

Highlights - Budget 2021-22

Provisions for Renewable Energy (RE) Sector

1. AtmaNirbhar Bharat –Production Linked Incentive scheme (PLI)

Para 40: For a USD 5 trillion economy, our manufacturing sector has to grow in double digits on a sustained basis. Our manufacturing companies need to become an integral part of global supply chains, possess core competence and cutting-edge technology. To achieve all of the above, PLI schemes to create manufacturing global champions for an AtmaNirbhar Bharat have been announced for 13 sectors. For this, the government has committed nearly 1.97 lakh crores, over 5 years starting FY 2021-22. This initiative will help bring scale and size in key sectors, create and nurture global champions and provide jobs to our youth.

- i. For manufacturing sector to grow in double digits on a sustained basis, manufacturing companies need to become an integral part of global supply chains, by possessing core competence and cutting-edge technology. Accordingly, PLI schemes to create manufacturing global champions for an AtmaNirbhar Bharat have been announced for 13 sectors including manufacturing of ‘High Efficiency Solar PV Modules’. The government has committed nearly Rs. 1.97 lakh crores, over 5 years starting FY 2021-22 including Rs. 4500 crore for ‘High Efficiency Solar PV Modules’ which will be implemented by Ministry of New & Renewable Energy (MNRE). It will help bring scale and size in Solar PV manufacturing, create and nurture global champions and provide jobs to youth. The PLI schemes will incentivize new Gigawatt (GW) scale solar PV manufacturing facilities in India. The EFC meeting for formulating a scheme in this regard has already been held. It will now be taken to the Cabinet for final approval. The scheme will reward efficiency of solar modules as well as local value addition.
- ii. As part of Paris Climate Agreement, India has committed to install forty percent of its electricity generation capacity from non-fossil fuels by 2030. For achieving this goal, India has set an ambitious target of setting up 1,75,000 MW of renewable energy capacity, including 1,00,000 MW of solar power, by 2022. Further, a target of 4,50,000 MW installed RE capacity by 2030 has also been fixed.
- iii. Solar capacity addition presently depends largely upon imported solar PV cells and modules as the domestic manufacturing industry has limited annual capacity of around 2,500 MW for solar PV cells and operational annual capacity of 9,000-10,000 MW for solar PV modules.

- iv. Under the PLI Scheme 10,000 MW capacity of integrated solar PV manufacturing plants (from manufacturing of wafer-ingot to high efficiency modules) will be set up by Q4 of 2022-23 with the direct investment for around Rs. 14,000 crore. Due to inbuilt incentive for higher efficiency module and local value addition, it is expected that the successful manufacturers will invest in R&D for achieving more efficiency and source their input material locally for more PLI benefits. The scheme will additionally create further demand of Rs 17,500 crore over a period of 5 years for locally produced balance of materials like EVA, Solar glass, Backsheet, Junction box etc, which will help in the development and augmentation of entire ecosystem associated with Solar PV manufacturing.
- v. The PLI scheme will result in creation of direct employment to around 30,000 persons in manufacturing activity and indirect employment to around 1,20,000 persons engaged in ancillary & allied industrial activities, packaging, logistics and other services.
- vi. Additional manufacturing capacity of 10,000 MW high efficiency domestic Solar PV module capacities every year will result in import substitution of such quantity, thereby leading to savings in foreign exchange of around Rs 17500 Crores per year.
- vii. The PLI (in Rs/Wp) on sales of high efficiency modules will be given for 5 years. The scheme will be technology agnostic and will allow various new and upcoming technologies using crystalline silicon, thin film or any new materials, such as TOPCon, Heterojunction, silicon with tandem cell, thin film with tandem cell, Perovskite, Perovskite with tandem cell etc.
- viii. Beneficiaries of PLI Scheme will be selected through a transparent bidding process. Preference will be given to the manufacturers who will set up integrated solar PV manufacturing plant of higher capacity. The bidder manufacturer has to fulfil the minimum performance parameters relating to efficiency of solar PV modules.
- ix. More PLI will be given for more efficient modules since they produce more energy and save cost of land and logistics cost. The manufacturers will be encouraged to source their material from domestic market. PLI amount will increase with the increased local value addition.
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2. Capital Augmentation of Solar Energy Corporation of India Limited (SECI) and Indian Renewable Energy Development Agency Limited (IREDA)

Para 73: "To give a further boost to the non-conventional energy sector, I propose to provide additional capital infusion of Rs.1,000 crores to Solar Energy Corporation of India and Rs. 1,500 crores to Indian Renewable Energy Development Agency"

(a) Equity infusion of Rs. 1000 cr. by Gol in SECI

- i. As part of Intended Nationally Determined Contributions (INDC), India targets to reduce carbon emissions intensity of its GDP by 33-35% as against 2005 level and install at least 40% of its electricity generation capacity through non-fossil sources by 2030. Given these targets, there is an urgent need to reverse the direction of carbon accretion while catering to India's increasing energy needs. In this context, the Ministry of New and Renewable Energy (MNRE) has been at the forefront of India's transition to a sustainable energy led future while providing cost-effective energy access to all its citizens. The Ministry of New and Renewable Energy is working towards achieving the target set by Government of India to install 1,75,000 MW (excluding large hydro) of renewable energy capacity by 2022 and further increase it to 4,50,000 MW by 2030. Significant progress has since been made in implementation of renewable energy projects through planned programs, policies and regulations.
- ii. Solar Energy Corporation of India Limited (SECI), a public sector undertaking as an 'Implementing Agency' of the Ministry, plans and calls for tenders for development of RE projects on pan-India basis. SECI procures RE power at a central level, thereby reducing the off-taker risk of RE developers and sells it to DISCOMs. SECI has also been setting up its own projects including demonstration projects.
- iii. SECI's efforts have resulted in flow of investments from all over the world into the country's RE sector, and in a rapid decline in RE tariffs, which has led to large-scale uptake of RE in the country. The cumulative capacity installed in the country as on 31.12.2020 is 91,000 MW and further 50,000 MW of the projects are under implementation of which SECI's share is 54%.
- iv. Presently, projects of about 47,000 MW of capacity with an investment of Rs.2.14 lakh Crore (approximately) have been awarded by SECI. Out of this almost 8,300 MW of capacity has been commissioned and the numerous projects are under various stages of implementation.
- v. To give a further boost to the RE sector, an additional capital infusion of Rs 1,000 crore to SECI has been provided which will enable SECI to float 15,000 MW of tenders on yearly basis. On yearly basis, it will attract investment of more than Rs. 60,000 crore, generate employment of 45,000 job years and reduce emissions of 28.5 million tons of CO₂ per year.
- vi. Capital infusion will also enable SECI to set up innovative projects of with an investment of around Rs.17000 Cr.

(b) Equity infusion of Rs. 1500 cr. by Gol in IREDA

Para 73: "To give a further boost to the non-conventional energy sector, I propose to provide additional capital infusion of Rs. 1,000 crores to Solar Energy Corporation of India and Rs.1,500 crores to Indian Renewable Energy Development Agency."

- i. IREDA, a Mini Ratna (Category-I) company under the administrative control of MNRE was set up in 1987 to work as a specialised non-banking financing agency for the Renewable Energy (RE) sector. It has been providing funding support to the sector since the time when wind and solar projects were not mainstreamed and other financing agencies were reluctant to finance RE projects. As a specialised RE funding agency, it has developed expertise in evaluating all types of RE projects and projects developers as well as entrepreneurs are more comfortable dealing with IREDA. International lenders are also happy to channelize their funds to India's large RE market through IREDA.
- ii. However, on account of RBI's prudential norms relating to capital adequacy and exposure for financial institutions, IREDA was getting constrained to meet demands of fast growing RE sector. Further, with the sector undergoing consolidation and larger project sizes coming up, demand of large size funding was being increasingly felt. Considering the national RE installation targets of 175 GW of RE by 2022, and 450 GW by 2030, the average installation is expected to be in the range of 30-50 GW per annum, which would require annual debt capital of about one lakh Cr.
- iii. With the equity infusion of Rs. 1,500 crore by Government of India, IREDA would be able to extend additional loan facility of Rs. 12,000 crore. This would be in addition to its existing book size of Rs. 27,000 crore. The additional equity will also improve its capital adequacy which will help IREDA in borrowing at lower rate of interest, thus lowering the interest rates for developers.
- iv. It would also help in financing of around 4,500 MW of RE projects worth Rs 18,000 to 19,000 crore. It will generate employment of 13,500 job years and reduce emissions of 8.55 million tons of CO₂.

3. National Hydrogen Energy Mission:

(Para 63): "Prime Minister, while speaking at the 3rd RE-Invest Conference in November 2020, had announced plans to launch a comprehensive National Hydrogen Energy Mission. It is now proposed to launch a Hydrogen Energy Mission in 2021-22 for generating hydrogen from green power sources"

- i. **From Hon'ble Finance Minister's budget speech (para 63):** *"Prime Minister, while speaking at the 3rd RE-Invest Conference in November 2020, had announced plans to launch a comprehensive National Hydrogen Energy Mission. It is now proposed to launch a Hydrogen Energy Mission in 2021-22 for generating hydrogen from green power sources"*
- ii. **India's Energy Transition is underway:** Increasing renewable energy use across all economic spheres is central to India's Energy Transition. Green Hydrogen is considered a promising alternative for enabling this transition. Hydrogen can be utilized for long-duration storage of renewable energy, replacement of fossil fuels in industry, clean transportation, and potentially also for decentralized power generation, aviation, and marine transport.
- iii. **Green Hydrogen:** Hydrogen is a versatile energy carrier that can be utilized in a variety of energy system applications including integration of renewables, clean transportation, and industry. Hydrogen produced from renewable energy sources is referred to as *Green Hydrogen*. *Green Hydrogen* can be produced by electrolysis (splitting of water using renewable electricity) or through conversion of biomass. Energy can be extracted from hydrogen through combustion or through fuel cells, which emit only water as by-product.
- iv. **Hydrogen for integrating RE:** Hydrogen provides a means for storage of variable renewable energy for stabilizing its output. For long duration storage, running into several hours, converting excess available energy into hydrogen and utilizing it for grid support and other applications is seen to be a suitable alternative.
- v. **Hydrogen in Industry:** In industry, hydrogen can potentially replace the coal and coke in iron and steel production. Steel manufacturing is one of the largest carbon emitters in the world, decarbonising this sector using hydrogen is expected to have significant impact on our climate goals.
- vi. **Hydrogen has potential to reduce fossil fuel imports:** At present, hydrogen produced from natural gas is widely utilized for production of nitrogenous fertilizers, and petrochemicals. Substituting this with green hydrogen could allow use of renewable energy in these important sectors and reduce import dependence.
 - a. For example, India's annual Ammonia consumption for fertilizer production is about 15 million tonnes, roughly 15% of this demand (over 2 million tonnes per annum) is currently met from imports. Mandating even 1% green ammonia share is likely save about 0.4 million standard cubic feet per day of natural gas import.

- b. Use of hydrogen in steel industry could substitute imported coking coal. During 2018-19, the total demand of coking coal for the steel industry was 58.37 million tonne (MT). Out of this, 51.83 MT was met through imports.
- vii. **Hydrogen based Transport:** Fuel cell electric vehicles (FCEVs) run on hydrogen fuel and have no harmful emissions. BEVs may be suitable for light passenger vehicle segment for shorter driving range. For heavy duty vehicles with longer trip range, such as buses, trucks and other commercial vehicles, FCEVs are likely to become cost competitive in the coming years.
 - a. While Battery Electric Vehicles (BEVs) are dependent on imported raw materials like lithium and cobalt for lithium-ion batteries, the hydrogen fuel cell supply chain can be wholly indigenized, making India Aatmanirbhar in the clean transportation segment.
- viii. **Hydrogen – trends and expectations:** Despite the unique advantages and possibilities, the supply challenges and cost-economics have held back replacement of fossil fuels and augmentation of renewable energy with green hydrogen. However, with declining costs of technology, notably renewable power generation, electrolyzers and fuel cells, hydrogen energy is likely to become cost-competitive.
- ix. **National Hydrogen Energy Mission:** The proposed National Hydrogen Energy Mission would aim to lay down Government of India's vision, intent and direction for hydrogen energy and suggest strategy and approaches for realising the vision.
 - a. The Mission would put forward specific strategy for the short term (4 years), and broad strokes principles for long term (10 years and beyond). The Mission document would cover all essential aspects of value chain, and consolidate approaches under a single framework and governance structure.
 - b. The aim is to develop India into a global hub for manufacturing of hydrogen and fuel cells technologies across the value chain. Toward this end, a framework to support manufacturing via suitable incentives and facilitation aligned with 'Make in India' and 'Atmanirbhar Bharat' will be developed. It will provide necessary flexibility to capture benefit from advances taking place in technology landscape.

- c. The Government of India will facilitate demand creation in identified segments. Possible areas include suitable mandates for use of green hydrogen in industry such as fertilizer, steel, petrochemicals etc.
- d. Major activities envisaged under the Mission include creating volumes and infrastructure; demonstrations in niche applications (including for transport, industry); goal-oriented Research & Development; facilitative policy support; and putting in place a robust framework for standards and regulations for hydrogen technologies.
- e. The draft Mission document has already gone through consultation process and is expected to be finalized in February 2021. Thereafter, it will go through inter-ministerial consultation and Cabinet approval process.
