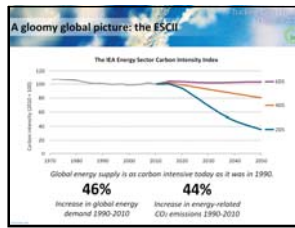




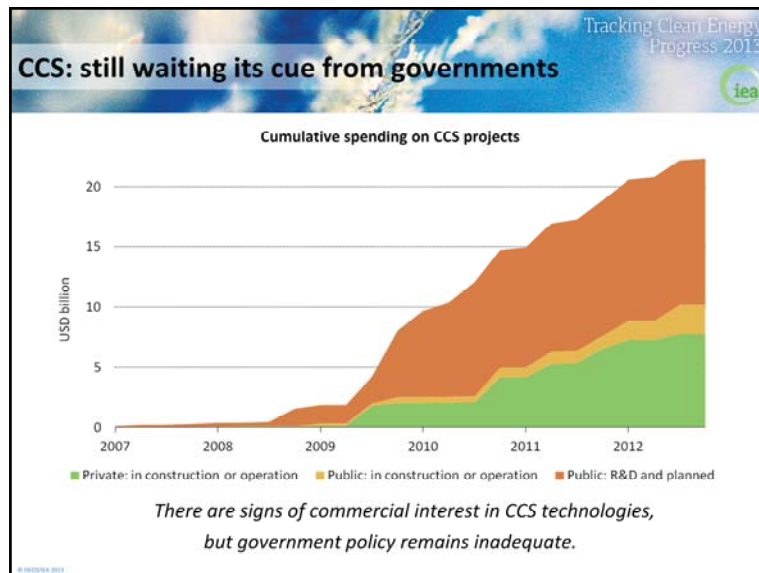
- Prime Minister Singh, Secretary Chu, Deputy Chairman Ahluwalia, excellencies, ministers, distinguished guests, ladies and gentlemen.
- It is a great pleasure to be at this 4th Clean Energy Ministerial. In a few short years this event has become a premier global forum to advance our clean energy goals at some of the highest levels of government. The IEA is proud to be a part of it since the earliest days.
- I have been asked to ‘set the scene’ for your discussions. I will do that based on the third Tracking Clean Energy Progress report, publicly released today. It provides a snapshot of current progress, and we give specific policy recommendations, technology by technology.
- I will not paint a rosy picture. Our analysis is a stark reminder the world is not on track to realise the benefits of a low-carbon energy system – to limit long term temperature rises to 2 degrees centigrade. Progress remains alarmingly slow for a majority of technologies that could save energy and reduce CO₂ emissions. And yet, positive examples exist and we can learn from them.
- Prime Minister Singh , Your Excellencies and business leaders from all countries, you all have the power to change things for the better. It is time to seize that opportunity.



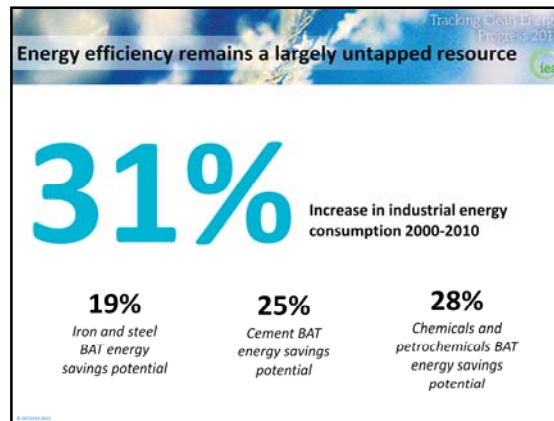
- Let me start with some good news: renewable power technologies continue to beat expectations, and those technologies alone are broadly on track to reach our “2 Degree Scenario” or 2DS targets. They are not enough to do the job. But their success shows that with sustained and strong policy frameworks, new energy technologies can be developed and penetrate the market.
- For example, from 2011 to 2012, electricity generation from solar PV grew by 42%, and wind by 19%.
- These figures are particularly impressive given ongoing economic and industry turbulence in 2012, and considering they follow a decade of similar growth.
- Markets are also expanding globally, as emerging economies step up clean energy efforts. Brazil, China and Indonesia are among the governments to have increased incentives for renewables over the past year. These efforts should be applauded. And here in India, the first phase of the ambitious (Jawaharlal Nehru) National Solar Mission has been encouraging, with the successful commissioning of many projects both large- and small-scale. In September last year upon the invitation of the India Minister for New and Renewable Energy Dr. Abdullah I saw some of these projects with my own eyes in the Ladakh Valley at over 3,500 meters altitude where solar power is bringing energy access to people in a harsh natural environment and where traditional energy provision was previously difficult and insecure.
- And yet globally, investment in non-hydro renewables decreased by 11% in 2012. Policy uncertainty and “stop-and-go” decision making played an important role in this.
- We believe that transparent and predictable renewable energy policies that take into account changing market conditions and technology cost development are essential to keeping renewable on track.
- The 2012 slowdown in renewable investment globally highlights the direct link between effective policy design and private sector investment.



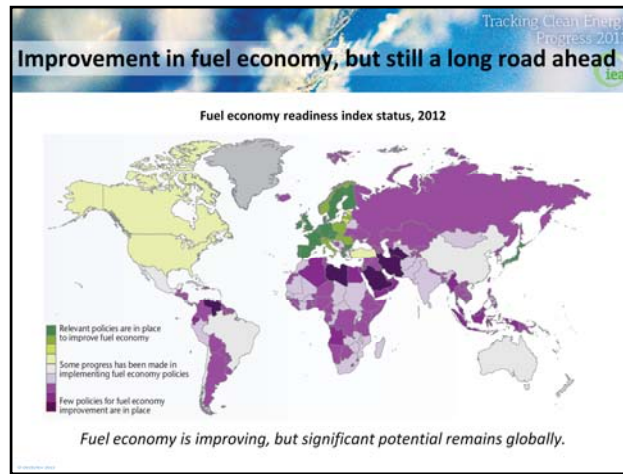
- So on the whole, and despite the investment slowdown, renewables are progressing well.
- And yet the global energy supply is not getting any cleaner. Let me unveil the IEA Energy Sector Carbon Intensity Index, which shows how much CO₂ each unit of energy that we produce emits.
- As you see, the net impact of changes in supply technologies has been minimal since 1990.
- In short, the drive to clean up the world's energy system has stalled. Despite much talk by world leaders and a boom in renewable energy over the last decade, the average unit of energy produced today is basically as dirty as it was 23 years ago.
- The key reason is that coal continues to dominate growth in power generation. It has far outpaced the growth in generation from non-fossil energy sources for more than a decade, and increased by 6% just in the last two years.
- What about the revolution in unconventional gas?
- Indeed, switching from coal to gas is a key measure to reduce emissions in the short term. But it is not a panacea – and we have to look at the global picture.
- So far coal-to-gas switching is largely a US phenomenon. From 2011 to 2012, gas-fired generation increased 24%, while coal-fired generation decreased by 14%, driven by low gas prices.
- But in Europe over the same period - partly as a result of cheap US coal exports, but also thanks to relatively dear European gas - we see coal fired generation following the trend from 2011, when coal demand grew at a rate surpassed only by China, at the expense of gas.



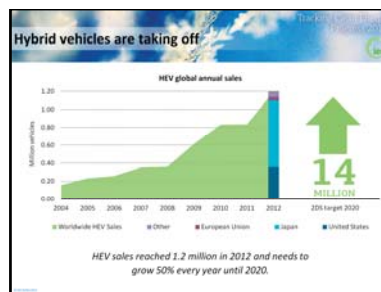
- In a world that continues to rely heavily on fossil fuels, CCS deployment is ever more critical.
- In total, 9 projects are now under construction. But in 2012, 8 projects were cancelled. Projected capture rates remain well below 2DS goals.
- Let me be clear; CCS technologies are mature in many applications, and there are signs of commercial interest.
- But governments must make a real long term commitment to CCS, including in energy intensive industries such as cement and steel.. This means support for demonstration, increased financial and policy support for deployment, including strong emissions reduction policies.



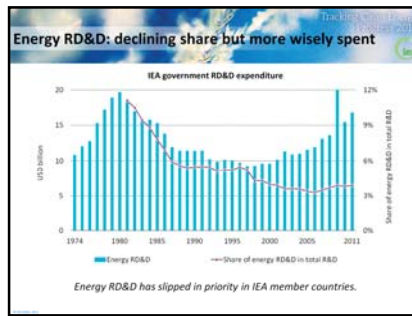
- In industry as in other end-use sectors, energy efficiency remains a largely untapped resource – we call it the hidden fuel.
- Just using existing technologies would give impressive savings.
- Several regions scaled up policy support for industrial energy efficiency in 2012, including Europe, South Africa and Australia, but more effort is needed.
- The IEA is a strong proponent of market solutions, but we also see many non-economic barriers to energy efficiency. This builds a strong case for regulation to tap into the potential we know is there.
- In industry, governments must implement policies to ensure that new capacity is developed with best available technology and promote refurbishment projects.
- We also know that building codes can have a strong positive impact if designed correctly. Today only Denmark, France and a non-CEM member, Tunisia, have best-practice building codes



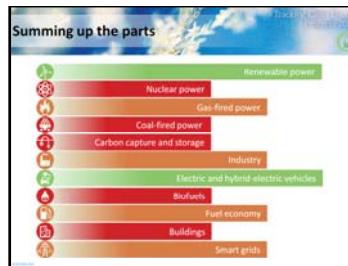
- Turning to transport, fuel economy improvement holds the greatest potential to reduce fuel consumption and emissions in the road transport sector to 2020
- This map shows where the potential is to bring fuel-saving technologies to the market.
- Average fuel economy improved by 1.8% per year between 2008 and 2011 – still below the 2DS goal of 2.7% annual improvement.
- And the pattern is uneven, fuel economy of new cars vary by up to 55% between CEM countries.
- There are policy instruments available: fuel economy standards and price incentives have proven to be effective where they are used.
- And this is not only about cars. There are still only few countries with fuel economy standards for heavy duty vehicles.



- Fuel economy will also rely on more fundamental engine advancements. Therefore it is encouraging to see signs of a breakthrough in the markets for hybrid vehicles, which can form a bridge to electric vehicles.
- Sales of hybrid-electric vehicles virtually exploded in 2012, growing by over 40% to more than one million units. Hybrids are now among the top five selling models globally.
- Sales of electric vehicles grew even more quickly, more than doubling from 2011 to 2012, albeit from very low levels.
- These trends are broadly on track to deliver the 2DS targets by 2020, and government targets are in line with our 2DS scenario. This is good news.
- However, our auto industry partners' production forecasts for 2020 are only 20% of government targets. Targets are simply not translating into real action.
- We project that advanced vehicles will need subsidies for the next decade, as costs continue to fall for elements like batteries – which have already been cut in half since 2009 thanks to publicly funded research. Somewhere around 2020 these cars will be competitive without targeted incentives.
- But until then, whether for electric or natural gas vehicles, we must incentivize the optimum rate of infrastructure deployment to both prepare for and support the growth of those new engine technologies.



- In this year's tracking report we have a special feature on research and innovation – in line with the focus of this CEM.
- Total public RDD investment has increased by 75% since 1990, bringing it back almost to the levels in the early 1980s.
- However, energy's share of total public RDD has fallen from 11% to 4% since 1980.
- But what does go to energy is going more to renewables, and less to fossil fuels. Last year almost 20% of energy RDD was in renewables, up from just over 5% in 1990.
- Another important trend is the rise of a highly educated, young population and vibrant research centers in many emerging economies.
- As a former minister I know that researchers always ask for more money. But if governments are serious about transforming the energy system, it is clear that energy research must get a higher priority than it does today.
- Our analysis shows that public investment in energy needs to at least triple - in advanced vehicles and CCS much more.
- Public R&D is necessary and it works: I mentioned batteries, but the same goes for solar in the US and wind in the Nordic countries.



- Taking developments across the energy system together, it is difficult to paint a positive picture. You see it summed up here.
- At the same time, several of the most promising trends in clean energy are coming from emerging economies – precisely where demand growth has been buoying carbon emissions. That is great news.
- Only by working **together** - among countries but also with stakeholders in the private sector and non-profit worlds - can we make progress at the scale and pace required.
- CEM offers a unique opportunity to do that. Its members represent 60% of global population, 75% of GDP, 75% of energy consumption and 80% of CO₂ emissions.
- As we enter these discussions, I would like to remind you of three broad messages that we should all have in the back of our minds. You have heard me say them before, and they emerge again from this report:
 - For too long have we supported, directly or indirectly, wasteful use of energy. Largely this is because prices do not reflect the true cost of energy. Altering this means creating a meaningful carbon price and phasing out fossil fuel subsidies. While that may not happen overnight, let's not fool ourselves: **if we do not get prices and policies right, the transition to a clean energy system simply will not happen.** That's my first message.
 - **Second, we need to take a systems-perspective and a long-term view.** Governments must think beyond individual technologies and electoral cycles, and consider the larger picture. This includes accelerated and more strategic support for research and innovation.
 - **Third, let's seize on energy's easy win, energy efficiency.**
- I hope that our report will be a useful input to your discussions, so that we can identify common actionable goals that will help your nations take advantage of the many energy security, economic, and environmental benefits that the clean energy transition can bring.

Thank you.