



RENEWABLES: CLIMATE FOR INVESTMENT 2020

INTRODUCTION

Renewable energy is at the centre of the energy transition driven by the need to decarbonize and reduce emissions. The global transformation away from fossil fuels and towards electrification will have ramifications across all industries and countries.

A global effort is required

The renewable energy sector requires new ways of thinking about energy generation, new ways of working and new approaches to resource consumption.

At BDO, we work with a wide range of companies across the technology classes including onshore and offshore wind, solar, waste to energy, anaerobic digestion, biomass, emerging clean technology and energy efficiency, and work throughout the world.

Our breadth of experience has led us to providing pragmatic advice and solutions for our clients that work in the real world.

We support these companies at every stage of the development cycle and are well placed to service and help our clients anticipate the evolving sector globally.

As climate change becomes an increasingly bigger issue, governments and industry bodies are responding with new policies and incentives. These however are constantly changing and complex. This short report is aimed to provide a high-level understanding of what the climate for investment is across 10 key countries for 2020. Those include Argentina, Australia, Brazil, Canada, China, France, Germany, India, UK and the US.

We hope you find it useful. Feel free to reach out to any of our Global Renewable contacts if you have any questions.



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Argentina has abundant natural resources for wind and solar energy generation. Considering technological improvements and financing, the country has huge potential for developing the renewable sector and achieving its sustainability goals.

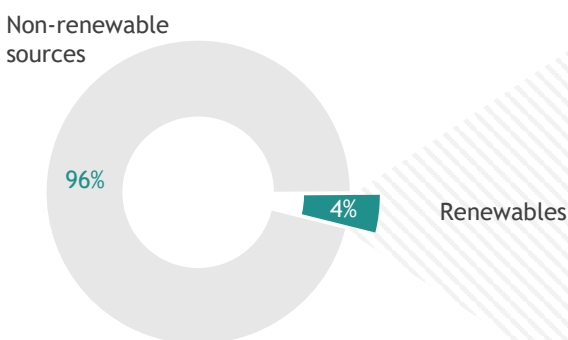
Renewable energy targets

Argentina has established Renewable Power Targets by the enactment of the National Promotion Regime for the use of Renewable Sources for Electric Power. The share of renewables in electricity generation must reach 12% by 2019, then 16% by 2021, 18% by 2023 and 20% by 2025. Renewable energy supply experienced significant growth during recent years. However, in 2018, the share of renewable power in total electricity was only 4%, thus Argentina is still far from reaching its goals.

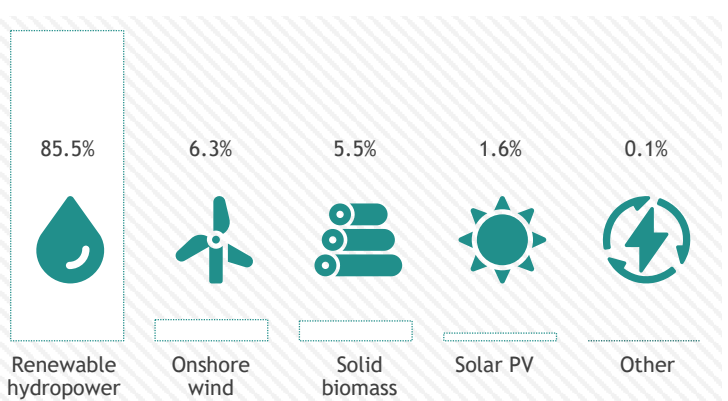
Regulatory environment

The government of Argentina aims to achieve the renewable energy goals through a variety of instruments and regulations. In 2016, one of the most important government programs, RenovAR, was implemented. The program covers public auctions for the development of renewable sources. Three rounds under the program have already been conducted and attracted high interest from investors. 147 projects were awarded to 21 provinces with the aim of adding 4,466.5 MW of new capacity from renewables. The contracts take the form of long-term power purchase agreements (PPAs) and are priced in US dollars and have a 20-year duration. Potential investors are thereby reassured that their sales are not exposed to potential devaluations of the Peso.

Electricity generated by renewables in Argentina, 2018



Installed capacity of renewable electricity generation technologies, 2018



Source: REN 21 – Global Status Report 2019; International Renewable Energy Agency



Other incentives for renewables development

Renewable energy targets are supported by fiscal incentives such as reductions in VAT, income and import taxes as well as a guarantee and promotion fund.

In addition to the National Regime aimed at the promotion of renewable energy for electric power generation, the Regime for the Promotion of the Distributed Generation of Renewable Energy, a regulatory decree for which was issued in 2019, and the Provincial Renewables Investment Attraction Index will also have a favorable impact on the investment environment.

Argentina was one of the countries to implement fiscal and financial incentives to promote biofuel production, distribution and consumption. In 2016, tax exemptions were settled for biodiesel production. Furthermore, biodiesel and ethanol blend mandates were implemented as renewable transport mandates.

Challenges and opportunities

Economic instability, high interest and inflation rates do not encourage investors to finance the energy sector in Argentina. At the same time, corruption schemes discovered in 2018 made the government discontinue the investment program for public work development under the public-private partnership (PPP) model in December 2018. Therefore, the situation has impacted the projects for extension of the national power grid that are highly important for further expansion of the energy generation. The PPP investment program has already been re-launched to support extremely important large-scale projects.

On one hand, the environment in the country may still be considered as risky, however, on the other hand, Argentina has very favourable geographic and climatic conditions for the development of solar and wind energy projects as well as biogas, biomass, biofuel and small water projects.

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AUSTRALIA



Numerous advantages such as geographical position and climate conditions, economical and political environment make Australia an attractive place to invest in.

Renewable energy targets

Australia has set national as well as sub-national energy targets. Renewable Energy Target (RET) as a Federal Government policy has been established and designed to ensure that at least 33,000 gigawatt-hours (GWh) – over 23% of Australia's electricity – are generated from renewable sources by 2020.

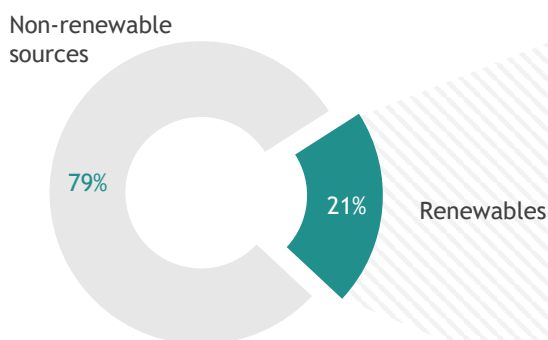
In 2019, a year ahead of the plan, Australia achieved its 2020 target for generating electricity from large-scale renewable energy.

Australia's sub-national energy targets are rather ambitious:

- ▶ Australian Capital Territory – 100% by 2025
- ▶ Victoria – 40% by 2025
- ▶ Northern Territory – 50% by 2030
- ▶ Queensland – 50% by 2030

Financial incentives for individuals and small businesses as well as for high-energy users are being implemented through Small-scale Renewable Energy Scheme and Large-scale RET respectively. Large-scale RET significantly encourages investments in renewable power stations.

Electricity generated by renewables in Australia, 2018



Regulatory environment

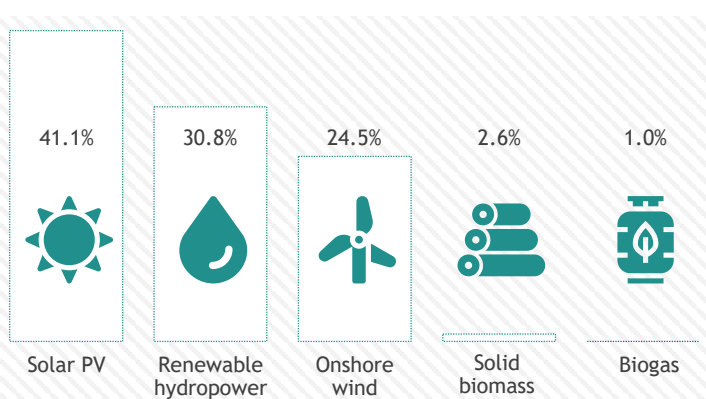
Australia's market for tradeable Renewable Energy Certificates have been growing fast. Clean Energy Regulator controls the implementation of the Large-scale RET and the Small-scale Renewable Energy Scheme to encourage additional generation of electricity from renewable energy sources by providing a mechanism through which small-scale systems and renewable energy power stations can create and sell certificates.

There are no Feed-in tariffs stated on the national level and at the same time tariffs at sub-national level were reduced significantly.

Some states such as New South Wales and Queensland have established their biofuel blend mandates. Heating and cooling mandates have been adopted at the national level.

Several specific policy measures have been already implemented at the state level. These include reverse auction programs to support renewable energy projects (Australian Capital Territory), Queensland and Victoria), state government Power Purchase Agreements (Northern Territory) and others.

Installed capacity of renewable electricity generation technologies, 2018



Source: REN 21 – Global Status Report 2019; Australian government website



AUSTRALIA



Other incentives for renewables development

Australia's state government measures provide significantly impact renewable energy sector and include public investments, support for grid-scale battery storage, loans and local grants.

The Victorian State Government is one of the most active states in development of the renewable energy sector and attaches the highest priority to it. For example, it founded New Energy Jobs Fund, which aims to drive investment into renewable energy projects and technologies. In 2018, in partnership with Australia's Renewable Energy Agency the state jointly funded battery storage at a transmission terminal to help stabilise the grid by drawing power at peak times.

There are several incentives provided to individuals and small businesses. For household systems the state of South Australia launched a subsidy scheme for the installation of home battery systems, while the Australian Capital Territory began a household energy storage rebate program.

Challenges and opportunities

Investors may be concerned by the transition to a renewables-based grid and changes of feed-in tariffs. Difficulties of obtaining permits are likely to cause troubles to offshore investors.

Lack of grid capacity is one of the biggest obstacles for implementing new renewable energy schemes. Therefore, development of renewable energy hubs and transmission infrastructure within regions are critical network developments for the Australian market and for further renewable investment projects. The situation is expected to be improved as state governments willingly cooperate with transmission operators.

Reaching the renewable energy targets may lead to the termination of subsidies from government to wind, solar and hydro power projects. Whilst the Australian government policies are foreseen to remain favorable to investors, they still need to be more transparent.

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The biggest source of energy generation in Brazil is hydropower, which accounts for about 70% total energy. Considering that different renewable energy sources and appropriate climate conditions are available in the country, they provide significant potential to increase the share of non-hydro renewables in the energy mix of Brazil.

Renewable energy targets

Brazil's government has set challenging renewable power targets for share of electricity generation – 23% by 2030 (excluding all hydropower) under the Paris Agreement. Also, it committed to expand its share of non-hydropower renewables, especially bio-energy, solar and wind, in the total energy matrix to 28-33%. The following installed capacity targets were adopted for each of the renewable sources, to be reached by 2021:

- ▶ Bio-energy – 13.7 GW
- ▶ Hydropower (small-scale) – 7.8 GW
- ▶ Wind power – 19.5 GW.

In 2018, renewables produced about 18.5% of the total electricity, therefore there is a huge potential for further renewable projects implementation.

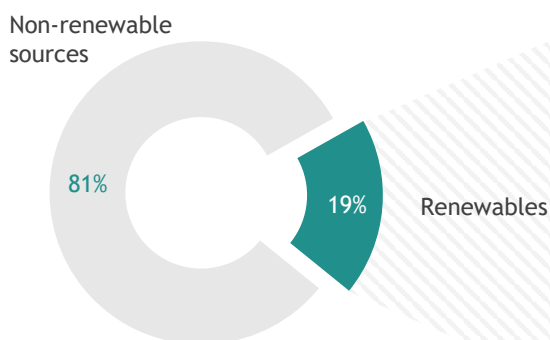
Regulatory environment

The regulatory environment for renewables in the power sector in Brazil operates through two types of markets: free market (ACL) and a regulated market (ACR). On the ACL market companies and traders can freely negotiate the price for sale of energy to other market players. While on the ACR, commercial relationships of companies and their consumers are regulated by National Electric Energy Agency. Although electric power auctions on the free market have stimulated the growth of the wind power sector, there are still concerns about the regulations of both wind power and solar power sectors.

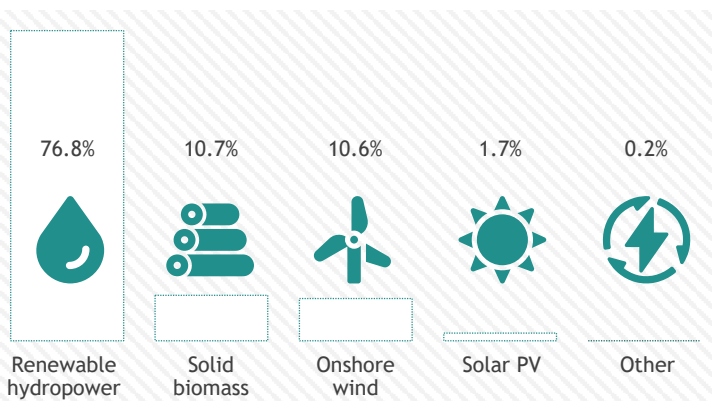
At the same time, there are promising projections about investments in wind and solar power sectors within the next few years.

The bio-energy sector also has positive prospects. For example, the market for biofuels has already been created with the adoption of a biofuel blend mandate. Several programs and laws, such as National Ethanol Program, National Program for the Production and Use of Biodiesel, and others were passed to stimulate the market.

Electricity generated by renewables in Brazil, 2018



Installed capacity of renewable electricity generation technologies, 2018





Other incentives for renewables development

Incentives created by the Federal government have created appropriate conditions for the development of projects in renewables. The Program to Foster Electric Power Alternative Sources (PROINFA) was created to diversify energy mix, increase participation of renewables and reduce emissions of greenhouse gases.

New Energy Auctions and Alternative Energy Auctions also stimulate investments in construction of new renewable power plants.

Fiscal incentives also play an important role in renewables development. They include a general regime for infrastructure development and exemptions from import tax and ICMS (state VAT). For the wind and solar energy market, ICMS Agreement valid till 2021 exempts state VAT for certain equipment for wind and solar energy projects.

Financial programs, which support the development and implementation of wind and solar energy projects are curated by the Brazilian National Bank for Economic and Social Development from time to time. Companies headquartered in Brazil and controlled by local or foreign companies can be financed directly or through loans to implement wind and solar power projects.

Challenges and opportunities

Despite the advantageous geographical and climatic conditions for offshore wind power generation, there are still many barriers for developing wind power plants. These include nascent specialised technical support, difficulties in the transportation of wind turbine components, high project cost, and possible interferences with oil and gas exploration and production, or sea routes.

Poorly developed infrastructure is creating obstacles for the progress of renewable power generation onshore, attributed to long distances between energy consumers and energy producers leading to staggering transmission and integration costs.

Also Brazil's tax system is one of the world's most complex due to federal state and municipal taxes which tend to be changed rather often.

With that said, one of the distinctive features of the energy sector in Brazil is that it mainly relies on hydropower, but Brazil is preparing to double its non-hydro renewable energy capacity, which will see an explosion of solar, and less so onshore wind to 2030.

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The Government of Canada implements programs and provides incentives to support goals of greenhouse gas emissions reduction and electricity generation increase from sources that do not produce greenhouse gas pollution. At the end of 2018, Canada announced regulations to phase-out traditional coal-fired electricity by 2030.

Renewable energy targets

According to Pan-Canadian Framework 90% of the electricity in the country is to be generated by non-emitting sources by 2030.

Few cities, such as Vancouver and Oxford County promote renewable energy deployment and have already committed to using only renewable energy after 2050.

In 2017, the share of energy supply from renewable sources was more than 17%. Hydro followed by solid biomass and wind are the main renewable energy sources.

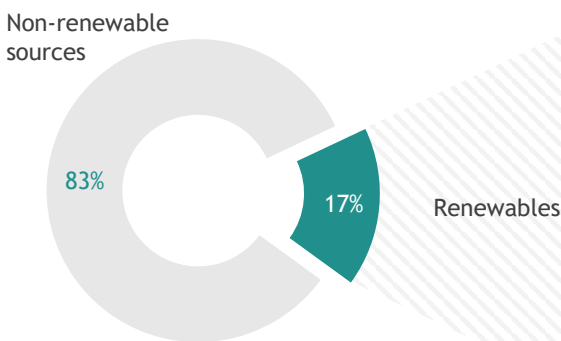
Regulatory environment

In Canada, there are three levels of government, which have authority to legislate and settle policies on renewable energy – federal, provincial and municipal. Therefore, the regulatory environment for renewables depends on the location investors choose to invest in.

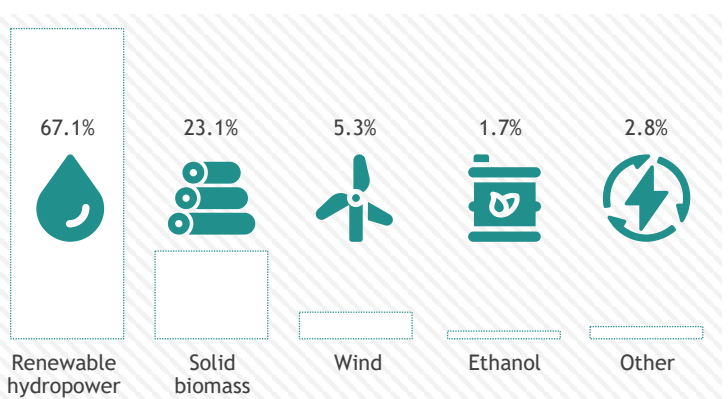
Canada was one of the first countries to support the development of renewable energy market. In 1996, the country introduced the Canadian renewable and conservation expenses (CRCE) regime to make renewable energy projects attractive for investors and competitive to oil and gas industry projects. CRCE is fully deductible in any year, can be carried-forward indefinitely or can be transferred to investors through the flow-through share rules.

Canadian businesses which develop clean energy projects have an opportunity to receive the support of Scientific Research & Experimental Development (SR&ED) Program, which is a federal tax incentive program administered by the Canada Revenue Agency.

Electricity generated by renewables in Canada, 2018



Installed capacity of renewable electricity generation technologies, 2018



Source: Canada climate action network; International Renewable Energy Agency



Other incentives for renewables development

Since 2005, Canada is a member of the executive committee of the Renewable Energy Technology Deployment (RETD). International Energy Agency of RETD undertakes projects and participates in international events aimed at accelerating the deployment of renewable energy technologies. Canada as a member government can pool resources and foster research, development and deployment of particular technologies.

In terms of renewables development in the transport sector, Canada is one of five countries to establish fuel economy standards not only for light-duty vehicles but also for heavy-duty vehicles. Several Canadian provinces have also established biodiesel and ethanol blend mandates.

The Federal Government of Canada offers several funding opportunities, grants and incentives to develop the renewables sector. Among current projects are Green Infrastructure Phase II, Clean Growth in Natural Resource Sectors Program, Energy Innovation Program and others.

One of the most important legacy programs is ecoENERGY, which was implemented to encourage generation of electricity from renewable energy sources such as wind, low-impact hydro, biomass, solar PV and geothermal energy. The program expires in 2021.

Challenges and opportunities

One of the main challenges which could reduce the willingness to invest in renewable energy projects is the lack of infrastructure necessary to support the technologies.

At the same time, the regulatory, political, and economical environment in Canada is considered as supportive for investments. The government is working on regulations and measures to move away from coal towards clean sources of electricity.

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China claims to be the most active player in the global renewable sector. Technology development, declining costs of renewables equipment and installations have stimulated the country's energy sector transformation. China's growing energy demand is increasingly met by renewables, natural gas and electricity while it tries to phase out the coal.

Renewable energy targets

According to China's Renewable Portfolio Standard, the country has adopted targets for the share of primary energy consumption:

- ▶ 15% by 2020
- ▶ 20% by 2030

In 2018, the share of renewables in primary energy consumption was already 14.3% and the country is likely to achieve the target for 2020 ahead of schedule.

Regarding the share of renewables in electricity generation, the target of 35% was established to be achieved by 2030. Also, renewable power targets have been determined for specific amounts of installed capacity of hydropower, biomass, solar and wind power.

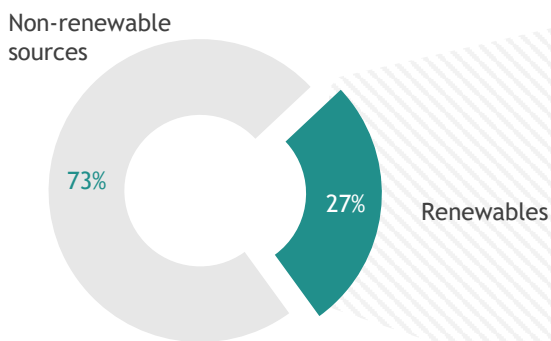
Regulatory environment

Chinese government's energy policy places the emphasis on electricity, natural gas and clean, high-efficiency and digital technologies. Adopted policies facilitate achievement of China's targets related to the Paris Agreement, promotion and application of new energy vehicles, development of smart photovoltaic industry etc.

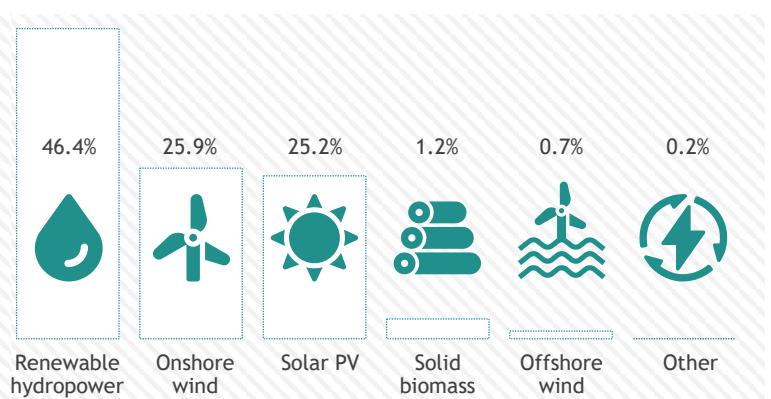
For example, in 2019, a mandatory renewable energy consumption mechanism was launched by the National Development and Reform Commission (NDRC), with quotas for each province, requiring power retailers and end-users to increase renewable power consumption.

Policy support is also provided to increase the share of renewables in transport. In China, the use of ethanol in petrol is being expanded by initiating blending mandates in every province by 2020. Advanced biofuel technologies and large-scale production of cellulosic ethanol are expected to play an important role by 2025.

Electricity generated by renewables in China, 2018



Installed capacity of renewable electricity generation technologies, 2018





Other incentives for renewables development

Deployment of renewables is aimed to fulfil cities' efforts to reduce CO₂ emissions and improve air quality. For example, Beijing has been replacing local coal-fired power generation with renewable energy since 2013 and announced a target to achieve an 8% renewable share in its total final energy consumption by 2020. Many cities in China have followed such an approach to reduce harmful emissions.

As renewables, particularly wind and solar, have significantly progressed, it was decided to halt financial support for solar projects and for wind in the nearest future. China National Energy Administration (NEA) has replaced feed-in tariffs for wind with auctions and tenders and reduced utility-scale solar PV feed-in-tariffs. At the same time, NEA and NDRC encourage the deployment of subsidy-free wind and solar projects. These projects are stated to receive special attention regarding the removal of barriers and there are no capacity limits for these projects.

During the recent years, the Chinese government provided priority access to the power grid for renewables and made a commitment to guarantee the purchase of the renewable energy generated in regions with high curtailment rates. In addition, the government supports renewables development with different tax incentives such as exemption from or reduction of corporate income tax.

Challenges and opportunities

The lack of infrastructure development led to grid systems overstretched as wind and solar PV deployment increased significantly. Thus, curtailment of the surplus of wind and solar output has reached high levels depending on the location and its connectivity to the grid.


In June 2019, the World Bank's Board of Executive Directors approved a 300 Mn USD loan for the China Renewable Energy and Battery Storage Promotion Project to increase the integration and utilisation of renewable energy by deploying battery storage systems. This project might help address technical constraints in the transmission networks and gaps in the regulatory framework for electricity trade between provinces.

Another significant advantage for investors is that the cost of installations for solar and wind farms is falling and they appear to be much more attractive for financing.

As the direct usage of renewables in end-user sectors is increased via bioenergy in industry, solar thermal for heating and biofuels for transport, renewable energy sector has favorable perspectives.

By 2040, electricity is projected to become the leading source of final energy consumption in China, overtaking coal in the late 2020s, and oil shortly thereafter.

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France started an ambitious energy transition under the Energy and Climate Change Law 2019. National low-carbon strategy, carbon budgets, a carbon price trajectory and a planning framework for energy investment were established under new law.

Renewable energy targets

The national renewable target for share of final energy is 23% by 2020 – slightly higher than that adopted for the European Union countries (20%) – and 32% by 2030. The biggest share of capacity is to be covered by solar PV and offshore /onshore wind power. In 2018, the share of renewables in the final energy consumption was only about 17%.

Renewables utilisation for heating and cooling was set to be at 38% by 2030. The level of 21.4% was reached in 2017.

The share of renewable transport in total energy supply was established to be 15% by 2020, which was more ambitious than the target adopted for the whole European Union.

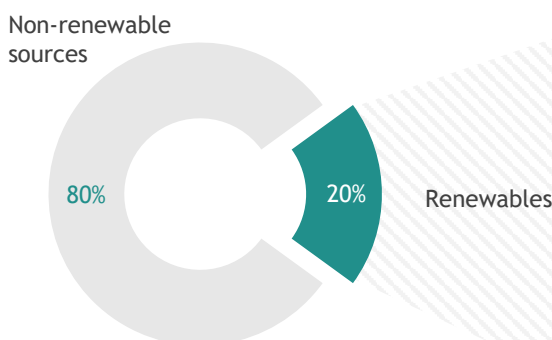
Regulatory environment

Ambitious energy and climate goals are to be achieved by the Multiannual Energy Program, which is not a piece of legislation but the announced strategy. Under the program, France plans to reduce the share of nuclear energy supply from 75% to 50% by 2035. The Government has already committed to closing 14 nuclear reactors by 2035 and four active coal power plants by 2022. Therefore, there will be high demand for investments in renewable energy. As prescribed by the program, the development of a new offshore wind energy sector, the tripling of onshore wind energy and a fivefold increase in solar PV energy are to be completed by 2030 .

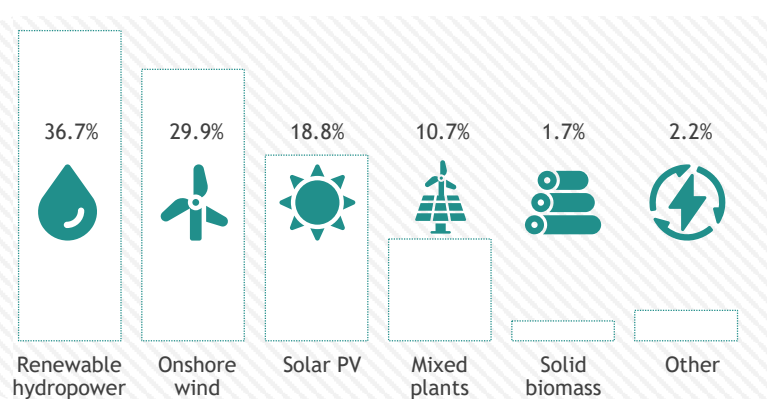
Competitive allocation procedures such as tenders and competitive dialogs are widely used by the Minister for Energy and the Commission for Energy Regulation.

Two support mechanisms are provided for renewable energy producers: feed-in tariff and feed-in premium. Since 2015, the market premium scheme became the main support mechanism.

Electricity generated by renewables in France, 2018



Installed capacity of renewable electricity generation technologies, 2018





Other incentives for renewables development

Specific investment projects and calls for projects are conducted by French Environment and Energy Management Agency. The most popular sectors of renewables in terms of project allocations were floating wind and tidal turbines, biomass and biogas energy.

Several energy subsidies, tax regulation mechanisms, as well as a zero percent-interest loan can be granted for generation of heat through renewable energy plants. Support of the heat production through renewable energy plants is ensured via Heat Fund (Fonds Chaleur), which focuses on national calls for tenders for large biomass plants, thermal solar energy and geothermal plants.

To achieve renewable transport targets biofuel blend obligations were adopted in the country. According to them 7.7% biodiesel and 7.5% ethanol blend mandates are valid.

Challenges and opportunities

Although there are rather favorable and stable economic conditions, potential investors still may have concerns about profitability of renewables financing.




Nuclear energy is the second least expensive type of energy after hydropower and takes the biggest share in the energy mix of the country. Due to the lack of incentives for end-consumers to procure renewable energy, it may be difficult for renewables producers to compete with nuclear energy, even though the strategy of nuclear energy supply reduction was announced.

Complicated administrative procedures may lead to long administrative processes, which may cause additional concerns for investors.

The grid also needs to be further developed to successfully accommodate renewable energy sources.

Overall, the country's environment is more than supportive for investments in renewables and further incentives could be expected due to the ambitious renewable power targets.

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Germany was one of the first countries to adopt a transformation strategy aimed at developing a low-carbon energy system. The country plans to phase out nuclear power by the end of 2022 and coal-fired power stations by 2038. These ambitious changes will require securing the power grid and a high level of energy supply from renewables.

Renewable energy targets

Germany has set an ambitious target for the share of renewables in electricity generation – 65% by 2030. In 2019, it has already reached 46% and surpassed the share of 40% from fossil fuels for the first time. Specific amounts of installed capacity were adopted for several major technologies such as solar PV, wind onshore and offshore power followed by biomass.

Renewable energy targets for share of final energy are 18% by 2020 and 30% by 2030, which is slightly lower than the shares adopted under the EU Directive (20% and 32% respectively).

The federal government has also set other renewable targets such as renewable transport target and target for the share of renewables in heating. They were determined to reach 10% and 14% respectively by 2020.

Regulatory environment

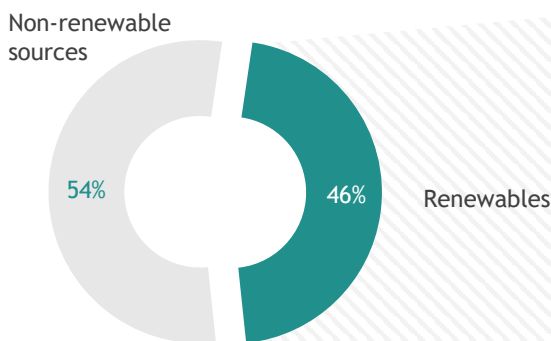
A new stage of energy transition was determined in the 2017 revision of the Renewable Energy Sources Act (RES Act). Funding rates for renewable electricity fixed by government were replaced by a market-based auction scheme to help synchronize grid expansion and renewables growth.

Only large plants, which sell their electricity on the electricity market can receive the market premium for each kilowatt-hour they feed in. The premium is compensated as the difference between the value to be applied (previously called the ‘feed-in tariff’) and the average trading price for electricity.

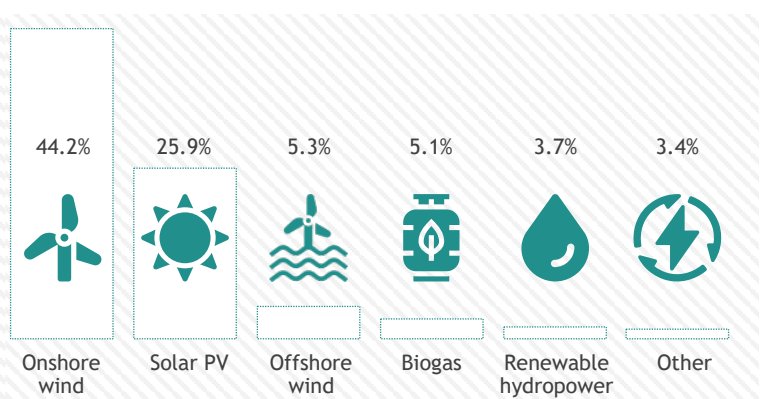
Grid operators are obliged to connect renewable energy plants to the grid without undue delay and provide the priority to electricity from renewable sources in the processes of purchasing and distribution.

Additionally, the cross-border scheme of auctions was adopted due to RES Act revision. According to it, 5% of new renewables capacity to be installed each year will be opened up to installations in other European Member States.

Electricity generated by renewables in Germany, 2018



Installed capacity of renewable electricity generation technologies, 2018





Other incentives for renewables development

Regarding fiscal incentives for foreign investors, there are hardly any incentive programs related to taxes as these are typically structured as state aid.

Low interest loans for investments in new plants are provided by different programs offered by KfW.

Market Incentive Program was implemented in Germany to stimulate the deployment of renewable technologies for heating and cooling sectors. Two types of support are provided by the program depending on the scale of project. For large-scale installations, heat networks and storage repayment grants are offered in the form of low-interest loans under the 'premium' variant of KfW Renewable Energies Program. Investments of this kind are mostly made in solutions for commercial or local government use.

In the transport sector, renewable energy is promoted through minimum quotas for biofuels and through research programs for alternative propulsion technologies and fuels.

Challenges and opportunities

The wind power sector may be the most vulnerable in Germany. Missing land for wind energy installations as well as repeated legal action against wind energy projects have caused a decline in new onshore wind farms. Receiving project's permissions have become one of the main problems because of complex procedures and slow application processing. In many cases by the time the pending application is reviewed, and the installation of new wind turbines is approved, the registered technology is already outdated.

Bid levels for new solar PV and PV power reached the lowest level during recent years. The enforcement to cut costs and tough competition due to the current tendering scheme may demotivate potential investors.

One of the biggest challenges for renewable targets fulfillment by Germany is the transmission grid expansion. In 2019, less than a half of planned transmission lines have been completed, which creates significant risks to ensuring sufficient generation capacity of the network.

Although the German energy market poses various barriers for investing in renewables, the economic environment of the country is stable and advantageous for investors.

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Increasing urbanisation and the development of manufacturing sector have led to a sharp rise in the demand for energy. Although coal remains the largest source of energy supply, the share of solar and wind power in electricity generation have doubled between 2016-2018. These and other sources of renewable energy are likely to continue expanding its share in the country's energy mix.

Renewable energy targets

Several policies regarding renewable power targets were established in India on national and sub-national levels.

The national renewable power target for the share of electricity generation was set to be 40% by 2030. At the end of 2017, Indian power stations generated 7.8% from renewables.

Special renewable portfolio standards were established for solar water heating, 14 GWth by 2022. The target was reached just partially by the end of 2017.

New schemes like floating solar, manufacturing-linked solar and offshore wind projects, it is forecasted that India can even overachieve its target of 175 GW of renewable energy by 2022. Hydropower installations larger than 25 MW are excluded from national targets.

In fact, the capacity of 83 GW of renewable energy has already been established by the end of 2019. At the same time, about 29 GW of capacity were under installation and 30 GW under the bid.

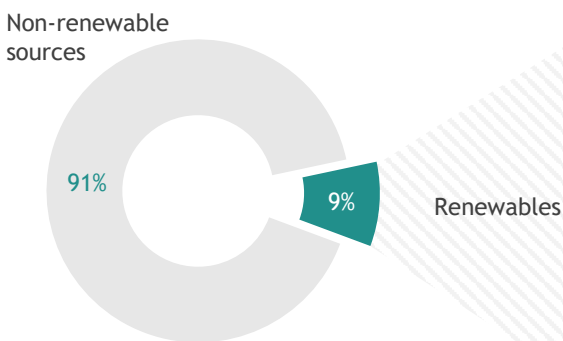
A new challenging target was announced by Prime Minister of India in September 2019. India's electricity mix would eventually include 450 GW of renewable energy capacity.

Regulatory environment

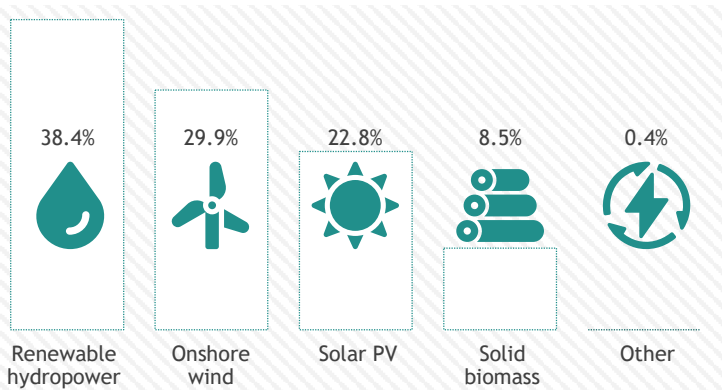
Renewable energy projects may get promotion and financing (loans, credit lines etc.) from the Indian Renewable Energy Development Agency established under the Ministry of New and Renewable Energy.

The National Electricity Policy 2005 and the Tariff Policy 2016 encourage private sector participation in renewable energy through measures such as fixing renewable purchase obligations (RPOs) for certain entities that are mandated to comply with RPOs. Under the RPO, regime entities have an opportunity to buy Renewable Energy Certificates to complete their RPO targets.

Electricity generated by renewables in India, 2018



Installed capacity of renewable electricity generation technologies, 2018





Other incentives for renewables development

India allows 100% FDI for RE projects to facilitate an easy transfer of capital and technology.

The state governments grant various fiscal incentives and tax incentives such as customs and excise duty exemption, accelerated depreciation and others. In 2019, tax breaks were announced to be provided for setting up mega-manufacturing plants for solar cells, lithium storage batteries, electric vehicles and charging infrastructure.

As India is a country with a high-density population, the government has adopted the national Wind-Solar Hybrid Policy which provides a framework for promotion of large-grid-connected wind-solar PV hybrid systems for efficient utilisation of land and transmission infrastructure. A tariff-based transparent bidding process is offered for power procurement from such plants. Also, such projects receive fiscal and financial incentives. At the same time the government of India is interested in the utilisation of floating solar PV after deployment of some pilot projects. Therefore, commercial tenders are adopted for this source of energy.

Challenges and opportunities

Renewable energy industry in India has matured and expanded significantly within recent years. However, it still has several barriers for its further development.

Albeit, national and state policies can have favorable impact on renewables individually, they may not be fully coordinated.

Declining tariffs, low prices from tenders and high investment costs can impel investors to abandon projects.

Although the government has established an RPO regime, the implementation of the regime by the states is not often consistent and several state distribution utilities have failed to honour their RPOs. Moreover, the REC market is also evolving.

Another challenge faced by developers is the lack of infrastructure and high curtailment rate ranging from 10% to 25%, which also leads to potential losses.

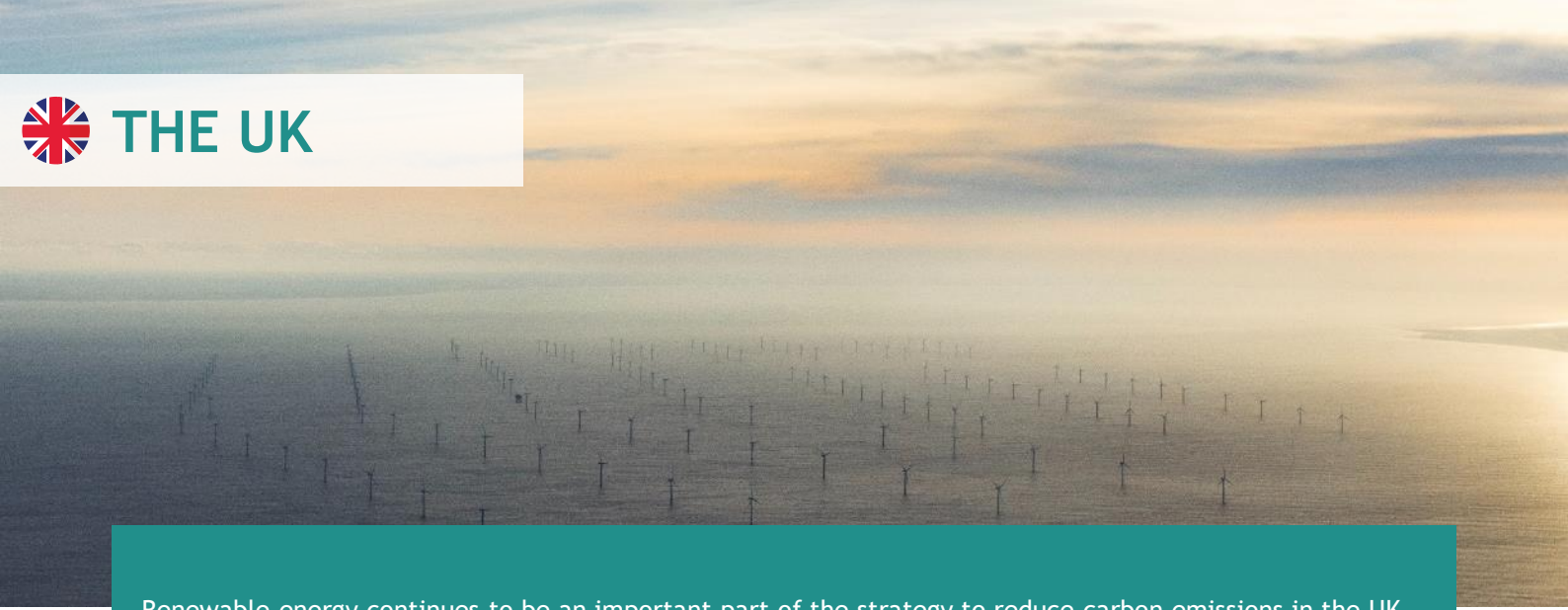
India can be considered an attractive place for investors as the government sets ambitious renewable power targets, encourages foreign investments and aims to provide cheaper energy access.

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Renewable energy continues to be an important part of the strategy to reduce carbon emissions in the UK.

Renewable energy targets

The UK has set numerous Renewable Energy Targets (RET) which are planned to be achieved by 2020:

- ▶ RET for the share of final energy – 15%
- ▶ The target for share of transport energy from renewable sources – 10.3%
- ▶ The target for share of heating and cooling from renewable sources – 12%

Currently, Renewable Power Targets for share of electricity generation are not settled at the national level. However, in Scotland the target of 100% share of renewables by 2020 was maintained.

The UK is undertaking more renewable energy projects and is shutting down old, polluting coal plants. Already in 2018, the share of renewables in electricity generated grew to 33%.

In the UK, there are some of the best conditions in Europe for wind power generation due to high wind speeds. The country has invested significantly in offshore wind farms and has defined a specific RET for the share of electricity generation by offshore wind power at a level of 33% by 2030.

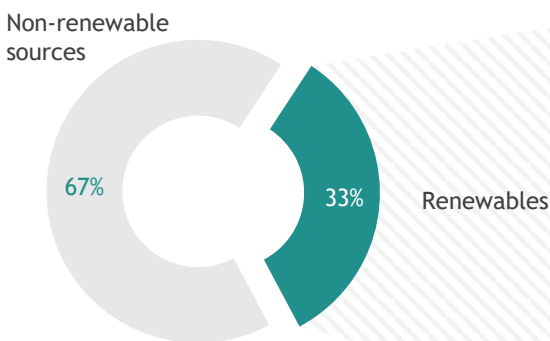
Regulatory environment

One of the most important regulators for the renewables market is the Office for Gas and Electricity Markets (OFGEM) E-Serve, which coordinates several environmental schemes on behalf of the government including schemes related to renewable energy such as the Feed-in tariffs scheme, Contracts for Difference (CfDs), Renewable Obligation, the Climate Change Levy and the Offtaker of Last Resort schemes.

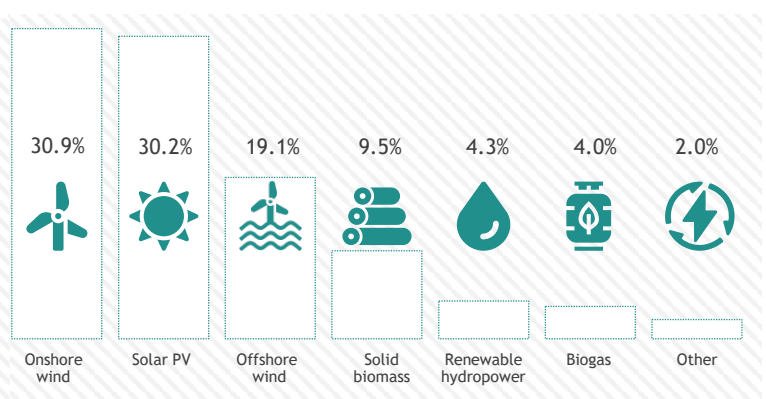
Since 2017 the provision of CfDs is one of the key policy measures to stimulate new low-carbon electricity generation. The CfD budget is not allocated for mature technologies such as onshore wind (except on remote islands) or solar energy, but is spent on offshore wind, certain forms of biomass or waste-fuelled plants, and others.

The Energy Act has been applied by the UK as a regulatory framework for the developing, financing, operating and selling of power and environmental attributes from renewable projects, and the regulation of CfDs.

Electricity generated by renewables in the UK, 2018



Installed capacity of renewable electricity generation technologies, 2018



Source: REN 21 – Global Status Report 2019; OFGEM website



Other incentives for renewables development

Long-term tariff support payments are provided for renewable heat generation. The UK launched a scheme providing grants and loans for renewable heat networks that serve two or more buildings in the public or private sectors, including residences, hospitals, schools and council buildings. Higher tariffs for biogas and biomethane are set by the government to benefit these industries and will provide opportunities for these energy suppliers.

Also, there are some tax incentives potentially available to renewable energy generators. They include Land remediation relief, corporation tax relief on profits earned from exploiting patented inventions due to the Patent Box scheme, and corporation tax relief or a tax credit in line with the R&D relief scheme.

The UK government actively supports R&D projects related to battery storage technology and has already made significant investments in it.

Challenges and opportunities

Shifting climate policies negatively affect investors' activity. During recent years, the government of the UK has reversed several low-carbon policies. Removal or reduction in renewable energy incentives had an unsatisfactory effect on investors' confidence.

The sector of renewable power storage continues to make significant investments to match the expansion of renewable power generation.

Although the renewable energy sector in the UK is moving away from subsidies and return on investment is decreasing, investors are still interested in using the advantages of participating in the UK government's CfD auctions and investing in the renewables sector.

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Renewable energy in the United States is one of the most attractive sectors for investments. Both federal and state-level regulations and incentives have been implemented in the country to achieve ambitious government carbon-free emissions goals.

Renewable energy targets

In the USA, there are no Renewable Power Targets for share of electricity generation established on federal level. However, on sub-national level, two states (California & Hawaii) and more than 100 cities and towns in the USA have set targets for 100% renewable electricity, including Cincinnati (Ohio), Minneapolis (Minnesota), San Francisco (California) and Washington, D.C.

In 2018, renewables made up more than 17% of electricity generated. The biggest share came from hydropower and windpower.

Regulatory environment

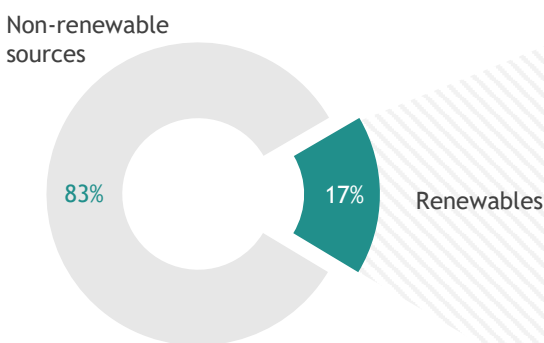
The above targets work as a part of renewable obligations, which are often represented in the form of renewable portfolio standards (RPSs).

Some states have specific mandates for power generation from renewable energy, and some states have voluntary goals. Compliance with RPS policies sometimes require or allow trading of Renewable Energy Certificates or Credits (RECs).

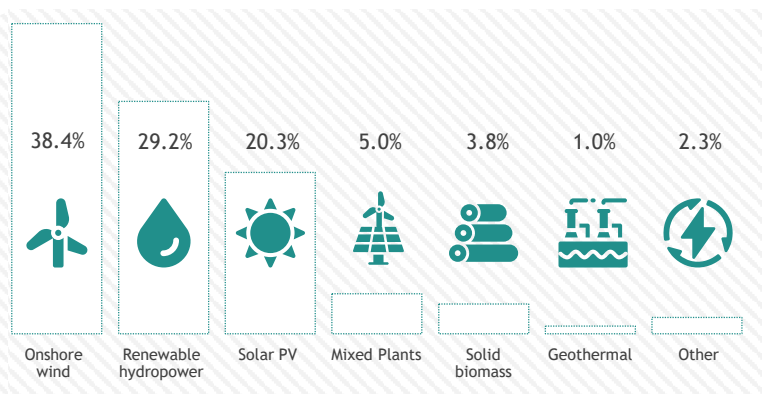
These financial products allow a purchaser to pay for renewable energy production without directly obtaining the energy from renewable energy sources, thereby stimulating the growth of renewable energy market.

Generation and distribution of electricity in the USA is regulated by the Federal Energy Regulatory Commission (FERC). Ten regional transmission organisations or independent system operators oversee grid operation and distribution pricing on behalf of FERC. The US FERC has pursued market reforms to allow all resources to compete on a level playing field as it understands and promotes the renewables ability to reduce emissions and diversify fuel sources. In early 2018, it began allowing energy storage in capacity, energy and ancillary services markets.

Electricity generated by renewables in the US, 2018



Installed capacity of renewable electricity generation technologies, 2018



Source: U.S. Energy Information Administration; International Renewable Energy Agency



Other incentives for renewables development

Federal government measures and state-level initiatives incentivise usage of biofuel. Supported both by agricultural policy and by the federal Renewable Fuel Standard (RFS) the USA continues to be the world's largest producer and user of biofuels. The RFS drives the biofuel market through setting an obligation at the federal level to use low-carbon fuels.

No special policies were adopted at the federal level for usage of renewable energy in heating and cooling. However, in California the range of investment subsidies to increase the utilisation of renewable heat technologies were established for residential, industrial, commercial and public facilities.

Energy from offshore wind has emerged as one of the key solutions to achieve carbon-free goals in the country. Several auctions were held in Rhode Island and Massachusetts to select offshore wind projects for development and the US Bureau of Ocean Energy Management continues to hold auctions to allocate leases for such projects.

Challenges and opportunities

The support schemes of Production Tax credit and Investment Tax Credit, which were key drivers and incentives for investors, expired on 1 January 2020. Investment Tax Credit stepdown, which started at the beginning of 2020, may potentially reduce investments in the US solar energy sector.

The Production Tax Credit for new wind facilities was extended at the rate of 60% for an additional year providing opportunities for investors in wind energy.

The falling cost of building and operating wind and solar stations due to technological innovation makes these energy sectors more attractive even without additional government subsidies.

Investment environment for renewables is likely to be favourable as major states and cities continue to establish challenging Renewable Power Targets. Corporate power purchase agreements and state-level policies contribute to growth of renewables. Wind farm developers will have the opportunity to gain benefits from federal tax incentives extension for 2020.

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