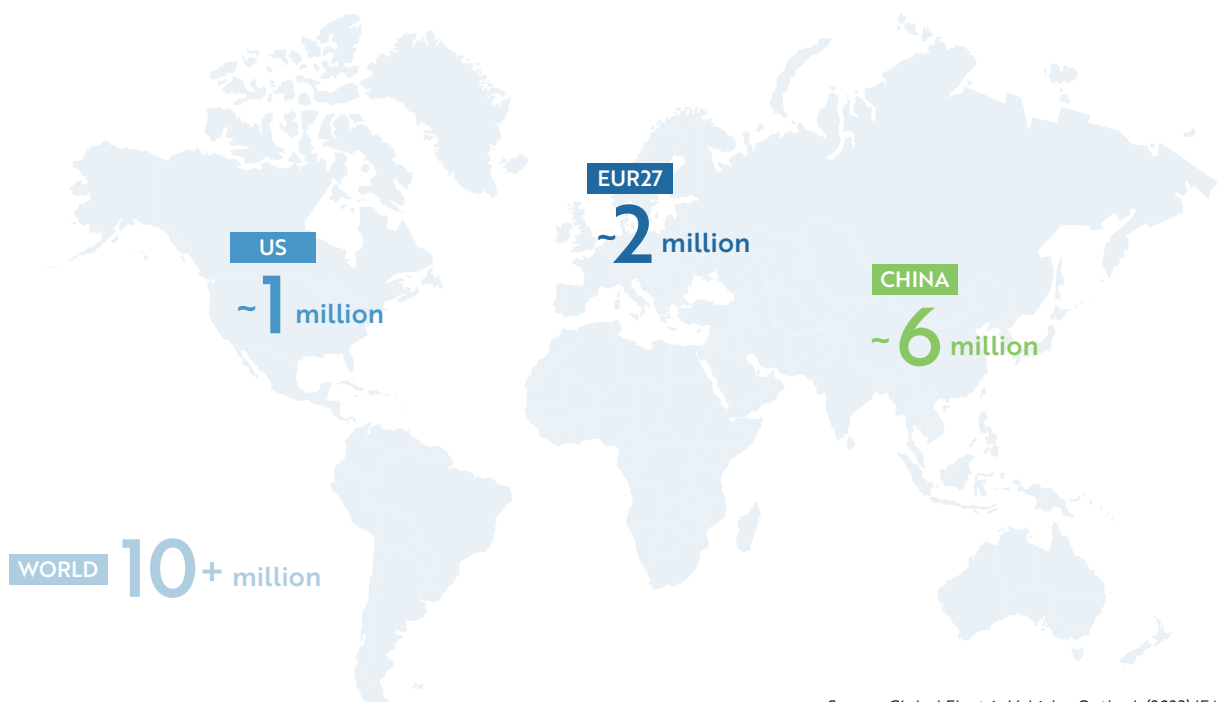
While impressive, global sales still fall short of what’s needed to be on track with the targets set by the Paris Agreement. That’s why the EVI Call to Action is encouraging the public and private sectors to take specific steps to close the gap between projected levels of EV sales in 2030 based on existing policies and the global sales needed to achieve global climate objectives.

One such action is to sign the EVI Zero Emission Government Fleet Declaration. Announced at the 13th Clean Energy Ministerial in 2022, the Declaration asked governments to both increase the share of light-duty electric vehicles in their fleets and aspire towards 100% zero-emission medium- and heavy-duty vehicle acquisitions by no later than 2035.

SHIFTING INTO OVERDRIVE

The electrification of medium- and heavy-duty vehicles is the next frontier in electric mobility.

According to the IEA Net Zero Emissions Scenario, electric trucks must account for 25% of all sales by 2050. While this may be a long way from today’s 0.3% market share, by leveraging the experience and success gained in the general EV market, and through such initiatives as the Global Commercial Vehicle Drive to Zero Campaign, CEM is well positioned to shift the electrification of medium- and heavy-duty vehicles into overdrive.



Source: Global Electric Vehicles Outlook (2023) IEA

BRINGING INDUSTRY AND GOVERNMENT TOGETHER

Bringing together industry and government, CEM's Transforming Solar Supply Chains initiative looks to develop resilient supply chain capacity and foster links among global trading partners.

From the way we work to the way we interact, eat, shop and learn, there's not much that the COVID-19 pandemic didn't disrupt – and the supply chain is no exception.

For example, pandemic-related lockdowns slowed or even temporarily stopped the flow of raw materials and finished goods, often disrupting manufacturing and delaying projects. The pandemic also magnified and, in some cases, accelerated problems that already existed within global supply chains.

Now, following the significant disruption of the pandemic era, many sectors are working to make their supply chains more resilient, collaborative and diversified.

In the solar PV sector, this work is being spearheaded by CEM's Transforming Solar Supply Chains initiative.

A BIGGER ROLE FOR SOLAR

Launched at the 13th Clean Energy Ministerial in Pittsburgh, USA, Transforming Solar Supply Chains is one of CEM's newest initiatives. With a focus on the solar PV manufacturing value chain, including raw materials, polysilicon, ingots, wafers, cells, modules and associated equipment, the initiative aims to support countries in developing resilient supply chain capacity and foster links among global trading partners.

The reason for this focus on PV is that, according to the International Renewable Energy Agency (IRENA),

staying on the 1.5°C path established by the Paris Agreement requires that 10 TW of renewable power be in place by 2030. However, to meet this goal, annual capacity additions must increase threefold.

With solar being one of the cheapest – and most abundant – forms of energy, solar PV has a key role to play in the clean energy transition. But as solar PV's role increases, so too will the need for more manufacturing capacity. In fact, meeting global climate and energy access targets will require an increase in solar manufacturing capacity from today's 250 GW to between 950 and 1250 GW by 2030.

This is where the Transforming Solar Supply Chains initiative comes into play.

STRATEGIC DIALOGUES

Knowing that manufacturing capacity cannot be increased without the direct involvement of the manufacturers, the Transforming Solar Supply Chains initiative focused on engaging the private sector in a series of strategic dialogues.

These dialogues welcomed industry representatives from every step of the supply chain, who joined government representatives for a candid conversation on everything from identifying supply chain challenges to defining what industry and government can do to address these challenges.

The conversations further explored what industry needs in order to increase the diversification of solar supply chains and how governments can address these needs through policy. They also highlighted unique regional characteristics and circumstances and mapped global similarities of establishing solar manufacturing industries.

TAKING THE LONG-TERM VIEW

From these strategic public-private dialogues, it is clear that despite only being in existence for a year, the Transforming Solar Supply Chains initiative has already succeeded at generating a lot of insights – some of which were presented during the 14th Clean Energy Ministerial in Goa, India.

These insights will not only go on to inform future policy recommendations, but also inform industry about evolving manufacturing needs. As such, the Transforming Solar Supply Chains initiative is acting as a lighthouse, helping policymakers and industry take a long-term view on how they can work together to build a resilient, collaborative and diversified solar PV ecosystem.

“Australia is excited to co-lead the new Transforming Solar Supply Chains workstream, which will play a key role in building resilient solar supply chains.”

Hon. Chris Bowen MP
Minister for Climate Change and Energy,
Australia



PREPARING TOMORROW'S CLEAN ENERGY WORKFORCE TODAY

Dedicated to inclusivity and cross-cutting collaboration, both within the clean energy arena and with outside players, CEM's Empowering People Initiative ensures that the world's workforce has the skills and training it needs to meet the demands of tomorrow's clean energy jobs.

According to the International Energy Agency (IEA), the global energy sector employs an estimated 65 million people – a figure that is only likely to grow as the clean energy transition ushers in a new era of job creation.

In fact, the IEA estimates that a net zero emissions pathway could lead to the creation of 14 million new clean energy technology related jobs. It could also shift around five million workers from fossil fuels to new roles within the clean energy sector.

The challenge is that these numbers still leave a substantial gap between clean energy jobs and the available talent capable of performing them – making it all the more crucial that governments proactively prepare their workforces.

Helping governments bridge this gap is CEM's Empowering People Initiative (EPI).

BUILDING A VIRTUAL GLOBAL COMMUNITY OF PRACTICE

Formally launched in 2021 during the 12th Clean Energy Ministerial in Chile, the EPI is committed to preparing the world's workforce for an inclusive clean energy economy. A good example of how it does this can be seen in the initiative's Integrated Policymaking and Empowering Communications for the Clean Energy Economy Workforce (IPEC) project.

Established in 2023, IPEC helps governments, employers, educators and community and labour organisations develop more holistic, integrated workforce preparation and just transition policies and programmes. The project also facilitates a global, virtual community of practice where its 500 participants can network and share opportunities and resources for accelerating the implementation of solutions.

“Ongoing energy transitions and decarbonisation efforts are poised to bring profound shifts in the sector’s employment, including massive new opportunities for job creation in clean energy.”

Dr Fatih Birol
Executive Director
International Energy Agency

Outcomes of the first phase of the project include four live interactive Solution Summits, a compendium of resources and a toolkit for policymakers and other stakeholders. These resources are designed to help identify and solve a number of shared workforce development challenges, including those relating to recruitment, curriculum and training and job placement.

COLLABORATING BEYOND THE CLEAN ENERGY ARENA

The EPI stands out in that more than 100 countries – including extensive representation from the Global South – have already answered its call to accelerate solutions to support just transitions. But what really makes the initiative unique is its success in convening and collaborating with players from outside the clean energy arena, including those directly involved with employment, labour and education.

Take for example the EPI’s collaboration with the European Commission’s Directorate-General for Employment, Social Affairs and Inclusion (DG

EMPL), the first time a government appointed a non-energy or non-climate department to helm a CEM initiative. EPI also includes representatives from national governmental offices for energy, education, employment and labour, industry, economic development, and social affairs and well-being amongst its participants.

A recent collaboration with the IEA resulted in a groundbreaking report that takes a deep dive into international best practices in skill development and reskilling. A follow-up study is planned this year, with EPI commissioning the IEA for a quantitative study of sector-specific workforce skills.

Whether it be working with the European Commission, different national government offices, the IEA, the International Labour Organisation (ILO), LinkedIn or the World Bank’s Energy Sector Management Assistance Programme (ESMAP), each collaboration highlights the synergies between clean energy and fair employment while also stressing the importance of making the clean energy transition an *all of society affair*.

SUPPORTING EXISTING CEM WORKSTREAMS

In addition to its work with global organisations, CEM’s Empowering People Initiative builds on and complements existing CEM workstreams. For instance, the EPI works closely with CEM’s International Smart Grid Action Network (ISGAN), an initiative looking to accelerate the development and deployment of smarter, cleaner and more flexible electricity grids.

In addition to supporting the ISGAN Academy, the two initiatives collaborated to launch the ‘Smart Grid Workforce Development for an Inclusive Energy Transition’ award. Part of the annual ISGAN Award of Excellence and announced during the 13th Clean Energy Ministerial in the US, the prize was awarded to the India Smart Grid Forum.

The EPI also collaborated with the Clean Energy Solutions Center (CESC) to bring together industry and workforce stakeholders, clean energy ministries, young jobseekers and communities to discuss the opportunities, challenges and key solutions and resources needed to prepare a workforce for clean energy transitions.



ASKED – AND ANSWERED

Matching policymakers with international policy experts, CEM's Ask an Expert service helps support the many clean energy initiatives happening in developing countries and emerging economies.

A policymaker in Belize wonders, 'is battery storage really critical to my evolving power system?'

Taken at face value, the question may seem straightforward enough. But the answer could have big implications for that country's clean energy policy.

For example, that same policymaker may want to know whether or not they need to do a procurement for said battery storage and, if so,

does that mean 24/7 auctions for 24/7 power or just auctions for renewable energy?

These are the type of questions that keep policymakers up at night.

They're also exactly the kind of policy questions that can be asked – and answered – via CEM's Ask an Expert service.

“The assistance the Ask an Expert service provided has proved invaluable to our work – many thanks for all your help in making this a reality.”

Barry Bredenkamp
Senior manager
South African National Energy
Development Institute (SANEDI)

A GLOBAL NETWORK OF EXPERTS

The Ask an Expert service, part of CEM’s Clean Energy Solutions Centre (CESC), is designed to help decision makers in developing countries and emerging economies identify and implement clean energy policy and finance solutions.

The free service leverages a global network of 50 experts from both CEM countries and its more than 40 international partners. Support is tailored to meet local and national goals and focuses on clean energy policy and programme needs, including the development of strategies, regulations and standards; financing mechanisms; and deployment programmes.

SKIPPING OVER THE PITFALLS AND HEADING STRAIGHT TO SUCCESS

Since its launch in 2011, experts have responded to more than 400 requests from 90 countries, island nations and regional organisations, including from South Africa.

As part of the country’s strategy to improve energy efficiency within the commercial sector, the South African Government looked to promote energy efficiency in commercial buildings. The task of drafting the regulation fell to the South African National Energy Development Institute (SANEDI), who immediately turned to the Ask an Expert service for assistance.

The assigned expert helped SANEDI think through the policy’s wording to see how it might affect their ability to administer the programme. Via email and telephone conversations, the expert offered advice on modelling options for the programme to quantify energy savings, provided best practices for setting incentive levels and targets, reviewed draft regulation language and provided comments on policy design.

Thanks to this collaboration with CEM, South Africa was able to skip the common mistakes and the trial and error approach that often impede clean energy initiatives and instead implement a policy with a good chance of success.

CLEAN ENERGY CAPACITY BUILDING IN PALAU

CEM’s Ask an Expert service provided assistance to the Government of Palau, who was working to deploy a range of clean energy technologies. This included reviewing draft regulations for independent power producers and translating them into law, helping develop a tariff framework for solar PV projects, and providing a cost-benefit analysis of feed-in tariffs for power purchase agreements.

Thanks in part to CEM’s assistance, Palau is not only well positioned to achieve its 45% renewable energy target, it also has the knowledge it needs to both develop and deliver cost-effective solar power to residential and commercial customers and to reduce its reliance on costly imported diesel fuel.

EVERYBODY IS TALKING ABOUT HYDROGEN

By helping to elevate hydrogen's place within the clean energy conversation, low-emission hydrogen is expected to grow sixfold, meeting 10% of total final energy consumption by 2050.

According to the International Energy Agency (IEA), low-emission hydrogen is currently enjoying unprecedented political and business momentum, with the number of policies and projects around the world expanding rapidly. But this wasn't always the case.

Even just five years ago you would have been hard pressed to find much mention of hydrogen within the clean energy conversation.

So, what happened between then and now that got everyone talking about hydrogen?

CEM established its Hydrogen Initiative (H2I).

ELEVATING LOW-EMISSION HYDROGEN

Launched in 2019, H2I set out to elevate low-emission hydrogen towards the top of the clean energy debate – and elevate it did.

Whereas in 2019, only France, Japan and Korea had strategies for using hydrogen, today, more than 20 governments have released hydrogen strategies. Furthermore, over 20 governments have publicly announced that they are working to develop such strategies, and numerous companies are seeking to tap into hydrogen business opportunities.

Many countries have also adopted policies promoting the use of low-emission hydrogen production technologies like electrolysis. For example, 17 national governments plus the European Union adopted targets for deploying electrolysis capacity by 2030. Furthermore, in the European Union, many Member States now have national targets, accounting for 70-75% of the EU Hydrogen Strategy target.

Several governments established cost targets for low-emission hydrogen by 2030, ranging from USD 1/kg (United States) to USD 3/kg (Japan). The US also launched its Hydrogen Earthshot, which seeks to reduce the cost of low-emission hydrogen to USD 1/kg by 2030.

Countries with hydrogen strategies have committed at least USD 37 billion, while the private sector has announced an additional investment of USD 300 billion.

BUILDING MOMENTUM

Thanks in part to the momentum being generated by H2I, low-emission hydrogen is set to play a bigger role in decarbonising industry and the mobility sector.

GROWING SUPPORT FOR H2

- The number of countries with policies that directly support investment in hydrogen technologies, is increasing, along with the number of sectors they target.
- There are around 50 targets, mandates and policy incentives in place today that directly support hydrogen.

As to the former, CEM's *Global Hydrogen Targets* report notes that Colombia, France and Spain have defined targets for low-emission hydrogen to meet between 20 and 40% of their industrial hydrogen demand by the end of this decade. Alternatively, Hungary defined specific amounts of low-emission and zero-carbon hydrogen to be used in industrial processes, while Portugal has defined targets for the share of renewable hydrogen for ammonia production, aiming to reach 100% renewable hydrogen between 2030 and 2040. Portugal also defined targets related to the share of hydrogen in final energy consumption in the transformation and extraction industries.

In July 2021, the European Commission released a proposed revision of the Renewable Energy Directive that includes a binding target on industry to have 50% of all hydrogen be from renewable origin by 2030 in EU Member States.

On the mobility side of the equation, 14 countries adopted targets for the deployment of fuel cell electric vehicles (FCEVs), accounting for a total of 1.5 million FCEVs by 2030 and 4.8 million FCEVs by 2040. That's a lot of hydrogen-based vehicles on the road, showing how by elevating a specific clean energy topic, CEM is further accelerating the clean energy transition.

LOW-EMISSION HYDROGEN PROJECT ANNOUNCEMENTS BY QUARTER Q1 2017-Q1 2021 (mmtpa)



INTRODUCING THE INTERNATIONAL HYDROGEN TRADE FORUM

Reducing greenhouse gas emissions to mitigate the effects of climate change in line with the Paris Agreement requires a diverse energy mix – one that includes low-emission hydrogen. But adding H2 into the mix first requires establishing international supply chains, or trade corridors, for transporting large volumes of hydrogen.

Enter the International Hydrogen Trade Forum (IHTF).

Announced at the 14th Clean Energy Ministerial in Goa, India as part of CEM's Hydrogen Initiative, the IHTF brings together hydrogen importing and exporting countries – including some not previously involved with H2I – to share knowledge, expertise and best practices. In doing so, the forum aims to reduce barriers, enable productive market conditions and, ultimately, accelerate international hydrogen trade.

BRIDGING CLEAN ENERGY'S GENDER GAP

On a topic where there tends to be a lot of talk but not so much walk, CEM has made significant strides in bridging the clean energy transition's gender gap.

According to the Status Report on Gender Equality in the Energy Sector, a publication by CEM's Equality in Energy Transitions Initiative (formerly C3E International), of the clean energy companies surveyed, women made up an average of just 23% of total employees, held an average of only 20% of seats on company boards and represented an average of 18% of management positions.

But gender equality is about more than 'doing the right thing' – it's also the smart thing to do.

For example, the G20 estimates that reducing the gender gap by 25% by 2025 could add a full percent to baseline GDP growth for OECD countries, not to mention 100 million new jobs for women. Furthermore, the McKinsey Global Institute estimates that advancing equality for women would add \$12 trillion to the global economy by 2026.

What all these figures equal is a clear need to build a balanced and inclusive clean energy transition, which is exactly what CEM's Equal by 30 Campaign is doing.

EQUAL PAY, EQUAL LEADERSHIP, EQUAL OPPORTUNITIES

Launched in 2018 at the 9th Clean Energy Ministerial (CEM) in Copenhagen, the Equal by 30 Campaign is a public commitment by public and private sector organisations to work towards equal pay, equal leadership, and equal opportunities for women in the sector by 2030.

On the private sector side of the equation, companies pledge to highlight and support women and close the gender gap by promoting actions in their business, providing leadership and sharing experiences and lessons learned on gender diversity programming and initiatives.

Public sector signatories, on the other hand, pledge to integrate a gender lens into all levels of work; mainstream gender equality into organisational culture and processes; and set high standards for the recruitment, promotion and participation of women.

"The time to act is now in ensuring that women are represented in decision-making positions, propelling political reforms and advancing gender-sensitive policies in the right direction."

Emelia Akumah
Equality Initiative Ambassador,
Founder and President
African Energy Technology Centre

CELEBRATING FIVE YEARS OF CREATING MEANINGFUL CHANGE

In the five years since its launch, more than 200 energy companies and organisations, along with 14 countries, have signed the Equal by 30 pledge – including all G7 member countries.

The extraordinary consensus was one of the key outcomes of the G7 Ministerial Meeting on Climate Change, Oceans and Energy – an event that not only saw leaders from each G7 country pledge their

commitment to the CEM campaign, but whose agenda championed gender equality and featured several Equal by 30 signatories and partners as speakers.

But make no mistake, the Equal by 30 pledge isn't all talk and no walk. In fact, according to CEM data, signatories have higher average rates of women's participation in three important indicators: total number of female employees, women in management and women on boards of directors.

EQUAL BY 30 CAMPAIGN SIGNATORIES ARE DEMONSTRATING LEADERSHIP ON WOMEN'S EMPLOYMENT



The G7 countries have also made significant strides. For example, by rigorously promoting parity with mandatory quotas, France now ranks first in the world in terms of the number of women on boards of directors. In the U.K., the full-time gender pay gap was at a record low of 7.9% in 2021, while the number

of women on boards of the FTSE 350 was at a record high – quadrupling from 9.5% in 2011 to 37.6% by the end of 2021.

Clearly, CEM has transitioned the global conversation on gender equality into meaningful change.

BETTER DATA FOR BETTER POLICIES

Data provided by the Equality in Energy Transitions Initiative has influenced numerous countries' national policies. For example, in Canada, it is now mandatory for federal government departments to use a special analytical tool to assess the potential impact of policies, programmes, services and other initiatives on diverse groups of women, men, and people with other gender identities.

The U.S. launched a programme focused on attracting, retaining and promoting women in the clean energy sector, while in Italy, the Department for Equal Opportunities has funded summer schools to foster an interest in STEM subjects within young girls and to fight stereotypes in lower education school members.

SPOTLIGHT ON BRAZIL: COLLABORATION AS A TWO-WAY STREET

Not only has Brazil gained a lot from the Clean Energy Ministerial, CEM and its members have gained a lot from the expertise that Brazil brings to the global clean energy dialogue.

Looking to create a more structured renewables agenda, Brazil decided to join the 21st Century Power Partnership (21 CPP) workstream, CEM's initiative for advancing integrated policy, regulatory, financial and technical solutions for the large-scale deployment of renewable energy.

Leveraging the network of experts and best practices that the workstream provides, Brazil quickly realised the value of CEM as a platform for collaboration. Being in contact with and participating in the workstream not only introduced it to new modelling tools, it also put the country in touch with experts who were doing similar work – many of whom attended 'CEM Days - Integration of Renewables in the Electric Sector: Paths and Challenges to Energy Planning', an event that Brazil hosted in 2018.

Realising that they weren't alone in these challenges gave Brazil a new sense of confidence in their own energy planning – a confidence that they translated into direct action. For example, today, the country's energy grid is based on the large-scale integration of the distributed generation model – a model it adopted thanks in part to its participation in 21 CPP.

TURNING COOPERATION INTO ACTION

Another area where Brazil is turning cooperation into action is in its transmission infrastructure planning – a field that demands long-term planning.

As a member of CEM's Long-term Energy Scenarios (LTES) initiative, which aims to promote the improved use of model-based long-term energy scenarios to support and accelerate the energy transition, Brazil has been able to discuss the challenges, risks and opportunities of synchronising their infrastructure for integrating renewables.

For instance, from their discussions with other CEM member countries with more advanced transmission infrastructure planning, Brazil adapted their decision making to better anticipate potential bottlenecks down the road. One of those decisions related to the launch of two auctions in 2023, both of which saw record high procurement of the transmission infrastructure needed to fully integrate renewables into the country's energy system.

IMPLEMENTING A BIOFUELS POLICY

Brazil also cites its involvement with CEM as being a key factor in its development and implementation of a biofuels policy.

As the country was working on its own policies, it realised other countries were in the same boat and could benefit from collaboration and the sharing of best practices.

Hence, the Biofuels Platform was born.

Co-led by Brazil, the platform is leading global actions to accelerate the development, scale-up and deployment of sustainable bio-based fuels, chemicals and materials.

The Biofuels Platform has proven to be particularly impactful to Brazil. With an energy portfolio heavily based on hydro and facing the new reality of ongoing severe droughts, as part of its 2050 Energy Plan, the country is looking for ways to diversify. Being an agriculturally rich country, bioenergy is well-positioned to play a big part in this plan.

THANK YOU TO ALL OUR MEMBERS

Without your continuous support and ongoing collaboration, the impacts highlighted in this publication would not have been possible.

Looking forward to many more years of advancing clean energy together!



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Secretariat@cemsecretariat.org

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