

# WIND ENERGY POLICIES



## Wind energy policy in China

With the strong determination and vast input, China has made the policy system for rapid developments of the energy sectors. In the recent years, it is seen that Chinese govt. is very serious about the renewable energy sectors. The vast wind energy potentials and supports of Chinese government's wind power development makes construct large scale power. For consistent developments of renewable energy in the country, Chinese govt. has formulating the host policies. During his 11th planning (from 2005 to 2010), wind energy experienced a high growth rates i.e. from 1.3 GW in 2005–44.7 GW in 2010 which was eight times more than the original target of 5 GW. The Chinese government has encouraged the 12th five-year plan (from 2011 to

2015) for the developments of national economics which would also provide to improve the wind energy developments. By end of the year 2015, the government has projected that there would be installed eight nos. of 10 GW wind power plants, the cumulative capacity would be 100 GW and the power would be generated 190 TWh from the wind energy [39]. However, by end of the year 2015, it is found that total installed capacities of the country crossed more than 129.34 GW where extra 87.07 GW under constructions. In year 2015, China also faced the dropped of electricity by 33.9 TWh which made the historical records [42]. In the 12th plan, many provinces have seen that they have installed more than their targets due to attractive policies. The Chinese government has decided that the wind energy policy by itself will be at the fastest rate as compared to the other countries like US and Europeans. This policy model has given the emphasis to develop the wind energy at the rapid growth rates. In 2007, the Medium and Long-Term Development Plan for Renewable Energy in China clarified that to connect 30 GW of wind energy by grid connected systems. Rich wind energy resources in provinces such as Guangdong, Fujian, Jiangsu, Shandong, Hebei, Inner Mongolia, Liaoning, and Jilin, will be exploited in adjacent swaths, thus establishing a backbone of major wind provinces, each with over 2 GW of capacity installed. In Chinese wind industry, has been divided into three stages: pilot phase (1985–1993; competitive tariff: cost issues were solved by supported of favourable loan and foreign financial assistance and state aid), industrial phase (1993–2003; approval tariff: regional government was regulated wind power prices on basis of the regional situations, and then submitted the approval

Different wind energy policies in China.

Issued by	Effective time	Documents
NDRC	July 2004	The decision of state council on reforming the investment system
NEA	August 2011	The provisional measures on administration of wind power development and construction
AQSIQ	October 2002	The measures on anemometry in wind farms
NDRC	September 2003	The compilation regulation on pre-feasibility reports of wind farms
NDRC	June 2004	Examination code of construction on wind power plant project
NPC	October 1999	Construction law
NPC	January 2000	Bidding law
SCC	February 2012	The implementing regulations of bidding law
NPC	October 2007	Urban and rural construction planning law
NPC	August 1998	Land administration law
MLR	December 2007	The measures on land registration
MLR	March 1999	The measures on the examination and approval of land for construction use
MHUD/ MLR/ SERC	March 2012	Indicators of land for construction of power projects (wind farms)
NPC	September 2000	The regulations on construction survey and design management
MHUD	August 2004	The measures on administration of reviews of construction design drawings and documents for building and infrastructure
MHUD	July 2001	The measures on administration of construction license

to the central government) and large scale commercial stage 2003–2009, bidding tariff: address the variance of regional economic development and wind energy resource distribution) Chinese wind energy is encouraged by Renewable Energy Law (which passed in 2005 and amended in 2009) and the important role of this law is to develop the renewable energy supplies, improve the energy structure, guarantee energy safety and protect the environments, preferential pricing, power purchase mandates, and cost sharing arrangements [49]. This law will encourage to the renewable energy generations for achieving 15% of total energy by 2020 and large state owned power companies at least to be contributed by 5% in the same years. In 2009, China introduced a FIT for wind energy power generations with a period of 20 years for four different regions from 0.51 RMB/kW h (0.08 USD) to 0.61 RMB/kW h (0.10 USD) as per the availability of wind resources. In 2010, the important role of this law was encourages to the renewable energy supply, improve the energy structure, guarantee energy safety, and protect the environments. The law includes several important policies viz. (i) Wind power grid connected pricing and cost-sharing policies, (ii) Public finance policies (iii) Preferential tax policies, (iv) Grid-connected wind power policy, (v) Preferential policies for foreign-investing enterprises, and (vi) Local government policy for wind power industry. Wind power grid-connected pricing and cost-sharing policies Renewable Energy Law and State council determined the wind power grid connected pricing and cost sharing policies on the basis of different characteristics and different types of renewable energy power generation conditions at different local conditions. According to the determining principles of economic reasonableness and benefits for the promotion of renewable energy development and utilisation; and on the basis of timely adjustments for the development and utilisation of renewable energy technology. The grid connected power from wind energy projects is decided by government-guided pricing; power pricing standards are determined by the pricing authorities of the State Council according to prices set through bidding .

#### Public finance policies

It is a fund support to the grid-connected pricing and cost-sharing as well as technological development of R & D, testing and demonstration. The National public finance authorities introduce the Renewable Energy Development fund for supports the national public financing via the arrangement of project funds. The Chinese government has introduced a policy “Interim Measures of Ministry of Finance on Management of Special Fund for Wind Power Equipment Industrialization” for Chinese companies, or companies. This policy promotes government investments in renewable energy, better introducing social investment and bank funds into the sector and developments the wind energy. Chinese controlling shareholders that develop and industrialize production of 1.5 MW and larger-capacity wind turbines and components, will receive subsidy of CNY600/kW for the first 50 turbines in year 2008. This subsidy encourages for first fifty turbines in technological innovations. Access to the low-cost finance system from state owned banks has supported extraordinary levels of expansion of renewable energy deployment

#### Preferential tax policies

Preferential tax policies based on price and expense cost sharing and supporting the public finance system which gives the financial incentives for the developments of wind powers in R & D, constructions and utilizations, reduction of costs with improvement of power quality and prepared by the State Council.

### Grid-connected wind power policy

China has increased the wind energy capacity by grid connection systems by 87% in the last six years. The National Energy Administration has released his guidelines for distributed wind energy power to grid connected systems. Henan, Anhui, Shanxi, Guizhou, along with some other province's are key issued for connections of wind energy from distributed system into the grid connected system. According to the guidelines, distributed wind power projects, where installed capacity is not allowed to exceed 50 MW, can only connect to the existing 110-kV or 66-kV power grid systems through multi-access points. For a large Chinese wind power farm expected that all existing wind turbines are designed to connect to higher-voltage power grid systems, which means that all distributed wind turbines will need further upgrade work before they can be connected to the power grid

### Preferential policies for foreign-investing enterprises

According to the laws and regulations related to foreign investment, Chinese-foreign equity joint ventures, Chinese-foreign contractual joint ventures and wholly foreign-owned enterprises (hereinafter collectively called foreign-invested enterprises) that are established within the territory of China and have obtained the related legal documents, including foreign-invested enterprise approval certificates and business licenses, of which the invested projects comply with the encouraged projects in the Catalogue for Guidance of Foreign Investment Industries or The Catalogue of Priority Industry for Foreign Investments in Central and Western Areas, the imported self-use equipment and the supporting technology, fittings and spare parts (hereinafter referred to as self-use equipment), apart from the commodities listed in The Catalogue of Non Tax-Free Imported Commodities of Foreign-Invested Projects, shall be exempted from tariffs and import value-added tax. Example: Siemens entered a JV with Shanghai Electric for producing of 4 MW offshore turbines in Jiangsu province.

### Local government policy for wind power industry

The National Energy Regulator referred to the local governments for measurements of the energy consumption from wind energy and resolution to the problems. The company can't get the subsidies from renewable energy development funds and grid connection systems of wind powers, if the project is not under the government approvals. Due to this, many projects were approvals after 1st September 2011 which helps for high growth rates.

### National supportive policies

The Chinese government has made the supportive policies with the help of industrial policy, standards setting, information administration and grid connected systems which would give the attractive to the large scale of wind firms.

#### Industrial policy

The industrial policy gives the clear return investment values for the investors and also it encourages for exploitations of high-quality resources and guarantee the orderly progress of wind power development.

#### Standard setting

In January 2010, the National Energy Bureau introduced a new regulation for the offshore wind energy developments and construction. This policy covers whole systems such as planning, prefeasibility and feasibility studies and operation and maintenance of the offshore wind power plants.

#### Construction information

In February 2009, the National Energy Bureau has established one information centre named as Nation Wind Power Information Administration for providing of all information about the wind power construction in the country. However, it was started the formal work done by officially from June 2010.

#### Grid construction

By various studies in different wind power regions, in April 2010, the National Energy Bureau has developed the relationships of the power systems for the large-scale wind power plants into the grid connected systems.

#### Deficiencies of wind energy policies in China

1. Current Chinese policies provide renewable power generation quotas for power supply enterprises only and there are no quotas defined for power grid enterprises.
2. Lags in development objectives in China's wind power policy. Due to a fear that industrial development would not be able to keep pace, China's wind power development goals were much lower in the past than the rate of developments. Although the government has indicated that wind power development target should not be less than 80 GW by 2015 and 150 GW by 2020, this is still not a formal, legally binding document.
3. The changes in the national value-added tax (VAT) system has affected the investment enthusiasm of local governments which may also have a negative impact on wind power industry. At a national level, changing the VAT from production to consumption and the implementation of a pre-tax deduction in terms of the machinery and equipment of secondary industries will reduce the tax burden on wind power development companies, but the income to local governments will be substantially reduced. These changes have encouraged several types of local protectionism.
4. The issue of wind curtailment remains unresolved. The raising of curtailment with weak grid infrastructures affects the developments of wind energy since last few years. It is estimated that the average rate of rejection of electricity has been increased by 10% in the last six years. The curtailment cannot be solved overnight and will continued to be an issue for the industry for years to come. However, the current FIT did not take into account the factor of curtailment when it was introduced back in 2009. Due to this continuous raised of curtailments may affects to the reach the targets
5. FIT Premium Reimbursement Delay has also created some problems for the developers which creates a huge cash flow problem.
6. Lack of co-ordinations among the relevant departments makes the difficult to approve, constructions and implementations of offshore wind energy.
7. Cheap electricity on the demand side effects the developments of wind energy for China's power generators and grid operators to ensure adequate supplies.
8. Existing transmission lines were designed for thermal and hydropower where output of generation is constant. However, the integration of wind power with same transmission lines may affect to the grid quality and reliabilities.

9. Due to poor quality, turbines installed affects to the grid qualities constantly.
10. It takes more than 2 years for grid companies to get the permit of approval from central government for the grid facilities.

### Wind energy Policies in INDIA

During 2016–17, MNRE had taken various policy initiatives in wind energy sector that include policies like Introduction of Bidding in wind energy sector, Re-Powering policy, Draft Wind-solar Hybrid policy, New Guidelines for development of Wind power project, etc.

A financial outlay of \$44.79 million has been expensed in R&D in wind energy sector by the government of India in its 11th five-year plan. In 12th five-year plan (2012–2017), government has approved an outlay of \$539 million for New and Renewable Energy Programmes. This support policy has increased the attention of investors and industrialists for the deployment of wind energy utilization in the country to fulfil the country's electricity demand. To achieve the target electricity demand of the country the government launches the various programs to support the growth of renewable energy such as wind, solar etc.

The government has come up with some schemes they are discussed below:

a) Generation based incentive scheme:

The Generation Based Incentive (GBI) scheme was discontinued in March 2012, but again reintroduced in August 2013. This scheme has been designed to accomplish 15,000 MW target during the 2012 to 2017 period. The main objectives of GBI includes the broadening of investor base, incentivize actual generation with the help of an outcome-based incentive and to facilitate entry of large Independent Power Producer and Foreign Direct Investment to the wind power sector. Under this scheme, wind electricity producers will receive INR 0.50 per unit of electricity fed into the grid for a period not less than four years and not higher than ten years with a capital of INR 100 Lakhs per MW. The total reimbursement in a year will not go beyond one-fourth of the maximum limit of the incentive during first four years. GBI scheme is applicable to the wind turbines commissioned on or before 01.04.2012, for entire 12th plan. This scheme has raised Foreign Direct Investment to 100% in wind energy sector. In 2011, the country added 2300 MW of wind power capacity, but the discontinuation of GBI in 2012 led the down fall in the wind energy sector and the figure came down to 1700 MW, but by reinstating GBI the capacity addition of 15,000 MW in next plan may be achieved.

b) Accelerated Depreciation:

The Accelerated Depreciation (AD) was introduced in 1994, with a depreciation rate of 100%. In 2002 the depreciation rate was reduced to 80% and the scheme was withdrawn completely in March 2012. In August 2014, the AD was reinstated at the rate of 80% for the wind power plants installed on or after April 1, 2014. The wind energy industry has been the primary beneficiary, due to the relative maturity of the technology, resource availability and preexisting experience. The AD tax benefit provided the necessary financial advantage to attract different private sector investment in the wind energy sector, and facilitated the ingress of a new class of investors comprised of high net worth individuals (HNIs), corporations, and small and medium sized enterprises. The rising number of installations also promoted the growth of domestic wind equipment manufacturing and other linked services sectors.

c) Tariff Design for Wind Power:

The State Electricity Regulatory Commission (SERC) in line with CERC and similar industry expectations espouse an approach on a cost plus basis for designing tariff for the electric energy from wind. The SERC has announced different tariffs for the procurement of power from wind power projects in different states. Recent amendment in tariff policy provides no inter-state transmission charges as well as the charges generated due to the loss of wind power during selling of wind power to facilitate the inter-state transmission from one state to another are also waived of under certain conditions.

d) Renewable Energy Certificate Scheme (REC) and Renewable Purchase Obligation (RPO):

Government of India launched the renewable energy certificate (REC) mechanism to relieve states with high share of wind power in their grid, wherein, renewable project developers can vend power to host utilities at tariff corresponding to their average procurement price and to obtain tradable certificates (REC). REC mechanism has encouraged the windy states to deploy additional capacity by reducing the procurement cost of wind. It began in February 2011 and almost 52% of total capacity of 4470 MW wind power received REC registry.

e) Forecasting and Scheduling Mechanism:

The CERC has notified a policy for the mechanism of scheduling and forecasting in case of inter-state transmission of wind power. The state of Gujarat, Tamil Nadu, Madhya Pradesh, and Odisha, has already notified regulatory draft for intra-state transmission of wind power. The state of Andhra Pradesh, Chhattisgarh, Jharkhand, Karnataka, and Rajasthan has finalized their regulations. The forecasting and scheduling exercise has been already conducted in Tamil Nadu recently by NIWE, Chennai which resulted in 12 Billion Unit of wind power evacuation during 2016–2017 compares to around 7 Billion Unit earlier.

f) Repowering Policy:

In order to optimally utilize the wind energy resources, repowering is crucial. The ministry has drafted a repowering policy for Wind turbine generators of capacity 1 MW and below for repowering. Under this policy, IREDA will provide an additional interest rate rebate of 0.25% for repowering projects. As per the repowering policy, all other benefits are also available to the repowered wind projects, i.e. accelerated depreciation or GBI are applicable. Additional generation could either be purchased by discoms at Feed-in-Tariff applicable in the state at the time of commissioning of the repowering project or allowed for third party sale.

g) Wind-Solar Hybrid Policy:

MNRE issued the draft of Wind–Solar Hybrid Policy with the objective of providing a framework for promotion of large grid connected wind-solar PV system for optimal and efficient utilization of transmission infrastructure and land, reducing the variability in renewable power generation, and achieving better grid stability. The objective of this policy is to achieve wind-solar hybrid capacity of 10 GW by 2020 and to encourage new technologies, methods and way-out involving combined operation of wind and solar PV plants.

h) Wind Bidding Scheme:



To enable discoms of non-windy states to fulfil their non-solar RPO obligation through purchase of wind power at a tariff determined by transparent bidding process. This scheme was sanctioned by MNRE on June 14, 2016 for setting up of 1 000 MW InterState Transmission System (ISTS) connected Wind Power Projects. The wind bidding guidelines under Section 63 of Electricity Act, 2003 issued by the Ministry of Power, enables the states to bid for wind power projects. The first wind bidding was concluded at low tariff of INR 3.46 per kWh of wind energy. . The wind tariff in India touched the lowest level of INR 2.64 per kWh in the second wind auction (1000 MW) conducted by SECI on October 4, 2017.

i) Offshore Wind Energy Policy:

This policy promotes optimum exploitation of offshore wind power generation. The government of India is targeting to have a generating capacity of 100 GW by 2022 through this mission. The policy supports the development of offshore wind energy through fiscal incentives, allowing Foreign Direct Investment (FDI) participation, Public Private Partnership, and international collaborations. The National Offshore Wind Energy Policy offers various fiscal incentives like relaxation in custom duty, excise duty exemption for the purchase of technology and equipment and also offers exemption from service tax for conducting service such as resource assessment, use of survey vessel and installation of vessels and on studies conducted by third parties (oceanographic and environmental impact). The policy also indicates Tax holiday scheme offered for the first ten years of wind power generation from offshore.

## Wind energy policies in USA:

### Renewable electricity standards

- Establishing long-term RES targets that increase over
- time to support sustained wind growth
- Defining the standard to support wind generation
- Enacting subnational RESs to support diverse wind
- resources and development needs
- Establishing set-asides for offshore wind technologies
- Supporting a broader enabling policy environment.

### Feed-in tariffs

- Differentiating wind FIT payments in relation to resource quality
- Differentiating wind FIT payments in relation to project size
- Differentiating wind FIT payments for offshore wind development
- Differentiating wind FIT payments in relation to technology
- Considering bonus payments and premiums to support broader wind development goals
- Considering wind FIT price degression.

### Interconnection standards and net metering for distributed wind

- Establishing interconnection standards
- Considering a wind net metering policy.



### **Wind investment and production tax credits**

- Establishing an appropriate incentive rate and controlling costs
- Supporting a stable policy environment
- Determining the tax incentive period
- Wind production tax credit considerations
- Wind investment tax credit considerations
- Supporting non-taxable entities.

### **Further approaches to support private investment**

- Identifying Competitive Renewable Energy Zones
- Reducing risk and cost of capital
- Designing wind ordinances
- Streamlining permit processes