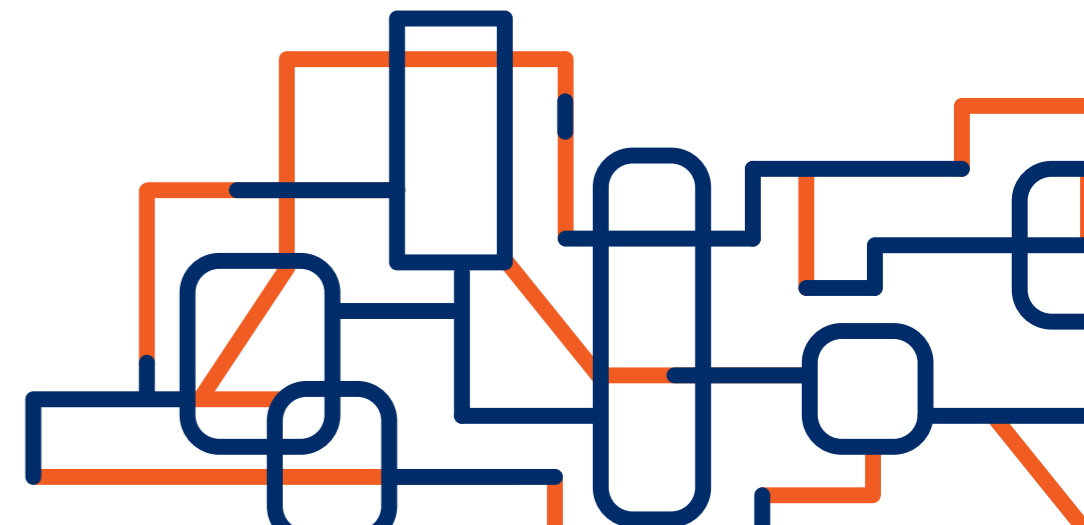
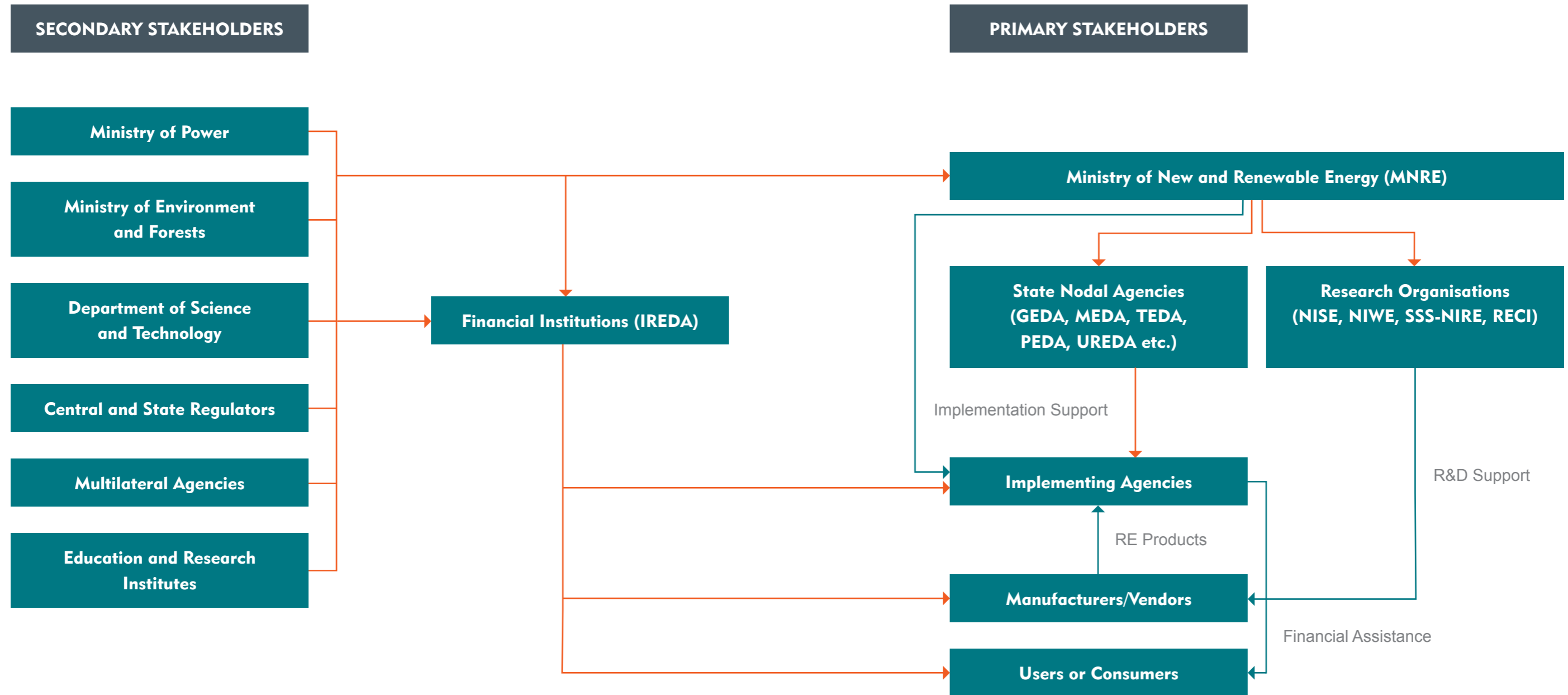


# **FRAMEWORK OF RENEWABLE ENERGY SECTOR IN INDIA**



# GOVERNANCE OF INDIA'S RENEWABLE ENERGY STRUCTURE (1/2)



# GOVERNANCE OF INDIA'S RENEWABLE ENERGY STRUCTURE (2/2)

## CENTRE

- There are multiple agencies involved in India's renewable energy sector. At the central level, the Ministry of New and Renewable Energy (MNRE) is the Government of India's nodal ministry.
- MNRE aims to develop and deploy new and renewable energy to supplement the country's energy requirements.
- The Ministry has set up three specialised technical institutions - National Institute of Solar Energy (NISE), National Institute of Wind Energy (NIWE), and Sardar Swaran Singh National Institute of Renewable Energy (SSS-NIRE).

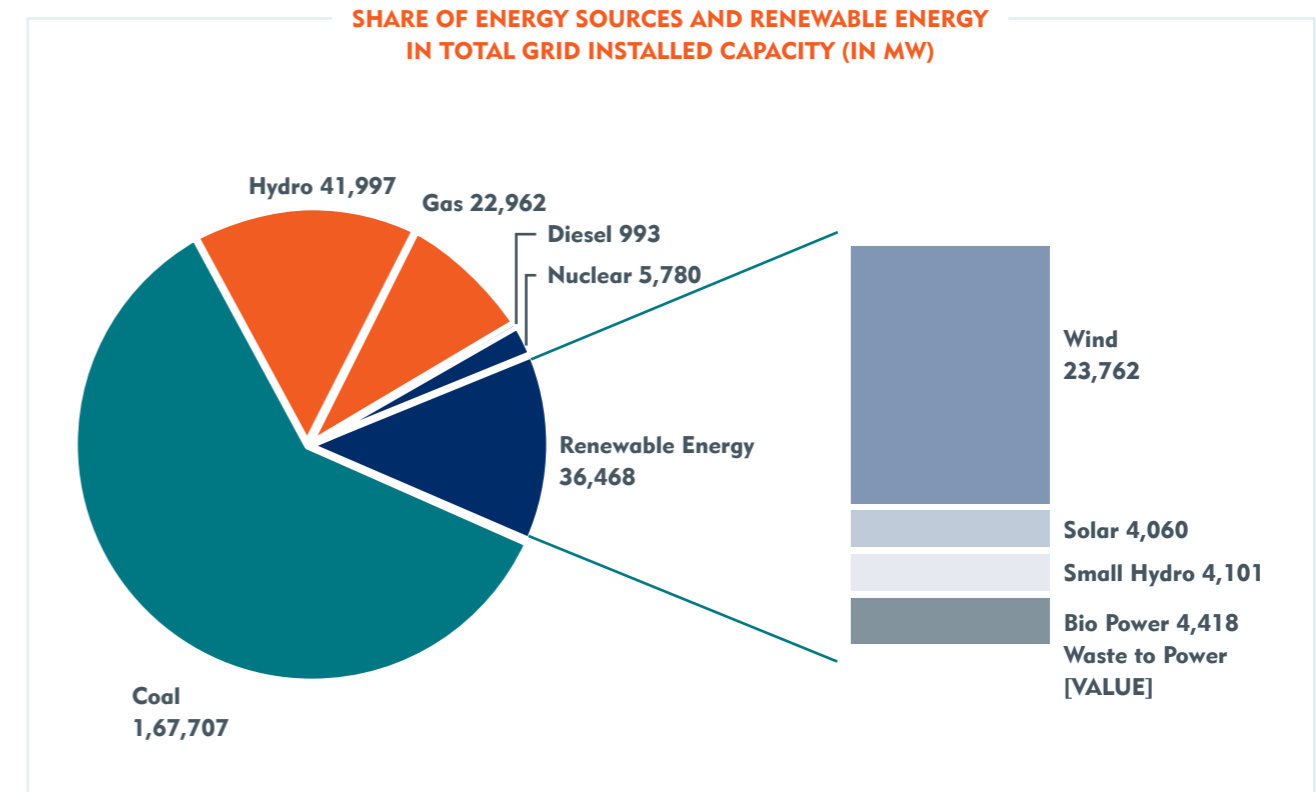
## STATE

- There are nodal agencies and departments which operate under the purview of their respective state governments to effectively implement all renewable energy and cogeneration schemes.
- These agencies promote the use of renewable energy at local level by channelling central-level subsidies, implementing demonstration projects, and providing assistance to interested parties.

## FINANCIAL AND OTHER GOVERNMENT INSTITUTIONS

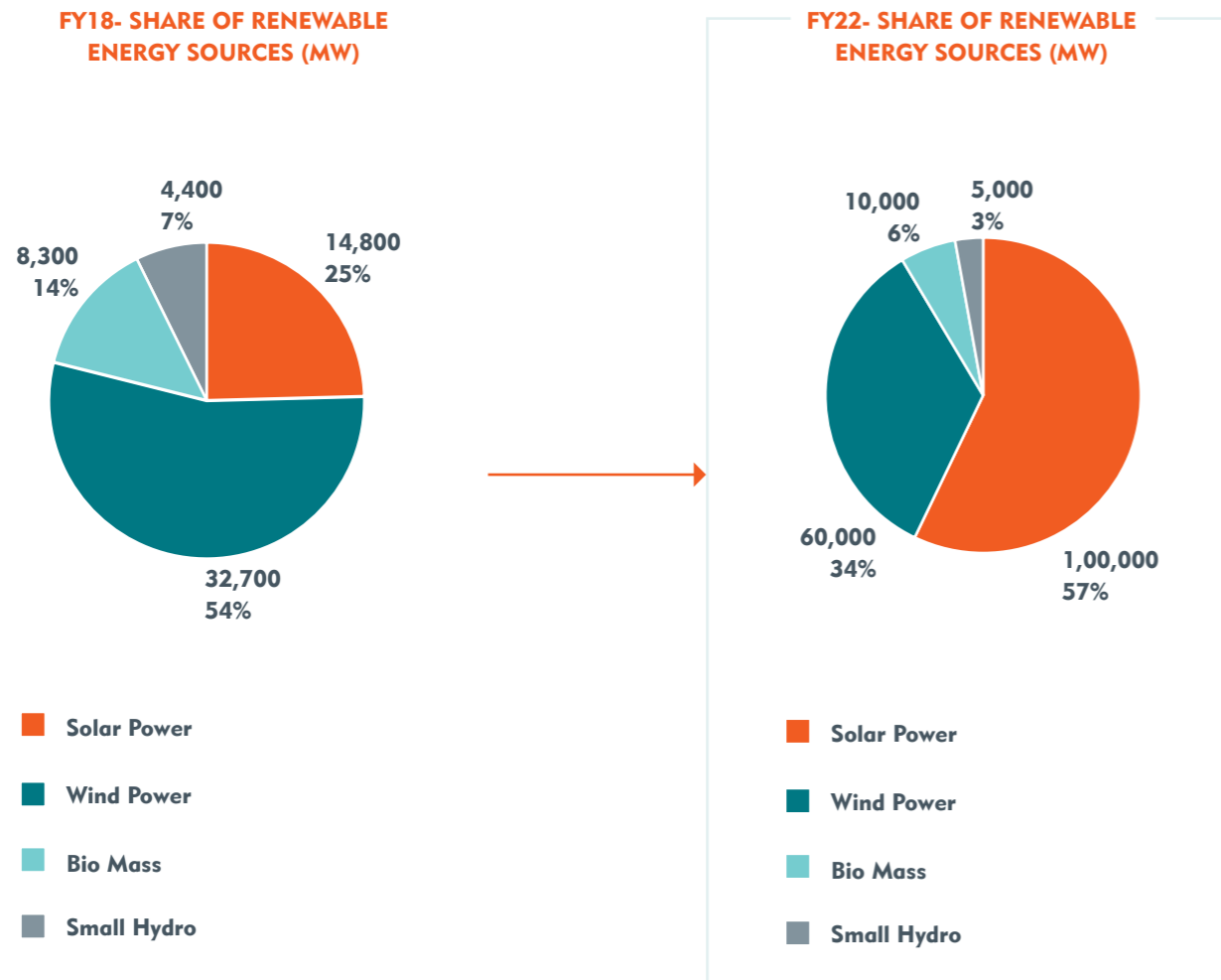
- Financial assistance for renewable energy projects is provided through the Indian Renewable Energy Development Agency (IREDA), the financial arm of the MNRE, which provides loans and channels funds and other initiatives to promote renewable energy.
- There are a number of government institutions mandated to include the renewable energy sector. For example, the Ministry of Power (MoP) is responsible for the national electricity policy and national tariff policy, both of which play a key role to promote procurement of renewable energy-based power. The Ministry of Environment and Forests (MoEF) is responsible for providing environmental clearances for renewable energy projects.

# SHARE OF INDIA'S ENERGY SOURCES



Renewable Energy Source	Installed capacity by end of the 11th Plan March 2012	Installed capacity as on March 2015	Target as per 12th Plan March 2017	Revised targets by 2022
Solar Power	941	3,383	10,941	100,000
Wind Power	17,352	22,645	32,352	60,100
Biomass	3,225	4,183	6,125	10,000
Small Hydro	3,395	4,025	5,495	5,000
<b>Total</b>	<b>24,913</b>	<b>34,236</b>	<b>54,913</b>	<b>175,100</b>

# GROWTH IN SHARE OF ENERGY SOURCES FY18-FY22



- Growth in solar power installed capacity is expected to surpass the installed capacity of wind power, reaching 100 GW by 2022 from its current levels of 14.8 GW as of 2018.
- As of November 2017, the Government of India is planning a 'Rent a Roof' policy to push adoption of solar energy while giving households a chance to become energy independent.
- Reevaluate DNI data for solar thermal technologies that can become the basis for project design and financial-viability calculations for all Indian states.

# KEY GROWTH DRIVERS IN THE ENERGY SECTOR



## ROBUST DEMAND

- India has relatively low per capita energy and electricity consumption. It was one-third of the world average in 2015-16.
- As the economy grows, electricity consumption is projected to reach 15,280 TWh in 2040 from 4,926 TWh in 2012. Most of the demand will come from the growth in the construction, industry and transportation sectors.



## COMPETITIVE ADVANTAGE

- India receives about 300 days of sunshine per year that will help to harness the available solar power. India also has a large hydro power potential which is being explored in the country's north-eastern states.
- With regular solar auctions and government mega projects such as solar parks, the set up and financing costs have reduced significantly in the past two years.



## INCREASING INVESTMENT

- Non-conventional energy received FDI inflow of US\$ 6.26 billion between April 2000 and December 2017.
- The energy sector has become attractive for both foreign and domestic investors due to the government's ambitious green energy targets.



## POLICY SUPPORT

- The Government of India aims to achieve 175 GW of renewable energy by 2022.
- India ranked 2nd in the 'Renewable Energy Country Attractiveness Index 2017' mainly because of immense support from the Government of India
- The aim of the government to achieve universal household electrification is also a boon for the power sector. India had highest ever capacity addition in renewable energy in 2016-17.

# POLICY INITIATIVES IN THE ENERGY SECTOR

## ELECTRICITY ACT 2003

- It provides policy formulation by the Government of India and mandates State Electricity Regulatory Commissions (SERCs) to take steps to promote renewable and non-conventional sources of energy within its jurisdiction.

## NATIONAL ELECTRICITY POLICY 2005

- Aims to exploit the feasible potential of renewable energy resources; reduce capital costs; promote competition and private sector participation.

## NATIONAL TARIFF POLICY 2006

- Formulates that a minimum proportion of renewable energy procurement should be mandatory. Also, a preferential tariff should be determined by SERCs to enable renewable technologies to compete and the procurement of renewable energy should be through competitive bidding.

## NAPCC 2008

- The National Action Plan of Climate Change by the Government of India identifies eight core national missions running through 2017, covering several measures to address global warming.

## JAWAHARLAL NEHRU NATIONAL SOLAR MISSION (JNNSM)

- Aims to promote the development of solar energy for grid-connected and off-grid power generation. The objective is to make solar power competitive with fossil based applications by 2020-2022.

## NATIONAL CLEAN ENERGY FUND (NCEF)

- NCEF was launched in 2010-11 using the carbon tax, clean energy cess, to fund research and innovative projects in clean energy technologies of public or private sector entities. It emphasizes the importance of renewable energy to meet India's energy demand.

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or  
Email us at:  
[urbangatewayindia@ukibc.com](mailto:urbangatewayindia@ukibc.com)

### UK INDIA BUSINESS CENTRE GURGAON

16th Floor, Tower 9A, Cyber City, DLF City Phase II, Gurgaon Haryana – 122002  
Tel: +91 124 4155700

### WEBSITE

[www.ukibc.com](http://www.ukibc.com)

