



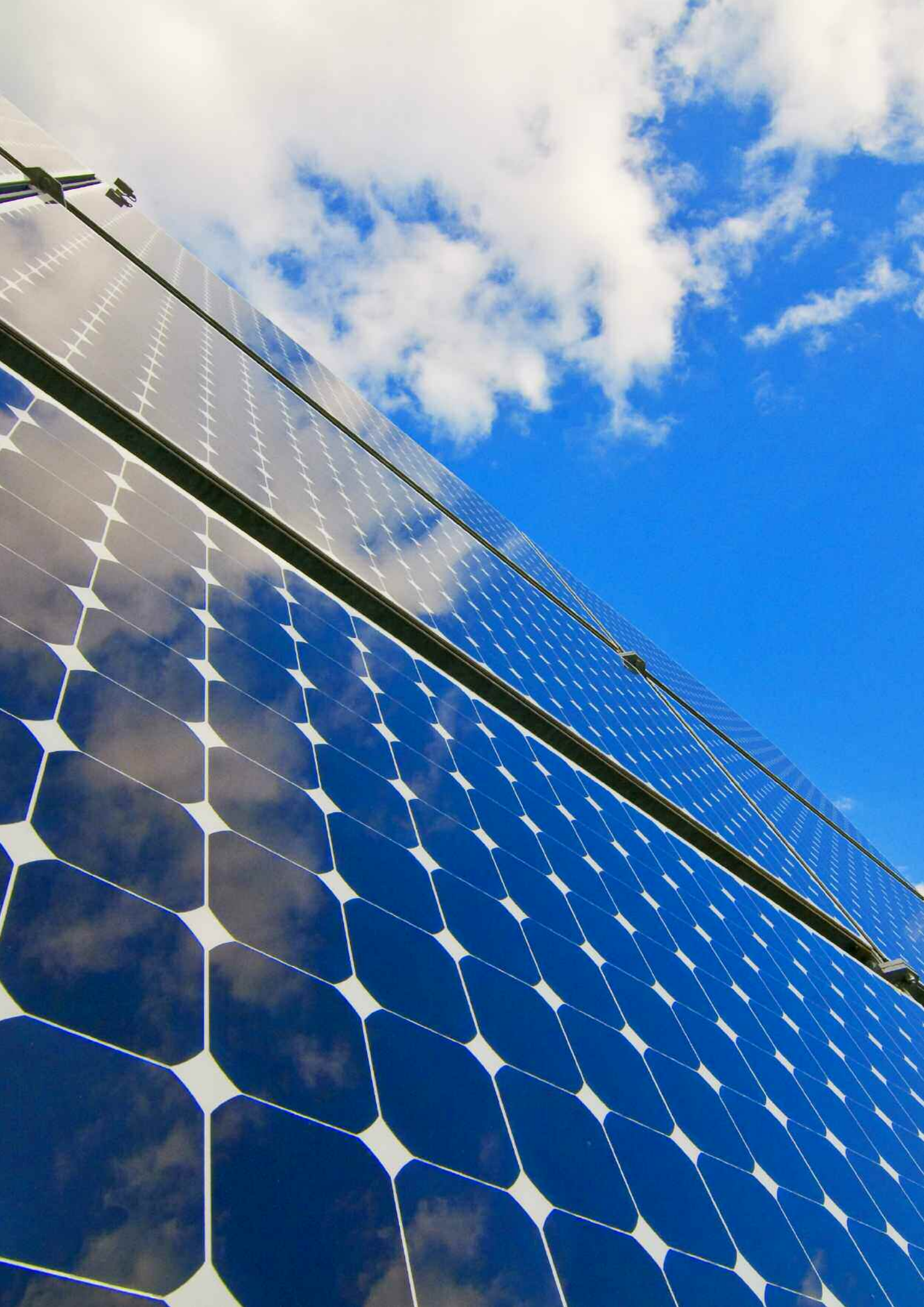
C L I F F O R D  
C H A N C E

Renewable Energy:  
Infinite Resources, Finite Incentives  
3rd Edition



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# Renewable Energy: Infinite Resources, Finite Incentives

## Introduction

As we move closer to 2020, it has never looked more difficult for some countries to meet their national greenhouse gas emissions reduction targets. In many jurisdictions, nuclear energy has been considered the answer to carbon reduction whilst fulfilling ever-increasing domestic energy demand. However, 2011 saw a global shift away from the nuclear option, triggered in part by the crisis at the Fukushima nuclear plant in Japan. Subsequently, Germany announced that the entirety of the country's nuclear power plants would be phased out by 2022; Switzerland and others followed suit. This shift away from nuclear power by some countries had a knock-on effect on those countries that still place nuclear power at the heart of their energy policy, as certain developers with nuclear expertise decided instead to focus on the development of renewables and cheaper forms of conventional power (such as gas-fired power), particularly in jurisdictions where they may not have much experience, but where they might consider there to be an easier investment framework.

## How to decarbonise?

The question therefore remains, if they cannot increase the use of nuclear energy, how can countries meet their carbon reduction aims, whether or not legally binding? New technologies have very significant potential, but many of the initiatives are still either in their infancy or remain theoretical.

■ **Carbon Capture and Storage (CCS)** systems have been widely promoted as the panacea to carbon emissions, particularly from coal-and gas-fired power stations; however, the technology could feasibly be applied towards CO<sub>2</sub> intensive industries, such as steel manufacturing, paper/pulp mills and biomass-fuelled generation, which would result in carbon-negative energy generation. CCS systems capture, transport and permanently store carbon emissions, effectively preventing the carbon from being emitted into the atmosphere. However, it is still untested at a commercial scale, despite several support programmes at national and international level being established.

■ **Energy Storage** involves the storage of energy generated during periods of low demand for use during peak demand hours, therefore helping to make renewable energy supplies more efficient and reducing reliance on baseload conventional power. For example, wind power generated

overnight (when demand for the electricity is low) can be stored for use during peak demand the next morning when the winds might be insufficient to meet demand and carbon-intensive power generation may otherwise have been called upon. Energy storage can also reduce the large gap between on-peak and off-peak prices, making renewables more economically viable.

■ **Demand-Side Management (DSM)** focuses on changing the behaviour of energy consumers to reduce electricity demand and therefore greenhouse gas emissions. Governments believe that once consumers become aware of their energy-use habits, for example by seeing usage and costs, they become better able to monitor and in turn reduce their energy use. Smart meters are an effective means of managing energy demand as they collect information about energy use electronically and allow consumers to keep track of how much energy they

are using in their homes in real-time and how much this is costing them, hopefully encouraging energy frugality. More advanced DSM measures may be adopted in the future, with electrical devices, such as fridge-freezers, being switched off remotely for a short time during periods of peak electricity demand.

■ **Energy Efficiency Measures** are aimed at minimising energy wastage, for example from unnecessary heat loss in buildings and old, inefficient electrical appliances. In the UK, the Department of Energy and Climate Change (DECC) is working hard to promote improvements in domestic energy efficiency measures, such as fuel-efficient heat-pumps; effective insulation; and improved performance of condensing boilers. DECC's Green Deal also aims to make it more affordable for home-owners and businesses to take energy efficiency improvement measures, by eliminating the up-front costs.

In recent years, the most significant means of reducing carbon emissions in energy generation has of course been the development of renewable energy, which boomed during the later part of the 20<sup>th</sup> century, with deployment rates increasing rapidly throughout the 21<sup>st</sup> century, such that approximately 25% of global electricity capacity is renewable, principally hydropower. Despite the rapid growth of renewables, the costs remain high compared with conventional sources, notably coal-and gas-fired power. This is partly due to the fact that renewable technology has had much less time to

develop and in turn cost reductions have not yet been established.

### Carrots and sticks

To equalise the costs of development and, to a certain extent, operational costs between renewable energy and conventional power, most governments around the world have adopted a three-pronged policy approach, as follows:

- introducing financial support mechanisms, such as feed-in tariffs or Green Certificate schemes (see below) to provide additional income streams to renewable power stations;
- introducing various policy measures to disincentivise carbon-emitting power generation, for example the EU emissions trading scheme, which requires coal-and gas-fired power stations to surrender (purchased) allowances equivalent to their emissions; and
- various other policy measures designed to ease or speed up the development of renewable energy infrastructure, such as granting renewable power projects priority access to the grid.

## What are Green Certificates and Feed-in tariffs?

### Green Certificates

Green Certificate schemes operate by awarding qualifying renewable energy generators with certificates equivalent to the amount of renewable energy generated. Some newer renewable energy technologies may receive a larger number of certificates than long-established technologies, to reflect the difference in deployment costs. Electricity suppliers are placed under an obligation to source a certain proportion of their electricity from renewables and they evidence satisfaction of their obligation by presenting Green Certificates, which are bought from renewable generators. Penalties are payable if suppliers do not meet their obligation.

### Feed-in Tariffs (FIT)

FIT schemes are more numerous than Green Certificate schemes as they are easier to administer and generally provide renewable energy generators with greater certainty of income. FIT schemes pay a sum of money or tariff to generators on top of their electricity sales. The sum paid may be a fixed amount, payable irrespective of the electricity sales price received by the generator, or it may be a variable amount to “top up” the sales income to an agreed level.

## Why are tariffs reduced?

Whilst the financial support mechanisms undoubtedly encourage the uptake of renewable technologies, setting the level of the support at a level which is acceptable to all stakeholders has proved to be extremely troublesome and controversial in many countries. If the level of support for renewables is set too low, there will not be the uptake of the technology that is required, but if it is too high it sparks a “goldrush”, resulting in costs spiralling out of control for governments in their attempts to maintain the levels of support promised. This has been particularly problematic in the context of the global economic downturn and the resulting public sector spending cuts.

Many support schemes around the world adopt the principle of “grandfathering”, which guarantees a certain level of financial support for a fixed period of time. However, subject to this principle, it is widely accepted both by governments and generators alike that levels of support need to be reduced over time such that projects developed in future will receive reduced tariffs to take account of, most obviously, falling development costs as technology prices drop. However, falling technology costs are not the only reason that tariffs have been reduced in recent years – in Slovakia, for example, an overly-generous feed-in tariff resulted in installed solar PV capacity rising from 31 MW at the start of 2010 to 492 MW by November 2011, which led to instability in the electricity transmission grid.

Finally, high levels of incentives have in many cases led to significant rises in final electricity prices paid by consumers and many governments have come under significant political pressure to reduce tariffs to lessen the effect on consumers,

who may otherwise question the need for expensive “green” electricity during a global financial crisis.

In the context of the issues raised above, the speed at which incentive levels for renewables should be reduced can cause great difficulties. Governments who act too swiftly, slashing tariffs with little warning, will adversely affect “shovel ready” projects in respect of which developers have invested significant time and sums of money in securing sites, obtaining the necessary consents and grid connection as well as procuring the necessary technology. Conversely, reducing incentive levels too slowly may not stop the problem of over-compensating developers quickly enough and can even result in a last-ditch flurry of projects seeking to take advantage of the original tariff levels, exacerbating the original concerns further. Last, but by no means least, governments who act to adjust their renewable energy incentive regimes too frequently will adversely affect the confidence of generators, investors and their funders who seek regulatory certainty for their projects.

Tariff reductions therefore need to be undertaken gradually with as much notice to industry as possible. The UK Government has recognised this and has recently published its proposals for incentives to be given to larger-scale renewable energy projects from 2013 to 2017. The consultation process, which commenced towards the end of 2011, enabled stakeholders to be fully involved in the setting of tariff levels at an early stage and allowed for long-term project planning.

Many incentive regimes, particularly feed-in tariffs, apply the concept of degression,



meaning that whilst a development is guaranteed to receive a tariff for a set number of years, the tariff will decrease each year. For example in Germany, tariffs decrease within statutory limits each year, with the exact decrease dependent on market conditions.

Interestingly, some countries have proposed draconian cuts in tariff levels, only later to perform an about-turn and subsequently reduce the severity of the cuts. For a number of years, Poland was one of the most attractive locations in Europe for investors when it came to renewable energy; however, in December 2011 a draft bill introduced the concept of banding (i.e.

applying different levels of tariffs to different renewable energy technologies) which resulted in many investors becoming nervous at the long-term viability of investing there. The Polish Government has since published a re-drafted bill which aims to provide more stability and therefore certainty for investors.

### Challenging the reduction

Whilst the problems highlighted above can create unacceptable levels of uncertainty for investors contemplating entering certain markets, the issues are exacerbated for those developers who have already committed to developing projects in areas where the relevant incentive regimes are subject to cuts. Solar PV developers have borne the brunt of this problem in recent years and there has been much discussion as to potential remedies for those who have been impacted.

In October 2011, the UK Government proposed substantial reductions to feed-in

tariffs to apply to installations that had become eligible for support in December 2011, effectively applying the reductions retroactively. A judicial review challenge to the Government's proposals was brought by Friends of the Earth and a number of solar PV developers. The proceedings concerned whether it was within the Government's power to make modifications that had such a retroactive effect and it was claimed that the modifications proposed would take away "vested rights" in those whose installations have become eligible for payment before April 2012, namely the right to a tariff fixed from the time the installation became eligible for payment throughout a 25-year period. The challenge ultimately succeeded despite being vigorously contested by the Government, who sought to take the case to the Supreme Court. The case highlights the problems that governments have in balancing the need to reduce incentive levels quickly, on the one hand, with implementing such reductions in a

proportionate and fair way on the other. Perhaps surprisingly, it also highlights that environmental pressure groups and renewable energy investors are willing to work together, despite differing agendas, to ensure that low carbon technologies receive suitable incentives to encourage their continued deployment.

Another method that foreign investors have used in fighting tariff reductions is claiming breaches of investment treaties. In Spain, investors have claimed that cuts in feed-in tariffs breach the Energy Charter Treaty (a multilateral agreement providing protection to investors in the energy sector, similar to a bilateral investment treaty) in respect of promises of long-term price support. In essence, developers have argued that the initial levels of support were relied upon when investment decisions were being made. Similar claims are being taken up by foreign investors in other jurisdictions such as Italy and the Czech Republic. The basis of such claims is often a breach of the "fair and equitable treatment" (FET) standard. Arbitral tribunals have interpreted the FET standard as protecting an investor's "legitimate expectations", although tribunals have taken different approaches to what this means. Some commentators have stated that relevant considerations could be transparency, stability, procedural propriety and whether a State has complied with its contractual obligations. However, some tribunals have found that investment frameworks need to evolve and be amended, as long as this does not run counter to a State's explicit obligations. As a result, a reduction in a previously established support mechanism could be inconsistent with a "legitimate expectation", although there is still an element of uncertainty for investors in





pursuing such a claim due to the variation of interpretation by the tribunals.

What is clear, is that governments cannot take decisions to cut subsidy levels lightly, as affected investors are not afraid to commence proceedings to protect their interests. When setting future subsidy levels, mechanisms that governments introduce will have to be much more flexible to minimise the likelihood of these types of proceedings arising.

### Potential solutions to future tariff uncertainty?

Tariff reductions seem to be an unavoidable fact of life for renewable energy projects and there is little doubt that they will continue to dominate the renewable energy incentive policies of many governments for the foreseeable future. On the basis that tariff reductions will need to be implemented, the mechanisms for doing so will need to be carefully considered and will inevitably be built into the legislative regime in order to lessen the “surprise” factor, which many tariff reduction announcements currently appear to have.

In future, tariffs may be linked to the deployment of renewable technologies, either by lowering tariffs when target levels of deployment have been reached, or by specifying a budget for a particular technology and closing the relevant incentive scheme to any plant deployed when the budget has been exceeded. The problem with this method is that whilst it will certainly ensure that government budgets are not stretched beyond expectations, it does not prevent technologies from being over-incentivised and as such it would be unlikely to offer the level of certainty that investors need (given the long lead-in times for certain



projects) and in the long-term may therefore reduce deployment levels.

Alternatively, tariffs could be reduced on a more regular basis as Germany has done, so that instead of reducing the tariff levels every 12 months, tariffs could instead be reduced every six months, for example, which would be particularly suitable for technologies that show fast-paced cost reductions such as solar PV. Further, the concept of index-linking tariff levels could be removed, or else an alternative index adopted, and the length of time during which tariffs are paid could be reduced –

in the UK, some technologies are eligible for index-linked tariffs for 25 years. Whilst most investors would understand the benefits of regular reviews and degressions of tariff levels, as this would enable them to be kept fully informed as to the incentive levels of their schemes, removing index-linking or dramatically reducing the tariff life would be difficult to accept, causing some investment funds ultimately to move into other industries or countries.

Another alternative for governments would be to impose more stringent



eligibility criteria or reduce tariffs for generators that have a portfolio of renewable schemes, which is proposed in the UK. Currently, tariffs are offered to those installations under certain output levels and this has meant that investors have often aggregated large portfolios of

smaller eligible installations. Some may argue that “portfolio investors” such as these may not need the high levels of support currently on offer but there are just as many who argue that this class of investor is critical to future renewable energy deployment – they have “bought

into” the asset class, understand the regulatory risks and have done so multiple times. Reducing tariff payments to these investors could again jeopardise future deployment rates.

As we have seen, support levels need to be reduced for many different reasons. However, this conflicts with the continuing need for investment in the renewables sector, particularly in light of countries’ renewable energy targets, which are often binding. When considering this problem, governments need to be mindful of previous attempts to impose drastic cuts in support, as this has often been overturned by the courts. Balancing the need for investment and ensuring technology is not over - incentivised is difficult, but is crucial to ensure that future energy needs are met. How governments approach this will be one of the defining energy stories of the next five to ten years.

**Clifford Chance’s Global Renewables Group offers depth in resource, local expertise and a long-term presence in, and commitment to, the key markets across the globe. Our market-leading team comprises acknowledged industry experts across all legal disciplines, providing top-tier renewables capability. If you would like to know more about the subjects covered in this guide, or about our Global Renewables Group, please contact any of the lawyers below or your usual Clifford Chance contact.**



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# Australia

<b>National Renewables Targets?</b>	In August 2009 the Australian Government implemented the renewable energy target scheme which is designed to deliver on the Government's commitment to ensure that 20% of Australia's electricity supply will come from renewable sources by 2020.
<b>Main Renewable Sources</b>	Hydro, wind turbines, solar thermal, solar photovoltaic, biomass, geothermal and wave and tidal energy.
<b>Green Certificates?</b>	<p>Yes. The Australian Government has been supporting the deployment of renewable energy in Australia's electricity supply through the renewable energy target scheme which guaranteed a market for additional renewable energy generation using a mechanism of tradable renewable energy certificates (RECs) that are akin to the Green Certificate systems used throughout a number of European countries.</p> <p>From 2001 to the end of 2010, RECs were the commodity in the market but from 1 January 2011 RECs were reclassified into:</p> <ul style="list-style-type: none"> <li>■ large-scale generation certificates (LGCs) that fall under the large-scale renewable energy target (LRET) scheme; and</li> <li>■ small-scale technology certificates (STCs) that fall under the small-scale renewable energy scheme (SRES).</li> </ul> <p>The LRET creates a financial incentive for the establishment and growth of accredited renewable energy power stations. There are currently more than 15 different types of renewable energy sources being used in accredited renewable energy power stations in Australia. The LRET creates financial incentives for the accredited renewable energy power stations by legislating demand for LGCs. LGCs are created based on the amount of eligible renewable electricity produced by the renewable energy power stations with one LGC being equivalent to 1 MWh of eligible renewable electricity generated above the power station's baseline. LGCs must be correctly created and validated in the REC Registry before they can be made available for purchase and surrender. Once created and validated, LGCs can be sold or traded to renewable energy target (RET) liable entities such as electricity retailers. In addition, renewable energy power stations can also sell generated electricity to the grid. RET liable entities have a legal obligation to buy LGCs and surrender them to the Clean Energy Regulator on an annual basis. The number of LGCs that must be obtained and surrendered is determined through a mathematical formula that considers a number of factors.</p> <p>The SRES creates a financial incentive for owners to install eligible small-scale installations such as solar water heaters, heat pumps, solar panel systems, small-scale wind systems, or small-scale hydro systems. It does this by legislating demand for STCs. STCs are created for these installations according to the amount of electricity they produce or displace with one STC being equivalent to 1 MWh of:</p> <ul style="list-style-type: none"> <li>■ renewable electricity generated by the solar panel, small-scale wind or small-scale hydro system (unless the solar credits multiplier applies – (see the "Other Incentives" section below); or</li> <li>■ electricity displaced by the installation of a solar water heater or heat pump.</li> </ul> <p>STCs are credited by owners directly in the online REC Registry but must be correctly created and validated in the REC Registry before they can be made available for purchase and surrender by RET liable entities. RET liable entities have a legal requirement to buy STCs and surrender them to the Clean Energy Regulator on a quarterly basis. The number of STCs that must be obtained and surrendered is determined through a mathematical formula that considers a number of factors.</p>
<b>Feed-In Tariff?</b>	<p>Australia currently has no nationalised feed-in tariff program and each Australian State and Territory runs schemes that vary substantially between jurisdictions. Most jurisdictions have set a minimum feed-in tariff amount with many electricity retailers offering above the minimum rate in a bid to gain further market share. A uniform federal scheme to supersede all State and Territory schemes has been proposed but not enacted.</p> <p>In Victoria, for example, a standard feed-in tariff is available to households, community organisations and small businesses with a solar generation capacity greater than 5 and less than 100 kilowatts in size, and is also available to eligible customers generating other forms of renewable energy, such as wind, hydro or biomass, with a system size less than 100 kilowatts. The Victorian standard feed-in tariff currently has no legislated end date.</p> <p>In contrast, the New South Wales feed-in tariff scheme is closed to new applicants that were not connected to the electricity network by 30 June 2012. Existing New South Wales customers whose systems are already connected to the electricity grid are not affected and will continue to receive the feed-in tariff until the scheme terminates on 31 December 2016.</p>
<b>Other Incentives</b>	<p>Solar credits are an incentive mechanism which increases the number of STCs able to be created for eligible installations of small-scale solar panel, wind or hydro systems by multiplying the number of STCs for which the system would normally be eligible.</p> <p>On 5 May 2011, the Australian Government announced that the solar credits multiplier would be reduced to three for small-scale systems installed from 1 July 2011. The multiplier will phase down by one each year consistent with the original intent of the solar credits multiplier reducing over time, until the multiplier is phased out entirely by 1 July 2013.</p>
<b>Additional Comments</b>	<p>According to the Australian Government, the transformation of the Australian energy sector will drive around A\$100 billion in investment in the renewables sector over the period to 2050. The Government's plan to support this investment includes:</p> <ul style="list-style-type: none"> <li>■ commercialisation and deployment of clean technologies through the commercially oriented A\$10 billion Clean Energy Finance Corporation;</li> <li>■ research, development and commercialisation of renewable energy at an early stage through the A\$3.2 billion Australian Renewable Energy Agency;</li> <li>■ research and development of clean technologies through the A\$200 million Clean Technology Innovation Program; and</li> <li>■ increased use of renewable energy through the carbon price and the Renewable Energy Target.</li> </ul>



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# Belgium

<b>National Renewables Targets?</b>	<p>In all three of the Belgian Regions, a certain percentage of the energy that is supplied must be green:</p> <ul style="list-style-type: none"> <li>■ Flemish Region: 7% by 31 March 2012 and 14% by 31 March 2013. This target will be increased yearly and will reach 20.5% by 31 March 2020. The 20.5% target will be maintained in the following years.</li> <li>■ Walloon Region: 15.75% in 2012 and 19.4% in 2013. This target will be increased yearly and will reach 37.9% by 31 December 2020. The 20.5% target will be maintained in the following years.</li> <li>■ Brussels Region: 3.25% in 2012. The Brussels targets for the following years are not known yet.</li> </ul>
<b>Main Renewable Sources</b>	<p>Mainly biomass and to a lesser extent wind, solar and hydropower.</p>
<b>Green Certificates?</b>	<p>Yes. Each of the three regions: Flanders, Wallonia and Brussels (in respect of their own territories) and the Belgian Federal State (in respect of offshore wind power in the North Sea) have put in place a Green Certificate system. The four systems are comparable, but procedures for obtaining the certificates for the support mechanisms and the conditions under which these are granted may vary.</p> <p>In common with other systems, the number of Green Certificates required to be surrendered is equal to a percentage of the energy supplied to end customers (please see above "National Renewables Targets").</p> <p>Apart from the market system for Green Certificates, the three Regions and the Federal government have put in place a system that guarantees a minimum purchase price for Green Certificates.</p> <p>Green Certificates are freely transferable within the regional system in which they are issued but are not recognised by other regions. The only exception is that Green Certificates issued in Wallonia are recognised in Brussels (although only for ten years following the relevant facility commencing operations).</p> <p>Several authorities and parties have stated that the Green Certificate scheme should be reviewed, in order to reduce the burden on electricity distribution and transport costs. On 13 July 2012, the Flemish Region was the first authority to adopt a statute that provides such reform. Most of the new provisions will only apply to plants for which the construction and operation permit is issued after 1 January 2013, and not to existing plants. The objective of the reform is to limit the support for the increased costs that result from the relevant green energy production method compared with conventional production methods. For this purpose, the 13 July 2012 statute provides (i) that the period of time in which Green Certificates are granted will be limited to the depreciation period of the relevant equipment, whereas currently the issuance of the certificates is unlimited in time for most of the green energy production methods (except solar) and (ii) that the level of the support will be established on the basis of the production method and equipment that is used, whereas currently for most green energy production methods (except solar) the level of support is similar. Note that the enacting decree that will further detail these matters has not been issued yet.</p> <p>It is likely that the other Regions and the Federal Authority may modify the Green Certificate scheme in order to reduce its cost.</p>
<b>Feed-In Tariff?</b>	<p>No but there is a guaranteed price for the purchase of Green Certificates.</p>
<b>Other Incentives</b>	<p>Increased investment tax deductions are applied to certain qualifying energy saving investments. The increased investment deduction is a non-recurring tax deduction applied on the investment value of the asset. For example, for the financial year ending 31 December 2011, the deduction amounted to 13.5%.</p> <p>Alternatively, and provided certain conditions are complied with, Belgian companies can apply the recurrent investment deduction, which implies that the investment deduction is calculated each year as a percentage of the annual depreciations (and not on the investment value) on the assets concerned. The recurrent investment deduction is determined on the basis of the basic investment deduction and is increased by 17%. As such, for the financial year ending 31 December 2011, the recurrent investment deduction amounts to 20.5%. The recurrent investment deduction is only applicable with regard to assets which are used to promote the research and development of new products and future-oriented technologies and may be subject to aggregation by the competent authorities.</p>
<b>Additional Comments</b>	<p>Particular issues hindering the development of renewable energy in Belgium are the lack of natural resources and space, for example, Belgium only has 65 km of coastline, which reduces its ability to develop marine-based renewables on a significant scale (unlike the UK and Germany for example).</p>



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# Czech Republic

<b>2005 Baseline</b>	6.1%
<b>2020 Target</b>	13%
<b>Main Renewable Sources</b>	Hydro, photovoltaic, wind, biogas and biomass
<b>Green Certificates?</b>	No, although a green bonus is available (discussed below) which is similar. It does not, however, place an obligation on any party to acquire a specific number of certificates.
<b>Feed-In Tariff?</b>	Yes. A fixed feed-in tariff ("FIT") payable by electricity distribution system operators ("DSO") is available to currently operating renewable electricity generators. Once a generator obtains the FIT applicable in the year of commissioning of its plant, it is entitled to receive such FIT for the entire expected lifetime of the plant (15 to 30 years). The duration of the entitlement to the FIT and the amount of the FIT depends on the source of renewable energy used. Starting from 1 January 2013, FITs will only be available for hydro power plants and for other facilities with an output not exceeding 100 kW. Incentives for all other newly commissioned power plants will only be provided via a green bonus (see below).
<b>Other Incentives</b>	<p>Green bonus – A subsidy which is only payable if the generated electricity, heat or bio-methane is either (i) actually sold on the market for the market price or (ii) consumed by the producer itself. After 1 January 2013, the maximum amount of the green bonus (or FIT, if applicable) will not exceed EUR 180 per MWh for electricity, EUR 2 per GJ for heat and EUR 70 per MWh for bio-methane.</p> <p>Priority to connect and supply – Generators of electricity from renewable sources have a priority right to connect their facilities to the electricity distribution or transmission grid, and a priority right to supply electricity to the grid. In practice, this means that where a generator opted for the FIT, it is now able to sell all the electricity it generates to the DSO for the price set by the relevant FIT.</p>
<b>Additional Comments</b>	<p>Solar boom – Until the end of 2010, particularly generous support was provided to PV plant operators (around EUR 0.50/kWh), irrespective of the size and location of the plant. This led to an increase in the total installed capacity of PV plants in the Czech Republic from 65 MW on 1 January 2009 to almost 2,000 MW by the end of 2011. On 1 January 2011, the subsidies for newly commissioned PV plants were reduced to approximately EUR 0.23/kWh, and since 1 March 2011, subsidies have only been available to PV plants with an output of less than 30kW and only if such plants are located on the roofs or facades of buildings. Moreover, a special 26% tax has been introduced, reducing the revenues from electricity sales generated by PV plant operators. This tax applies to all PV plants commissioned between 1 January 2009 and 31 December 2010 with an output exceeding 30kW. Due to these changes, no new large PV plants are currently being commissioned or likely to be commissioned until 2020. Nonetheless, the currently operating PV plants connected under the generous 2009 and 2010 FITs, combined with the priority to connect and supply, are increasingly targeted by foreign investors.</p> <p>New Act – The solar boom and the associated increase in electricity prices for final consumers led to serious discussions on the future of subsidy schemes for renewable energy sources. As of 1 January 2013, the currently applicable legislation will be replaced by a new act ("New Act"), which, inter alia, sets maximum output limits to be reached by 2020 for every type of renewable energy source. Once those limits are exceeded, no subsidies will be provided to any new operators of the relevant energy source. The final shape of the subsidy schemes has, however, not yet crystallised and further changes may be expected as discussion continues.</p> <p>New investment opportunities – With regard to the output limits set out in the New Act, it appears that only wind power, biomass and biogas are areas with a potential for growth until 2020. Under the National Renewable Energy Action Plan, there is still approx. 300 MW of free capacity for wind power and 240 MW of free capacity for biogas. As for biomass, the 2020 target accounts for a yearly consumption of 2.7 million tons, while 2011 consumption was around 1.3 million tons. Since wind energy generally faces strong public resistance due to its impact on the landscape, biomass and biogas are likely to be the most attractive investment opportunities in the near future in this sector. The New Act also introduces bio-methane (biogas that can be supplied to the public gas distribution system) as a particular source of renewable energy eligible for subsidies.</p>



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# France

<b>National Renewables Targets?</b>	2020 target: 23%
<b>Main Renewable Sources</b>	Hydroelectricity, wind and solar
<b>Green Certificates?</b>	No
<b>Feed-In Tariff?</b>	<p>Yes. A feed-in tariff scheme implemented in 2000 obliges Electricité De France (EDF) and other “non-nationalised operators” to purchase electricity produced by hydroelectricity, wind and solar panels, provided that certain conditions are met.</p> <p>Producers must obtain an authorisation to operate an electricity production facility. In order to benefit from the feed-in tariff, they must also obtain a power purchase certificate which then allows them to enter into a purchase agreement with EDF or non-nationalised operators.</p> <p>The level of remuneration available depends on the type of renewable technology used:</p> <ul style="list-style-type: none"> <li>■ Hydroelectricity: 6.07 c€/kWh (with premiums for small installations and regular production)</li> <li>■ Maritime hydraulic: 15 c€/kWh</li> <li>■ Onshore wind (mainland France and Corsica): 8.2 c€/kWh (reducing over time)</li> <li>■ Offshore wind: 13 c€/kWh (reducing over time)</li> <li>■ Offshore wind: a call for tenders was launched on 11 July 2011 and bids were submitted on 11 January 2012.</li> <li>■ Solar: <ul style="list-style-type: none"> <li>• 1.37 c€/kWh to 38.80 c€/kWh. The purchase price will be revised on a quarterly basis, based on the volume of projects developed and the number of tendering processes that are initiated for large roofs and solar farms;</li> <li>• 11.08 c€/kWh for significant plants (depending of the position of photovoltaic panels: &gt; 36 kWh or &gt; 100 kWh) and all plants located on the ground.</li> </ul> </li> <li>■ Solar – two calls for tenders: <ul style="list-style-type: none"> <li>• a basic tender was launched on 13 July 2011 for installations placed on buildings between 100 and 250 kilowatts. Bids were submitted on 20 January 2012;</li> <li>• a call for tender was launched on 4 August 2011 for very large roofs exceeding 250 kilowatts and plants located on the ground. Bids were submitted on 8 February 2012.</li> </ul> </li> </ul> <p>A recent development has seen the highest French administrative court request that the European Court of Justice (the “ECJ”) give a preliminary ruling on the question of whether a 2008 Order setting the feed-in tariffs for onshore and offshore wind electricity constitutes a state aid measure.</p>
<b>Other Incentives</b>	None
<b>Comments</b>	The French Government is entitled to issue calls for tenders to reach the targets set in the multiannual investment program (MIP) of electricity production. The French Government has increasing recourse to this option which allows it to control (i) the number of megawatts to be installed in France and (ii) the tariffs at which EDF will purchase the electricity generated from renewable sources.



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# Germany

<b>National Renewables Targets?</b>	35% by 2020; 80% by 2050
<b>Main Renewable Sources</b>	Hydro, onshore wind, offshore wind, photovoltaic, biomass, solar heat and geothermal energy
<b>Green Certificates?</b>	Yes, but only for power generated in installations from renewable energies which are not part of the promotional scheme of feed-in tariffs under the German Renewable Energies Act.
<b>Feed-In Tariff?</b>	<p>Yes – feed-in tariffs have existed since 1990.</p> <p>Grid system operators are obliged to connect installations generating electricity from renewable energy sources to their grid; further they have to purchase, transmit and distribute the entire available quantity of electricity from renewable energy sources as a priority; finally they have to pay official guaranteed tariffs for a period of 20 years, as well as for the rest of year in which the installation was commissioned.</p> <p>The tariff rate depends primarily on the type of renewable technology, and secondarily on other factors such as location and size of the installation as well as on the point in time when the installation was/is initially commissioned (degression):</p> <ul style="list-style-type: none"> <li>■ Hydro: 3.4 c€/kWh – 12.7 c€/kWh depending on the rated average annual capacity</li> <li>■ Offshore wind: 3.5 c€/kWh (basic tariff); during the first 12 years after the commissioning 15.0 c€/kWh (initial tariff) or, if the installation was commissioned prior to 1 January 2018, an increased initial tariff (19.0 c€/kWh) on request of the installation operator during the first 8 years</li> <li>■ Onshore wind: 4.87 c€/kWh (basic tariff); during the first 5 years after the commissioning 8.93 c€/kWh; increased initial tariff (9.41 c€/kWh) if the installation is commissioned prior to 1 January 2015 and fulfils the requirements of section. 6(5) of the Renewable Energy Sources Act – EEG 2012</li> <li>■ Photovoltaic: 13.5 c€/kWh – 19.5 c€/kWh depending on location and installed capacity</li> <li>■ Biomass: 6.0 c€/kWh – 25.0 c€/kWh depending on rated average annual capacity and substances used, such as biowaste or manure</li> <li>■ Geothermal: 25.0 c€/kWh, utilising petrothermal technology tariff increases by 5.0 c€/kWh</li> </ul>
<b>Other Incentives</b>	<p>In order to force and incentivise installation operators to become market players by selling their electricity on their own on the wholesale market instead of taking advantage of the guaranteed feed-in tariffs, the system of feed-in tariffs under the German act on granting priority to renewable energy sources (Renewable Energy Sources Act – EEG) was amended by a revision act on reorganising the legal framework for the promotion of electricity generation from renewable energy sources (BGBl. I 2011, 1634) on 1 January 2012.</p> <p>The revision act expanded the rudimentary provisions on direct selling in the EEG (now Part 3a, section. 33a – 33i EEG) and introduced the market premium model (section. 33g and 33h EEG).</p> <p>Even before 1 January 2012 installation operators were free to choose between the system of guaranteed feed-in tariffs laid down in the EEG and the selling of their electricity to third parties by themselves (direct selling). Since the market prices were and are usually lower than the feed-in tariffs, this option has been rather theoretical in the past.</p> <p>Having this in mind the legislator introduced the market premium model (section. 33g and 33h EEG), which functions as a hedge for a possible spread between the individually hypothetically applied feed-in tariff and the monthly average spot market price. The incentive given by this hedge is that there is an opportunity to exceed the feed-in tariffs on the wholesale market, if the operator is able to achieve a price higher than the monthly average spot market price by producing and selling power, in particular in peak price periods.</p> <p>The market premium model works as follows: First of all, an installation operator has to sell electricity directly to a third party (in total or a percentage – section. 33f EEG). Afterwards the operator is entitled to claim an additional market premium (MP) from the grid operator. The MP is determined by the grid operator on an individual basis, since the feed-in tariff depends – as shown above – on the individual installation. With the individual feed-in tariff as a starting point the MP is the spread between the individual feed-in tariff and the reference value (RW), which is published monthly by the transmission grid operators. The RW is then spread between the Phelix Base Month (MW) and the management premium (PM). The MW is the monthly average of hourly contracts (24 hours a day, every day in a month) at the EPEX spot. The PM has been determined by the legislator for every year until the end of 2015. The idea behind the PM is the compensation of additional costs, which have to be carried by installation operators in the case of direct selling, and prediction risks.</p> <p>Overall the determination of the MP can be summed up as follows:</p> $MP = \text{individual feed-in tariff} - (\text{MW} - \text{PM})$
<b>Comments</b>	<p>After the ponderous growth of installations generating electricity from solar radiation during 2011 (7500 MW), the German legislator, once again, amended the tariff structure in this area. Firstly, installation operators will only be entitled to claim tariffs for the first 10 MW of the installed capacity. Secondly, the basic tariff rate is set uniformly to 13.50 c€/kWh. Installations, which are in, attached to or on top of a building or noise protection wall may receive a higher tariff rate (16.5 c€/kWh – 19.5 c€/kWh depending on the installed capacity). Thirdly, for installations in, attached to or on top of a building with an installed capacity of 10 kW up to 1 MW only 90% of the annual produced quantity of electricity is eligible to receive a feed-in tariff. Finally, the solar-specific provisions on degression have been amended. Starting on 1 May 2012 the official guaranteed feed-in tariffs have been reduced monthly by 1%. Additionally, the legislator has set a bandwidth for the annual growth of photovoltaic installations (e.g. 2012 and 2013: 2500 – max. 3500 MW p. a.). If the annual bandwidth is exceeded, the federal government is entitled to raise the monthly degression. Additionally, an overall limit of 52 GW has been set for installed PV-capacity. In the event the limit is reached there will be no further promotion for new PV installations.</p>



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# Italy

<b>National Renewables Targets?</b>	2020 Target: 17%
<b>Main Renewable Sources</b>	On-shore wind, hydro, solar and biomass
<b>Green Certificates?</b>	<p>Yes, until 2015.</p> <p>Renewable Energy Certificates (RECs) are assigned to qualifying plants, in proportion to the renewable electricity generated and multiplied by a variable factor which depends on the technology used. Subject to various conditions, relevant plants are eligible to receive RECs for 8-15 years.</p> <p>The Italian Green Certificates system requires all electricity producers and importers to input into the national electricity system a minimum quota of electricity produced using renewable sources. This obligation can be discharged by (i) producing the minimum quota of energy from renewable sources (thus receiving the related RECs), or (ii) purchasing whole or part of the minimum quota, or equivalent amount of RECs, from other producers.</p> <p>This system, which applies to all renewable energy plants other than photovoltaic plants, will be abolished starting from 2015, as provided recently by a new legislative decree. Starting from 2013, each producer's minimum quota will be gradually reduced on a straight-line basis, from the 2012 quota to zero by 2015.</p> <p>A new incentive system will be available for renewable energy plants (except photovoltaic plants) commissioned after 31 December 2012, and will consist of feed-in tariffs to be paid on the basis of two principles: (i) fair compensation for the investment costs; and (ii) on-going financial support over the whole life of the project.</p> <p>Secondary legislation in the form of ministerial decrees, yet to be issued, will provide detailed sets of rules for the new incentive system, for the interim period and the transition of plants that currently receive RECs to the new incentive scheme.</p>
<b>Feed-In Tariff?</b>	<p>Yes – a feed-in tariff mechanism known as “Conto Energia” has been available for photovoltaic plants since 2005. This incentive system provides for the payment of incentives to the plant for twenty years starting from the date the plant starts operations. The incentives are paid by the GSE (Gestore dei Servizi Elettrici S.p.A.), a state-run company.</p> <p>Incentives are set on the basis of the plant's commissioning date, from the second semester of 2011 through 2016. For each semester, the incentive levels vary depending on the: (a) type of plant (photovoltaic plants/plants with innovative features/solar concentration plants), (b) whether the plant is integrated or not integrated, and (c) installed capacity of the plant. The intention is to promote small-sized integrated plants.</p> <p>The incentive can be increased by only one of the following, if applicable: (i) by 5%, for plants installed on certain sites; (ii) by 5 ¢cent/kW for integrated plants installed to replace asbestos in the roofing, or (iii) by 10%, if at least 60% of the plants' construction costs were for products manufactured within the European Union.</p> <p>A new incentive system (the so-called “Fifth Conto Energia”) is currently under discussion. On 16 April 2012, the Minister of Economic Development, in agreement with the Minister of the Environment, published a draft text of the Fifth Conto Energia, which is subject to amendments. According to the draft text, plants admitted to the Fifth Conto Energia will receive an all-inclusive tariff, calculated on the basis of the capacity and type of plant, for 20 years from their commissioning date. The intent of the Fifth Conto Energia is to reduce significantly the incentive tariffs of the previous regime, and it provides for a reduction of at least 38.5% and by as much as 65.4%, depending on the size of the plant.</p>
<b>Other Incentives</b>	<p>Italian legislation provides that electricity produced from renewable energy sources has priority access to the grid system, and the transmission grid operator has to give dispatch priority accordingly.</p> <p>Italian legislation grants to producers of electricity from (i) intermittent renewable sources of energy (including, therefore, electricity from solar and wind plants) or (ii) other sources (in this case for up to a nominal power of 10 MVA), the option to sell the electricity produced under the mandatory purchase regime (<i>ritiro dedicato</i>), rather than on the market. Under the mandatory purchase regime, the GSE must draw and purchase all the energy produced by a plant, net of any energy used for in-plant consumption, paying to the producer the “hourly zone price”. The hourly zone price derives from the prices registered in open trading on the electricity exchange. Producers of electricity at photovoltaic energy plants with a capacity of up to 1 MW can choose to sell energy to the GSE at the pre-defined minimum guaranteed prices, rather than at the hourly zone price.</p> <p>Under the net metering service (<i>scambio sul posto</i>), producers/users at small power plants (up to 200 kW) may feed into the grid the electricity generated and not immediately consumed and take-in electricity as needed at a different time.</p> <p>VAT at the reduced rate of 10% is provided for the acquisition and construction of renewable plants and subsidies and benefits are available in connection with the sale or purchase of the land on which renewable plants are installed.</p>
<b>Additional Comments</b>	<p>This continuously evolving, complex legal framework is causing uncertainty in the market. Nevertheless, opportunities for investors still exist, mainly because the plants that are already operating and receiving incentives are good prospects for acquisition by both new operators that wish to access the market and existing operators who wish to consolidate their market position. In terms of general economic politics, it is quite clear that the Italian Government is taking a rigorous approach, while keeping in mind the importance of renewable energy in a country where natural resources are not sufficient to cover internal need and where nuclear power has been definitively banned.</p>



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# Japan

<b>National Renewables Targets?</b>	2020 Target: 10% 2030 Target: 25-35%
<b>Main Renewable Sources</b>	Solar, wind, geothermal, water and biomass
<b>Green Certificates?</b>	Yes – there are Green Certificates available in Japan although they are practically and commercially superseded by the Japanese FIT (as explained below).
<b>Feed-In Tariff?</b>	<p>Yes – the Renewable Act has introduced the feed-in tariff in Japan (“Japanese FIT”) as of 1 July 2012. The Japanese FIT applies to electricity generated from solar, wind, geothermal, mid-small size hydro power, and biomass.</p> <p>The operator of a renewable power plant is entitled to sell all of the electricity generated from that plant to a utility company during a fixed period at a fixed price which is determined by the Ministry of Economy, Trade and Industry (“METI”) in respect of each fiscal year in Japan (i.e., 1 April to 31 March). The sales price (and period this is fixed for) for those plants accredited in the fiscal year 2012 are as follows:</p> <ul style="list-style-type: none"> <li>■ Solar (10kW or more): JPY 42.00 (with tax) per kWh for 20 years</li> <li>■ Wind (20kW or more): JPY 23.10 (with tax) per kWh for 20 years</li> <li>■ Geothermal (15,000kW or more): JPY 27.30 (with tax) per kWh for 15 years</li> </ul> <p>The relevant purchasing utility company is obliged to enter into a grid connection agreement and an electricity sale agreement with the operator unless the utility company has a justifiable reason which is set out in the Renewable Act (such as the amount of electricity generated exceeds the available capacity of the utility company).</p> <p>In order to benefit from the Japanese FIT, the operator must have (a) obtained approval from METI for the construction of the power plant and (b) applied to a utility for approval of a grid-connection before the plant commences the generation of electricity. It typically takes a few months to obtain such approvals.</p>
<b>Other Incentives</b>	N/A
<b>Additional Comments</b>	<p>Terms and conditions of grid connection and electricity sale agreements with the various utility companies will be determined by market practice. The Japanese FIT is still at an early stage, so standard terms have not yet been established.</p> <p>In terms of the future sales prices determined by METI, the Renewable Act states that the sales price for the first three years from the commencement of the Japanese FIT (i.e., the fiscal years 2012 to 2014) shall be determined on the basis that operators are able to make a profit in order to boost initial investment in renewable projects. However, there is no obligation on METI to take account of this consideration when setting sales prices after 2014. Therefore, it is expected that the sales prices for the fiscal years 2012 to 2014 will be higher than those for the fiscal year 2015 and thereafter.</p>



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# Morocco

<b>National Renewables Targets?</b>	20% of national electricity consumption by 2020
<b>Main Renewable Sources</b>	Wind and Solar
<b>Green Certificates?</b>	No
<b>Feed-In Tariff?</b>	No
<b>Other Incentives</b>	<p>Law 13-09 in relation to renewable energy permits electricity from renewable sources to be produced, sold and exported by private operators to public and private consumers, subject to a preliminary statement/authorisation regime, depending on the capacity of the installation.</p> <p>Law 13-09 also provides for the right of any operator to be connected to the national electricity grid at medium, high or very high voltage.</p> <p>Finally, law 13-09 provides that wind farms and solar plant projects above 2 MW must be developed on designated areas determined by the local government entity.</p>
<b>Comments</b>	<p>No feed in tariffs</p> <p>No guarantee of repurchase by the public operator – Law 13-09 does not provide for a guaranteed repurchase by ONE of any surplus electricity produced. Each operator can freely negotiate with ONE the repurchase of the surplus electricity not sold to private consumers. However, as Law 13-09 intends to promote the private production and selling of electricity from renewable sources, the part of electricity sold to private consumers shall remain substantial compared to the surplus sold to ONEE.</p>



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# The Netherlands

<b>National Renewables Targets?</b>	2020 Target: 14%
<b>Main Renewable Sources</b>	Biomass, onshore wind, energy from waste, solar, offshore wind, water and green gas
<b>Green Certificates?</b>	Yes, suppliers of electricity have a notification obligation with regard to the generation details of their supplied electricity
<b>Feed-In Tariff?</b>	No, but see below under "Other Incentives"
<b>Other Incentives</b>	<p>In October 2010 the Dutch Cabinet replaced the SDE (Subsidy for Renewable Energy) policy guidelines with the SDE+ (2011, 2012) mechanism.</p> <p>The focus of the SDE+ 2012 will be a cost-efficient approach. Each year, subsidies will be granted in five phases. Each phase will have its own subsidy cap per kWh for electricity, Nm<sup>3</sup> for green gas and GJ for renewable heat, such that the first phase will have the lowest caps and the last phase the highest. However, a total cap for all phases will apply and subsidies are granted on a first-come-first-served basis. This implies that, for example, if the total cap is reached during phase 2, then phases 3, 4 and 5 will not be applied during that calendar year and further applications will not be allowed. In this manner the Dutch Cabinet wants to prioritise "cheap technologies". Once a project has been granted a subsidy, it will continue to receive it at the same level on an annual basis for 15 years (12 years for biomass). The total budget for subsidy granted in 2012 is EUR 1.7 billion.</p> <p>The final technologies for which SDE+ 2012 will apply are the following:</p> <ul style="list-style-type: none"> <li>■ Onshore wind;</li> <li>■ Green gas hubs e.g. landfill gas;</li> <li>■ Renewable heat;</li> <li>■ Biomass;</li> <li>■ Geothermal energy e.g. cogeneration;</li> <li>■ Gasification;</li> <li>■ Solar PV; and</li> <li>■ Sewage treatment.</li> </ul> <p>Basic (maximum) compensation for phase 5 in the SDE+ 2012 is set at EUR 0.15 per kWh, EUR 1.32 per Nm<sup>3</sup> for green gas and EUR 41.70 per GJ for renewable heat. A "free category" for more expensive technologies has been established and would be decided on a case-by-case basis. The free category includes offshore wind farms and wave and tidal power initiatives.</p> <p>Whilst the subsidies under SDE were funded from the general tax income of the Dutch State, the subsidies under SDE+ 2012 will be funded by the introduction of a form of feed-in tariff which covers both households and businesses. The corresponding bill is expected to enter into force on 1 January 2013.</p>
<b>Additional Comments</b>	The Dutch government is still firmly committed to achieving its renewable energy targets. In October 2011 Green Deals were introduced in order to mitigate bottlenecks. By the end of 2011 150 Green Deals had been concluded. After the previous Cabinet stepped down in April 2012 formation discussions began, with a new Cabinet expected to be installed at the end of 2012.



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# Poland

<b>National Renewables Targets?</b>	Yes. The annual targets currently in force are set for up to 2017 (12.9% electric energy from RES of the overall electric energy sold to final off-takers in 2017), but a new ordinance from the Minister for the Economy (to come into force on 31 December 2012) increases and extends the targets up to 2021 (e.g. 16% in 2017, 20% in 2021, etc.).
<b>Main Renewable Sources</b>	Hydroelectricity, onshore wind, biomass
<b>Green Certificates?</b>	<p>Yes. Enterprises which generate or trade in electricity and sell to a final off-taker as well as, in certain circumstances, final off-takers trading with energy at the commodity exchange and brokerage houses trading with energy at the commodity exchange, are required to acquire certificates and to present a number of them (in a proportion that corresponds to the amount of renewable energy generated calculated by reference to sales to end users) to the energy regulatory authority. The Green Certificates are issued by the Polish energy regulatory authority to renewable energy generators to confirm that they have produced a certain amount of renewable energy over a certain period of time. They are issued on the application of a given energy generator and on the basis of data provided by the operators of the grid transmission or distribution system to which the given renewable energy generator is physically connected.</p> <p>The support scheme applies to all technologies, regardless of their efficiency and costs.</p> <p>Obligated entities which do not present certificates are required to pay compensation. Failure to present certificates or pay compensation leads to the imposition of a financial penalty by the energy regulatory authority.</p>
<b>Feed-In Tariff?</b>	No
<b>Other Incentives</b>	<p>The operator of the electricity system is obliged to ensure that electricity generated from renewable energy sources has priority of transmission.</p> <p>By law suppliers of last resort are obliged to purchase electricity generated from renewable energy sources. The obligatory purchases are made at the average price on the competitive market for the preceding calendar year determined yearly by the energy regulatory authority. The energy regulatory authority is obliged to announce the average price by 31 March of the following year. Any entity not meeting its obligation to purchase electricity from renewable energy sources is subject to a financial penalty.</p> <p>Electricity generated from renewable technologies is exempt from excise duty.</p>
<b>Comments</b>	<p>In early October 2012, the Ministry for the Economy published the final ministerial draft of the Bill on Renewable Energy Sources (as well as drafts of the New Energy Law, Gas Law and the Implementation Act). One of the purposes of the draft Bill is to improve the effectiveness of the existing support scheme for energy from renewable sources.</p> <p>The draft Bill proposes substantial changes to the existing support scheme. Although in principle the obligation to buy electricity generated from renewable sources, and the system of Green Certificates, remains the basis of the support scheme, the Bill introduces differentiation in the level of incentives depending on the technology and capacity of the RES installations. The Bill also proposes a fixed 15-year support period for all renewable sources, as well as other important changes to the existing regulations applicable to renewable sources.</p> <p>The Bill on RES is now to be processed (and probably further amended) by the Parliament before being enacted. The new law is expected to come into force during the first quarter of 2013 at the earliest.</p>



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# Romania

<b>National Renewables Targets?</b>	2020: 24%
<b>Main Renewable Sources</b>	Hydro energy, onshore wind, photovoltaic, biomass
<b>Green Certificates?</b>	<p>Yes. Suppliers of electricity to consumers are obliged to acquire a minimum number of Green Certificates based on the quantity of electricity they supply each year to consumers. The regulatory authority establishes the quota of Green Certificates to be acquired by electricity suppliers. In 2011, this was set to 0.03746 Green Certificates/MWh. Suppliers that do not meet this mandatory quota are bound to pay a fine of EUR 110 for each Green Certificate that is not delivered, and such value is updated every year. In 2012, the quota is estimated at 0.126 Green Certificates/MWh.</p> <p>For 2012, the value of a Green Certificate is set between EUR 28 and EUR 57. Such values are indexed every year. Producers of electricity from renewable sources receive a different number of Green Certificates per MWh of electricity generated, depending on the type of renewable source. Thus, the number of Green Certificates per MWh ranges between 0.5 for certain types of hydro power plants and up to 6 in case of solar energy.</p> <p>Producers and suppliers of electricity from renewable sources can trade Green Certificates on an internal centralised market, which is organised and operated by OPCOM or directly through bilateral contracts.</p> <p>The support scheme can be cumulated with other forms of investment aid (e.g., EU funds), but in such a case the number of Green Certificates will be reduced to a level which will guarantee only certain profitability rates (i.e. between approximately 9% and 11%, depending on the type of technology). In addition, for renewable power plants having an installed capacity exceeding 125 MW, the aid will have to be notified individually to the European Commission, in order to be accredited as a renewable project and hence receive Green Certificates.</p> <p>In addition, according to the legislation in force, following an overcompensation analysis performed by the regulatory authority the promotion system may be revised, starting in 2014 for photovoltaic projects and in 2015 for all other types of renewable projects. The outcome of such revision would be a reduction of the number of Green Certificates granted to projects commissioned after the date of such revision.</p>
<b>Feed-In Tariff?</b>	Only for projects having an installed power of maximum 1 MW. However, the secondary legislation regarding the feed-in tariff has not yet been implemented and consequently this is not yet applicable.
<b>Other Incentives</b>	The default suppliers are obliged to purchase electricity produced from renewable sources in plants with an installed capacity of maximum 1 MW at regulated prices, but as mentioned above, this is not yet applicable, due to the lack of the secondary legislation. Producers of electricity from renewable sources have priority access to the transport/distribution network, subject to the safety of the National Energy System.
<b>Additional Comments</b>	Only limited wind energy capacity can currently be connected to the grid due to imbalance risks and poor grid infrastructure. The permitting procedure overseen by local authorities can be lengthy and bureaucratic. According to the newly enacted energy law, PPAS can only be concluded on the centralised electricity market.



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# Slovakia

<b>2005 Baseline</b>	6.7%
<b>2020 Target</b>	14%
<b>Main Renewable Sources</b>	Photovoltaic, hydro, wind, geothermal, biomass, biogas and biomethane, hydrothermal, aerothermal.
<b>Green certificates?</b>	No, although a 'green bonus' is available (discussed below).
<b>Feed-In Tariff?</b>	<p>A fixed feed-in tariff ("FIT") payable by electricity distribution system operators ("DSO") is available to renewable electricity generators. Once a generator obtains the FIT applicable in the year of commissioning of its plant, it is entitled to receive such FIT for 15 years from the date the facility was put into operation. The amount of the FIT depends on the source of renewable energy used.</p> <p>Ever since the end of 2010, when the following support has been provided to PV plant operators, (i) EUR 430,72<sup>1</sup>/MWh up to 100 kW PV; (ii) EUR 425,12/MWh above 100 kW PV and up to 10 MWh, FIT has been continuously decreased.</p> <p>As of 1 January 2011, the support for PV plants was reduced to (i) EUR 387,65/MWh up to 100 kW PV; (ii) EUR 382,61/MWh above 100 kW PV. As of 1 July 2011, the support further reduced to EUR 259,17/MWh and became available only to PV plants with an output of less than 100 kW and only if such plants were located on the roofs or facades of buildings. For the period between 1 January 2012 and 30 June 2012 FIT amounted to EUR 194,54/MWh. Current FIT (as of 1 July 2012) amounts to EUR 119,11/MWh.</p> <p>No special tax has been introduced and it is not expected that one will be introduced.</p> <p>The FIT available for plants commissioned before 1 February 2011 can be reduced by a maximum of 10% in 2012 as compared to the FIT available to them in 2011. As of 1 February 2011, this rule no longer applies to new wind and PV plants, i.e. the FIT may be reduced for subsequent years without limitation.</p>
<b>Other Incentives</b>	<p>"Green bonus" – although the green bonus is not formally established under Slovak law, a generator of renewable electricity can opt for a 'green bonus' (instead of, or along with, the FIT) if it consumes all or the majority of the electricity produced. The green bonus is slightly lower than the FIT.</p> <p>Priority to connect and supply - generators of electricity from renewable sources have a priority right to connect their facilities to the electricity distribution or transmission grid, and a priority right to distribute and supply electricity to the grid. In practice, this means that if a generator opts for the FIT only, it will be able to sell all of the electricity it generates to the DSO for the price set by the relevant FIT.</p> <p>Indexation - the FIT is indexed by a formula reflecting nuclear inflation, however, use of the indexation is at the discretion of the regulatory body.</p>
<b>Additional Comments</b>	<p>The current FIT scheme has been particularly successful in relation to PV plants. The relatively high FIT, together with falling technology prices, caused a boom in the PV sector in 2010. As a result, the total installed capacity of PV plants in the Slovak Republic increased from 31 MW in 1 January 2010 to approx. 492 MW in November 2011.</p> <p>This boom aroused concerns about (i) electricity prices for end customers, and (ii) the stability and safety of the entire electricity grid. As a result, the above-mentioned reduction of PV support was introduced.</p> <p>On the other hand, there are no comparable significant restrictions relating to other renewable energy sources.</p>



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# Spain

<b>National Renewables Targets?</b>	The target for 2020 is 20%.
<b>Main Renewable Sources</b>	Wind, solar photovoltaic, hydroelectric, thermosolar, biomass.
<b>Green Certificates?</b>	No.
<b>Feed-In Tariff?</b>	<p>Spanish legislation creates two regimes applicable to the production of renewable energy/electricity: the ordinary regime, which is applicable to conventional power plants; and the special regime, which is applicable to power plants using renewable energy sources.</p> <p>Feed-in tariffs, regulated premiums and applicable supplements are paid to installations operating under the special regime by the Spanish National Energy Commission. Special regime electricity producers may choose the type of remuneration they wish to receive based on either the sale of the energy produced at the rate of a feed-in tariff or the sale of the energy produced at the pool price supplemented by a premium.</p> <p>All renewable technologies are equally eligible for assistance but the amount of financial assistance available varies because the feed-in tariff and the applicable premium are specific to each type of technology used. Traditionally the highest feed-in tariff has been that of solar photovoltaic installations, although this scenario is changing due to the latest modifications approved by the government in order to reduce the Spanish tariff deficit.</p>
<b>Other Incentives</b>	Supplements are available for installations meeting, for example, efficiency requirements
<b>Additional Comments</b>	<p>In November and December 2010 the Spanish Government approved regulations on the economic regime applicable to renewable energy, mainly affecting solar photovoltaic, solar thermal and wind power installations. The principal modifications applicable to the above technologies can be summarised as follows:</p> <ul style="list-style-type: none"> <li>■ Photovoltaic installations may only receive a feed-in tariff during the first 30 years of operation.</li> <li>■ Thermoelectric technology plants to which the Royal Decree 661/2007 applies must sell the net energy produced, in accordance with option a) of Article 24.1 of the Royal Decree, during the first 12 months after the date on which a definitive start-up certificate is issued. Plants which obtained their certificate prior to 9 December 2010 must sell their energy during the 12 months following 1 January 2011.</li> <li>■ For wind power plants the reference premium for those plants subject to Royal Decree 661/2007 will be reduced by 35% between 1 January 2011 and 31 December 2012. This reduction does not apply to plants subject to the First Transitional Provision of the Royal Decree. After 1 January 2013, the values of the premiums established in the Royal Decree 661/2007 will apply.</li> <li>■ With regards to all three technologies, a limit has been placed on the number of equivalent hours (the ratio between the net annual production in kWh and the nominal capacity of the plant in kW) of operation which are entitled to tariff or premiums.</li> </ul> <p>In January 2012, the Government passed a new regulation which temporarily suspends the remuneration pre-assignment procedure and all economic incentives for new electricity generation installations which use co-generation, renewable energy sources and waste. It is envisaged that this regulation will remain in force until a solution to the tariff deficit has been reached.</p>



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# The United Kingdom

<b>National Renewables Targets?</b>	The target for 2020 is 15%
<b>Main Renewable Sources</b>	Offshore wind, onshore wind, biomass, hydro, landfill gas, solar
<b>Green Certificates?</b>	<p>Yes – the Renewables Obligation was introduced in 2002. Electricity suppliers are required to purchase Renewables Obligation Certificates (ROCs) from generators of qualifying renewable electricity and present them to the regulator or, if they have insufficient ROCs to present, pay money into a “buyout” fund. The buyout price is currently £40.71 per ROC for the period 1 April 2012 to 31 March 2013.</p> <p>ROCs are currently awarded to newly accredited projects on a banded basis as follows (although these awards will reduce in future):</p> <ul style="list-style-type: none"> <li>■ Offshore wind: 2 ROCs/MWh (for new turbines after 1 April 2010)</li> <li>■ Onshore wind: 1 ROC/MWh</li> <li>■ Dedicated biomass: 1.5 ROCs/MWh</li> <li>■ Dedicated biomass with combined heat and power: 2 ROCs/MWh</li> <li>■ Hydro: 1 ROC/MWh</li> <li>■ Landfill gas: 0.25 ROC/MWh</li> <li>■ Solar photovoltaic: 2 ROCs/MWh</li> </ul> <p>Money paid into the buyout fund is distributed on a pro-rata basis to suppliers who have presented ROCs to the regulator.</p> <p>The current obligation for the period ending on 31 March 2013 is 0.158 ROCs per MWh. This means that suppliers must purchase 0.158 ROCs per MWh of electricity supplied (or make equivalent payments to the buyout fund).</p>
<b>Feed-In Tariff?</b>	<p>Yes – the feed-in tariff was introduced in April 2010. The feed-in tariff applies to small-scale low-carbon electricity generation (5MW and below). The feed-in tariff guarantees relevant generators a payment from an electricity supplier for the electricity generated and used, and a payment for the surplus electricity exported to the grid.</p> <p>The export tariff is currently 4.50p/kWh, while the generation tariff depends on the size of the generating station and the technology deployed. Rates from 1 December 2012 (or from 1 November 2012 for PV installations) have been set at:</p> <ul style="list-style-type: none"> <li>■ Anaerobic digestion: 8.96p/kWh to 14.70p/kWh</li> <li>■ Hydro: 4.48p/kWh to 21.90p/kWh</li> <li>■ Solar photovoltaic: 7.10p/kWh to 21p/kWh</li> <li>■ Wind: 4.48p/kWh to 37.90p/kWh</li> </ul>
<b>Other Incentives</b>	<p>The Climate Change Levy (currently £5.09/MWh), a tax on the non-domestic supply of certain energy products, is payable by industry, commerce, agriculture and the public sector. However, every MWh of renewably generated electricity consumed is awarded one Renewable Levy Exemption Certificate which makes that energy exempt from the Climate Change Levy.</p> <p>In November 2011, the Renewable Heat Incentive (RHI) was launched. It provides financial support to non-domestic renewable heat generators. The purpose of the RHI is to encourage the installation of renewable heat sources by ensuring commercial viability compared with fossil fuel alternatives. The supported technologies include solar, biomass and water/ground source heat pumps with more technologies proposed to be added in 2013.</p>
<b>Comments</b>	<p>In 2012, the Government published proposed changes to the ROC banding levels between 2013-2017. While the Government has a policy of grandfathering support, meaning that generators will receive ROCs at the level at which they were initially granted irrespective of future changes in the law, the periodic review of ROC bands is designed to ensure that newer technologies receive more support while more established technologies receive less support.</p> <p>A carbon floor price will be introduced on 1 April 2013. It will be achieved through the Climate Change Levy (and other fuel tax regimes). Suppliers of fossil fuels used in electricity generation will be liable under the Climate Change Levy from that date.</p> <p>As part of the Government’s program of Electricity Market Reform, the Renewables Obligation will be replaced by a “Feed-in Tariff with Contracts for Difference” (FIT CfD). Although the detail of the proposal has not been finalised, the Government’s intention is that FIT CfDs will replace the Renewables Obligation from 31 March 2017 for new projects. Existing projects will have the option between 31 March 2014 and 31 March 2017 to remain with the Renewables Obligation or to proceed under FIT CfDs.</p>

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