RENWABLE ENERGY
Medium-Term Market Report 2015

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Market Analysis and Forecasts to 2020
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Profound changes underway in energy markets

- Signs of decoupling of energy-related CO$_2$ emissions and global economic growth

- Oil prices have fallen precipitously, raising questions over the competitiveness of renewables

- But policy drivers for renewable electricity – energy diversification, local pollution and decarbonisation – remain robust

- Renewables are key to the unprecedented pledges ahead of COP 21

- Renewables to become first source for electricity in the longer term, but addressing policy uncertainty in the next five years is crucial
Renewables are becoming the largest source of new power generation capacity

The share of renewables in net additions to power capacity continues to rise with non-hydro sources reaching nearly half of the total.
As the OECD slows, non-OECD countries account for two-thirds of renewable growth, driven by fast-growing power demand, diversification needs and local pollution concerns.
High levels of incentives are no longer necessary for solar PV and onshore wind, but their economic attractiveness still depends on the regulatory framework and market design.
Evidence of lower costs on the horizon

Recent announced long-term contract prices for new renewable power

A combination of price competition, long-term contracts, good resources and financial de-risking measures is creating deployment opportunities in newer markets and at lower costs.
Renewables can power Africa’s economic growth

With huge resources, improving cost-effectiveness and policy momentum, renewables account for almost two-thirds of demand growth in Sub-Saharan Africa.
Renewables can power Africa’s economic growth

Sub-Saharan Africa power demand growth versus supply sources

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Renewable growth can be accelerated back on track to meet climate goals

World renewable power capacity growth, main versus accelerated case

Renewable energy can be brought back rising annual installation growth, through enhanced domestic policies, e.g. grid integration of variable renewables
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A decisive moment for the future of renewables

- Increasingly affordable renewables are set to dominate the growing power systems of the world.

- The effect of the lower oil price environment on global renewable growth is more perception than reality, though biofuels are an exception.

- Further policy action is needed for heat and biofuel sectors, in the face of structural challenges.

- Yet, wavering policy commitments risk undermining investor confidence and are dampening growth.

- While variability of renewables is a challenge energy systems can learn to adapt to, variability of policies poses a far greater risk.
Global Renewable Technologies
Renewable electricity expanded at its fastest rate in 2014, despite sharp fall in oil prices

The global expansion for renewable electricity remains robust and renewable power capacity rises by 40% over 2014-20. The outlook stems from greater cost-effective deployment of solar PV and onshore wind. Still annual forecast remains relatively flat, with a dip in 2016/17.
Onshore wind leads global renewable capacity additions, with higher growth forecast versus MTRMR 2014

The forecast for onshore wind is more optimistic mostly due to China and Brazil. Solar PV is the second-largest source of capacity growth, with a raised forecast reflecting more optimistic growth prospects across a number of markets.
Strong global momentum for renewable electricity generation

In 2020, renewable generation reaches over 7 150 TWh, more than today’s combined demand of China, India and Brazil
Generation cost profile for fossil-fuels varies under fixed prices versus historical volatility

Historical gas prices by region versus price range for LCOE of new CCGT at USD 60-80/MWh

More robust competitiveness assessments would account for value of electricity generated when and where, and fossil fuel and carbon price volatility.
The heating sector offers particular challenges for policy makers. There are no targets and support policies for renewables heating and cooling in Japan, while the strongest policy drivers today have been adopted in OECD Europe as a result of the EU’s mandatory 2020 targets for renewable energy.
Focus on Japan
In OECD Asia Oceania, despite strong annual growth in the near term, the additions will slow.

Renewable additions are expected to slow over the medium term, with uncertainties over progress in integrating higher levels of variable renewables in Japan and reduced expectations in Australia, where electricity demand is expected to stagnate.
Drivers and Challenges in Japan

Drivers

- Strong policy environment backed by generous FITs and need for new generation
- Potential for increased system flexibility in the electricity sector through planned reforms

Challenges

- Integration of variable renewables in certain regions and maintaining a dynamic approach to support scheme adjustments
- Implementation of new electricity sector reforms and new strategic plan
Over 2014-20, solar PV expands by 36 GW, but deployment pattern may be volatile.

While the solar PV cumulative capacity reaches 60 GW in 2020, the pattern may be volatile, with high levels in 2015 followed by a shrinking market, due to assumed grid constraints.
Japan’s solar PV approaching benchmark prices

Japan estimated solar PV LCOE ranges versus FIT and end-user price levels

Solar PV residential and commercial LCOEs are seen falling to near current household and industry retail prices, potentially creating incentives for deployment under self-consumption.

Solar PV below 10 kW (residential scale)

- Feed-in tariff
- Average household power price (ex tax)

Solar PV above 10 kW (commercial and utility scale)

- Average industry power price (ex tax)
However, Japan’s solar PV costs still remain high compared with international standards.

Historical and forecasted typical solar PV investment costs, beginning year

Japan’s utility-scale solar PV investment costs remain notably higher than the general investment cost range in the world (USD 1 000-2 000/kW), in part due to constricted land availability and grid connection and permitting challenges.
Onshore Wind Investment costs in Japan remains highest

Typical onshore wind total investment costs per kW in selected countries (2010-20)

Difficult topography, costly turbines adapted to special meteorological conditions, high construction costs and lack of grid availability combined with expensive and long pre-development process are the main factors behind these high investment costs.
Priorities for Renewables in Japan

- Objective should remain to foster a well-balanced portfolio of renewable energy technologies

- Proceed in the power system reforms
  - Strengthen interconnections and enlarge balancing areas
  - Allow for fair and equal grid access conditions

- Policies on Solar PV should be adapted to reduce unit costs as much as possible and rapidly align with international benchmarks prices

- For development of renewable heating and cooling policy, need to obtain reliable data on production, utilisation and costs
For further insights and analysis...

- The Medium-Term Renewable Energy Market Report 2015 was launched on 2\textsuperscript{nd} October and can be purchased online at:


- Thank you for your attention!