Ladies and gentlemen,

It is a pleasure to be here once again.

As you well know, 2015 is a crucial year for climate change action. This also means that it’s a year of opportunity – for CEM ministers, that means the opportunity to send a strong message on the importance of clean energy technologies for pursuing ambitious sustainability goals.

Because while climate pledges can give us a floor from which to pursue more ambitious targets, and policies and finance can support deployment of cost effective options, it is ultimately the availability of technologies – at the right cost – that will enable the transition.

Yet we must not make such pledges and develop such policies blindly. That is why metrics are of such crucial importance – to ensure that the policies that are put forth are directly linked with realistic and attainable actions.

This year’s *Energy Technology Perspectives* demonstrates that with a strong understanding of how to support energy technology innovation, decision makers can be confident that when commitments must become reality, the necessary solutions will be available at the right price.
All of this is crucial to limiting the long-term global average temperature rise to 2 degrees Celsius – the goal that defines our 2DS scenario. Energy innovation is instrumental to making the 2DS more feasible as it reduces the costs and improves the performance of existing solutions. It can also provide new solutions.

Innovation has already proven it can deliver and examples exist across the energy sector: improving energy efficiency, cleaner fossil fuels, renewables. These are solutions ready to be deployed now. But to meet longer term goals we need a better understanding of the innovation process so efforts can be stepped up and guided to provide the solutions we need. Part of this requires the ability to track progress towards these goals in a more detailed way, to understand what works and what doesn’t.

We also need to choose wisely how we track progress, as the right metrics can help evaluate multiple objectives associated with various options.

The use of energy metrics can support the design and implementation of more effective energy policies by identifying potentials and setting ambitious, yet realistic, national targets. Metrics can also help to highlight the short-term actions that ultimately underpin long-term transformation. Perhaps most usefully, energy metrics can more directly link targets with those policies that are under the control of government, for example, a mandated share of renewable electricity generation.
CEM countries could play a leading role in identifying the goals that they feel would lead to the overall objectives, and then gather the information needed to evaluate progress towards these goals. The IEA would be happy to work with the CEM to identify and track these metrics.

We have already carried out significant work on energy metrics, covering all dimensions and sectors of the energy system. In 2013 we introduced the energy sector carbon intensity index, or ESCII. We also keep track of a similar metric for the electricity sector.

But the ESCII doesn’t show what actions need to be taken to achieve targets. And while comparing the ESCII with clean energy supply, we see a clear relationship between the two. More detailed information is needed on clean energy supply technology deployment to see if these actions are actually underway.

Initiatives like the 21st Century Power Partnership could gather data on the deployment of clean technologies in CEM countries to help evaluate progress, and analyse the effectiveness of their programme.

We also need to look at the demand dimension of energy systems and how this relates to the overall economy. As we see here the productivity of energy demand is set to increase, but there are is a marked difference between what would happen under a 6DS and a 2DS scenario – a difference explained by the higher efficiency in energy uses in the 2DS.
But this metric, while useful, will again need to be augmented by more detailed information.

For example, tracking the rollout of more efficient technologies – like the electric vehicles information gathered by the EVI – and linking this to overall goals can help to show us if our efforts are up to our ambitions, and if they are paying off.

CEM Initiatives could also endeavour to develop initiative-specific metrics, for instance on smart grids. But this will only be possible if we devote enough resources to be able to track such progress.

Of course metrics don’t always tell us the story we want to hear.

Indeed our most recent analysis shows us that clean energy deployment is not on track to achieve the 2DS. The picture of where do we stand on clean energy progress relatively to the 2DS targets is bleak: For the first time, not even one of the technologies is in line with 2DS targets.
But it’s not all bad news, as the tools are available to get things back on track.

If we move from a static to a more dynamic perspective – shown here by a series of arrows – recent developments on some technologies have been encouraging, despite the fact that policy has been stalling progress in many countries.

Technologies exhibiting positive developments include: renewable power, CCS, Fuel Economy in transport, electric and hybrid-electric vehicles, and additionally energy storage.

These positive developments are mainly the result of efforts in technology innovation. However we must quickly step-up efforts to support such innovation if we wish to see concrete results.

Looking at past experience can build up the confidence necessary to step-up such efforts.

For example, technology innovation is making renewable energies market viable. Thanks to 40 years of innovation efforts, some renewables are closing the cost gap quickly. Indeed renewable power generation is becoming cost competitive in an increasing number or regions. Solar PV and wind plants are increasingly able to compete in the wholesale electricity market with newly-built fossil-fuel plants.

Ten years ago very few would have believed this possible.

However policy uncertainty in many countries means project risks remain high, making capital too expensive to mobilise.
On the demand side, we see that the efficiency of best available technologies keeps improving, as is shown here for the transport sector. However, the deployment of these technologies still suffers from non-market barriers. We must ensure that appropriate policies are in place to entice people to use the best that innovation can deliver.

In the longer-term, innovation will also be essential for sustainable growth. Indeed the deployment of innovative technologies provides almost 30% of the opportunities in the ZDS.

The role of the private sector in fostering such innovation should be properly addressed by policy-makers – and this is particularly crucial in the industrial sector. Public and private entities need to work together to align innovation goals and achieve multiple benefits.

Stimulating innovation from the private sector requires a long-term, systems-based policy perspective.

But to gain the political will to support earlier stage investments, actions need to be guided by the potential business opportunity – an opportunity that will be created by the conditions at the time when the technology will need to be deployed.

For example, analysis on CCS supports the evidence that determined, parallel action in technology development and market creation could enable the cost gap be closed, compared to unabated fossil fuel power generation with very reasonable CO₂ prices.
Looking at the US, we see that – assuming a certain fuel cost differential – electricity costs for power from coal with CCS would equal those of unabated natural gas power generation at CO₂ prices of USD 56.

Much of such innovation will rely on research, development and demonstration.

Though energy RD&D support is still not where it needs to be, support to clean energy has been increasing since the early 2000s. However while energy RD&D support in IEA countries is increasing in absolute levels, the rate remains relatively less than for other sectors.

This suggests that energy innovation is not a priority. In fact the share of energy in total RD&D has fallen dramatically from a peak of 11% in 1981, and has remained flat between 3% and 4% since 2000.

That said, energy RD&D data is only readily available in terms of public spending in IEA countries. To be able to properly support and guide RD&D, data is needed globally, and must include private sector expenditures, as well as data from emerging economies.

Of course simply spending money is not enough. Innovation needs to be guided, and also supported by enabling environments. Government support needs to be adapted to the different phases of the innovation/deployment cycle. The right support depends on the maturity of the technology and the degree of market uptake.
As you would expect, there are regional differences to all of this. The IEA recognises that all regions of the world have a role to play in making the ZDS possible, particularly as by 2050, nearly 75% of annual reductions need to come from non-OECD countries.

Yet this growing demand for energy – and the infrastructure needed to provide it – creates a unique opportunity for emerging economies to reduce CO₂ emissions by deploying innovative low-carbon technologies.

All emerging countries have different starting point, different pathways and different end solutions to meeting climate goals. CEM countries have the opportunity to work together to develop and deploy the solutions that will have the largest global impacts.

Developing a vision of what can be achieved, and tracking progress through metrics, can help raise ambitions and steer action. CEM countries should identify how each initiative contributes to the overall goals, and develop metrics to evaluate progress and identify strengths and weaknesses.

Ladies and gentlemen,

Decarbonisation goals are achievable and cost-effective. Innovation is the not-so-secret ingredient. Yet the capacity of innovation to deliver needs to be reflected into a stronger vision from policy-makers.
This vision though must be backed up by data, collected by appropriate metrics. Given the urgency of the climate threat, and the need to deploy solutions today, it is no time to blindly take action.

The world demands assertive decisions at this year’s climate negotiations. With the right data, investment, and policies, we can take real and concrete steps toward a clean energy transition – and the benefits that will bring for us all.