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Remarks
by

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at the
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Thank you very much. It is really a great pleasure for me to be in China.

China is a country that is showing what it is possible to achieve in the future. It has a very fast growth trajectory and it is experiencing serious problems of solutions in energy supply but it is exhibiting the leadership and imagination to look for a sustainable future, which is inspiring many of us around the world with your example.

So, I would like to thank you for your leadership, for the excellent co-operation we have had in the development of the 2030 roadmap for China, and the strong expertise and commitment to collaboration of CNREC, which showed that we have a very detailed and very precise idea of how we can achieve the energy transition and has been very important for what we want to do.

The basic message of the China report is that it is technically possible and that it is financially feasible for China to nearly quadruple the share of modern renewables in final energy consumption by 2030.

That is a very big message in a country that is the biggest energy consumer in the world and that is one of the fastest growing economies and largest economies in the world. So huge ambition, but consistent with China's ability to constantly meet that expectation.

The China report will be presented a little bit later by my colleague, Mr. Dolf Gielen, but I wanted to start talking about our report on RETHinking Energy – why we need a new paradigm to look at energy in the new global situation that we have.

And I like very much Mr. Shi's introduction when he said that the history of society has been shaped much by the energy transition we have gone through. That is very true. If you look at the structure of society, you'll look that we have moved from firewood to steam to the development of internal combustion engine, the advent of oil and gas.

They have defined the way our civilization has grown. And now we are at a point where decisions about the future transition have to be made.

Energy security, economic growth and environmental imperatives at the centre of national development agendas around the world, and we believe that a major transformation of the energy system is now in motion. And this transformation will really find the way energy in its various forms is generated, distributed, and consumed.

So the publication that we have just issued this year, RETHinking Energy, captures the key dynamics driving the ongoing transformation of the energy sector towards one that is sustainable, secure and environment-friendly.

And driving in from the airport yesterday morning, I can understand the environmental imperative in the urban centres of China – the air quality is not sustainable and clearly we have to find a way to deal with that.

So, the publication builds on the institutional knowledge developed by the Agency since its inception four years ago to analyse successes and failures of this transition, and presents a

clear picture of where the renewable energy sector stands today and what are the key priorities to be addressed to accelerate the transformation ahead of us.

With the support from our membership – which, I am very pleased, now includes China, as of the beginning of this year – this series marks an important milestone in IRENA’s development as THE knowledge repository and authoritative voice for renewable energy in the world.

So when we look into the way the world of energy is transforming, the past four decades have been characterised by rapid industrialisation, socio-economic development, increasing consumption and rising populations.

Energy has been a fundamental driver behind this growth with energy demand growing 250% in the same time period. Demand for energy services will continue to grow, particularly in emerging economies. By 2030, global electricity demand is projected to increase by 60% – it is expected to triple in Africa and double in Asia.

It is becoming increasingly clear that demand can no longer be met through the traditional energy sources that have been deployed thus far. Growing concerns over dependence on imported fossil fuels and their impact on energy security and competitiveness of local industries, climate change and the environmental impact of conventional energy sources are prompting individuals, businesses and governments to move towards an energy mix that is dominated, to the greatest extent possible, by locally sourced energy which is low-carbon, enhances energy security and maximises domestic value creation, and supports the economy.

Renewable energy has to be a major part of the solution. Rapid technological progress, combined with falling costs, a better understanding of financial risk and a growing appreciation of wider benefits, means that renewable energy has become an increasingly viable and cost-effective option – and the business case for renewable energy today is competitive.

Since the beginning of this century, nearly 14 years ago, we have seen renewable energy move from the margins to the majority in terms of new capacity additions worldwide. In just the last three years, well over 100 gigawatts of new renewable capacity has been added every year. And in 2013, more than half of that capacity came online in China.

In that same three-year time span, renewables have accounted for more than half of net capacity additions in the global power sector – meaning that more new renewables capacity is being installed than new capacity in fossil and nuclear power combined every year for the past three years. And in 2013, for the first time, China’s new renewables capacity exceeded the new installed capacity in fossil and nuclear power.

These are very significant developments. By 2013 the share of renewables in total global electricity production exceeded a record 22%.

The growth story of renewables globally resonates strongly with what we see in China, where in 2013, one-third of total global solar installations and 40% of new global new wind power

generating capacity were located. China remains the global wind and hydropower leader, with the most installed capacity in the world.

And China is not only taking the lead in renewable power, the country is also the largest producer and user of solar water heaters.

In China and around the world, advancements in technology and economies of scale effects are driving dramatic decreases in technology costs making them cost-competitive against traditional forms of generation in most contexts.

In recent years, solar PV and onshore-wind in particular, have reached new levels of cost-competitiveness. Both have reached grid parity – the point where electricity is equal to the price of power from the grid – in an increasing number of countries and settings.

Onshore wind is increasingly the least-cost option for new grid supply. The levelised cost of onshore wind electricity has fallen 18% since 2009 on the strength of cheaper construction costs and higher efficiency levels, with turbine costs falling nearly 30% since 2008. In Denmark, onshore wind is now the cheapest form of energy. Wind is now also cheaper than gas in some of the key emerging markets, such as South Africa and Brazil.

Here in China, wind power generation costs will continue to decline, and installed wind generating capacity will increase as the country works towards its goal of reaching grid parity by 2020, when 200 gigawatts of wind is expected to be connected to the grid.

Between 2009 and 2013, prices for solar PV modules declined by two-thirds and the technology reached new levels of competitiveness at both distributed and utility scale.

Looking around the world, the cost of residential solar PV systems in Germany declined by 53% during the same period, and commercial solar power has reached grid parity in countries including Germany, Italy and Spain, with France and Mexico due to attain parity soon.

Among the most prominent message from this data collected from IRENA's work on costing, is that renewables are now **THE** most economic options for off-grid investment, compared to electricity systems based on diesel anywhere in the world.

Global investment in renewable generating capacity has risen significantly over the last decade from USD 55 billion in 2004 to USD 214 billion in 2013. An additional USD 35 billion was spent on large hydropower projects in 2013.

Investment in new renewable capacity has also exceeded investment in new fossil based power-generation capacity for three years running.

And despite an 11% decline in global renewables investments in monetary terms in 2013 due to the global economic downturn, renewable energy deployment in capacity terms hit record levels, with solar PV and wind capacity growing 37% and 13% respectively.

In 2013 China, with USD 56 billion invested in renewable energy, surpassed Europe by 16%, thus driving the sector forward and contributing to falling production costs.

Global investment patterns are also shifting. In 2013, developing countries installed around USD 93 billion worth of renewables, as compared to USD 122 billion in developed countries – representing a dramatic change from 2006 when developed economies invested three times more than developing countries.

As deployment continues to grow at a remarkable scale and financial institutions garner more experience with renewable energy investment, new and innovative sources of financing are emerging.

As most renewable technologies have a relatively high ratio of upfront to operating costs, their viability is particularly sensitive to the cost of capital. That is why government financial support has traditionally been critical for promoting renewables. Their role will continue to remain important in derisking financing, particularly in new and emerging markets.

However, the bulk of financing that will drive renewables deployment will continue to come from the private sector, including project developers, commercial banks and institutional investors, and this trend will increase as markets mature.

In parallel, sophisticated new products that suit a wider range of investment profiles – from small-scale community financing to large institutional investments – are reducing investment risks and bringing in new investors, new instruments and new players.

Green bonds, for one, allow investors to tap into fixed income markets and finance clean energy. Green bonds to finance renewable energy projects have already been issued for over USD 16 billion this year, surpassing the USD 14 billion issued in all of 2013. And next year, the overall green bond market is forecast to grow by USD 100 billion.

At the other end of the spectrum, decentralised, co-operative renewable projects based on small-scale investment opportunities are proving highly successful.

Large non-energy corporates like IKEA, Wal-Mart and Google are also getting involved. Google alone has invested over USD 1.4 billion in wind and solar – in most cases because of the attractive financial returns. Amazon has just announced its intention to achieve 100% power for its operations from renewables.

Within the power sector, renewable energy is driving a shift from centralised utilities to more diverse localised production. Small-scale renewables are driving the centralised utility business model to shift towards a distributed local model, thereby transforming traditional consumers into producers.

In Germany, for instance, utilities own less than 12% of renewable energy capacity, and nearly half of the capacity is owned by farmers and individuals.

This paradigm shift from a centralised power system to a distributed one not only improves the resilience of the electricity system, but also brings a vast array of socio-economic benefits, such as jobs and improved trade balance.

With respect to employment, the numbers prove that the renewable energy sector is no longer a niche. At a global scale, the renewable energy sector (excluding large hydro) has already become a major employer, supporting around 6.5 million direct and indirect jobs in 2013, up 14% from 2012.

Solar PV is the largest employer, with 2.3 million jobs, among which China's PV industry provided 1.6 million jobs. And we expect these numbers to continue to grow.

From a country perspective, China is the largest employer in the renewable energy sector with 2.6 million jobs. Other large employers, in decreasing order, are Brazil, United States, India, Spain and Bangladesh.

Renewable energy also has other positive socio-economic impacts throughout society, simultaneously advancing economic, social and environmental goals.

For example, renewable energy is proving to have a positive impact on gross domestic product. In China, a prospering solar PV industry generated USD 52 billion in national income.

Renewable energy is also proving to be good for a country's balance of trade. In fossil fuel-importing countries, investment in domestic renewable energy resources means less money is spent on expensive fuel imports.

In Spain, for one, the use of renewables is estimated to have avoided USD 2.8 billion of fossil fuel imports in 2010, while Germany saved USD 13.5 billion in 2012.

The environmental benefits are just as compelling, on both local and global levels. Perhaps most notably, localised air pollution from electricity generation has long had a direct impact on human health for a long time.

According to the World Health Organization, 7 million people annually around the world suffer premature deaths linked to localised air pollution. A considerable number of this global total is in China as a result of growing coal use. Just between 2010 and 2012, total coal supply increased by 25% with increased health and environmental impacts.

And there are few places on this planet today that show more negative impacts from the burning of coal than the urban centres in Asia and China. In Beijing, smog-filled skies have become the norm. City officials recently announced a ban on coal use beyond 2020 to combat the severe air pollution problem, and we congratulate them for taking this important decision.

On a global level, where the most pressing environmental concern is climate change, the environmental benefits are even more apparent.

Crucially, renewables offer a route to reducing greenhouse gas emissions, a major cause of global warming.

Electricity alone accounts for more than 40% of man-made carbon dioxide emissions today. Solar, wind, nuclear, hydroelectric, geothermal and bioenergy are, across their lifetime, 10-120 times less carbon intensive than the cleanest fossil fuel, which is natural gas, and up to 250 times lower in carbon than coal.

This means that renewable energy must play a central role in any solution to address climate change. And the recent agreement announced between the US and China on the margins of the APEC meeting, stating that China is to cap its emissions by 2030 and have 20% clean energy in its mix by 2030, is of extreme importance with regards to the global fight against climate change.

However, despite the major gains in renewable energy that I have just spoken about, the average emissions intensity of electricity production around the world has hardly changed over the last 20 years.

Gains from the increasing deployment of renewables, and less intensive fossil fuels, such as natural gas, has been counteracted by coal. Without a substantial increase in the share of renewables in the mix, climate change mitigation will remain out of our reach.

IRENA's global roadmap for renewable energy, REmap 2030, shows that under a business as usual scenario, average emissions worldwide will not keep atmospheric carbon dioxide levels below 450 parts per million, the tipping point at which a 2-degree global temperature rise – as well as the most severe impacts of climate change – will become unavoidable.

While China possesses the resources, as well as the dynamism, to spearhead a transformation of global energy use, REmap 2030 suggests ways to combine various renewable energy technologies to ensure a clean and secure energy system.

China will play a key role in stabilising emissions below 450 parts per million. REmap shows that China could account for 20% of the global carbon dioxide emission reductions by 2030. Its engagement – together with that of the USA, which would account for another 20% of the total global – is crucial to any effort to fight climate change.

However, REmap also shows us that a doubling in the share of renewables could help mitigate climate change by reducing the global average emissions to acceptable levels. And it shows that we can do so in a cost neutral manner, while generating economic growth, income and employment.

The outlook for renewable power is bright. Recognising the profound differences of a world run on renewables will provide the rationale and impetus for future investment supported by strong electricity systems planning, market design, policy frameworks and innovative funding.

We have the potential to create a new paradigm – a new industrial revolution – and to create a renewables-based system which improves energy access, enhances health and security, creates jobs and safeguards the environment.

I believe that for us to be in China to have this discussion today over the role that China will have in the world making some of these critical changes is very auspicious, and I would like to thank you all for your presence to join us for this discussion.

Thank you very much.
