

GST INCENTIVES AND INDIA'S GREEN GROWTH AGENDA: PROMOTING RENEWABLE AND SUSTAINABLE INDUSTRIES

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ABSTRACT

India's transition towards a low-carbon and sustainable economy depends significantly on strengthening investment in renewable energy and environmentally responsible industries. Such a transition can contribute to economic resilience, environmental sustainability, and long-term energy security. Within this framework, the Goods and Services Tax (GST) system plays an important role in shaping the cost structure, investment environment and growth prospects of renewable and sustainable industries. The present study examines the influence of GST-related tax provisions and incentives on the development of renewable and sustainable industries and explores their potential contribution to economic growth in India. Particular attention is given to the GST treatment of renewable energy technologies and environmentally sustainable products and services with emphasis on tax rates, input tax credit, business-related tax benefits, overall tax incidence and compliance requirements. The study is based on secondary information obtained from GST notifications, government reports, policy documents, industry publications and other relevant sources. The findings highlight several concerns including compliance-related expenses, limitations in the effective utilisation of input tax credits and variations in the tax treatment of green products and services. At the same time an enabling and well-structured GST regime can encourage technological innovation, stimulate investment, generate employment and support industrial expansion. The study concludes that a stable, transparent and sustainability-oriented GST framework can strengthen India's efforts towards inclusive economic growth while advancing its broader objectives of employment creation, environmental sustainability and long-term economic development.

Keywords: Goods and Services Tax (GST); Renewable Energy; Sustainable Industries; GST Incentives; Economic Growth

I. INTRODUCTION

Energy constitutes an important input in almost every sector of the Indian economy. It may be any sector like manufacturing, transportation, agriculture, households, services, etc. With huge population growth, urbanisation and economic development India's energy requirements are expected to increase further. Earlier, India used to rely heavily on coal, petroleum and natural gas to meet these requirements, however, this excessive dependence on fuels has led to environmental degradation. The energy prices increased tremendously and concerns regarding long-term energy security started to begin. Thus, the need of the hour is to maximise investment in the renewable sources of energy such as solar, wind, water, etc. This can lead to more environmental protection and guaranteed energy security (Azad., 2020).

Any country's development pace can be correlated to the investment and development made by the country in renewable energy sectors. In return it influences the fiscal and taxation structure of the economy. Goods and Services Tax (GST) implementation since 2017, has had important implications for the cost structure and operating environment of renewable energy. Applicable GST rates, input tax credit (ITC), tax incidence, credit availability etc. can directly affect the ease of availability of finances and overall economics of renewable energy projects. Initially GST was introduced at a low rate but subsequent changes in the tax rates and inverted duty structures complemented by the valuation mechanisms like the 70:30 valuation approach applicable to certain solar and wind projects various have created complexities for certain stakeholders. In the study aim is to analyse the role of tax-related factors and GST incentives which may help in increasing the growth of renewable and sustainable industries in India.

II. REVIEW OF LITERATURE

The transition towards green growth has increasingly become an important component of India's economic and environmental policy. The literature indicates that renewable energy can simultaneously contribute to energy security, environmental improvement, employment generation, technological development thereby leading to long-term economic growth. Within this broader policy framework taxation can influence the relative cost of clean and conventional energy and thereby affect investment decisions.

Kumar and Majid (2020) examined the role of renewable energy in promoting sustainable development in India with laying special emphasis on investment, employment, energy security and environmental protection. Their study found that the renewable energy tends to increase the economic development of the country and reduce the dependence on fossil-fuel sources. They stated that strong government policies and institutional support are very important in making India an attraction for renewable-energy investment.

Elavarasan et al. (2020) conducted an assessment of renewable-energy development in India and the challenges that a country may face along with the implications of Policy in India. They laid more importance to the states leading in this area like Karnataka, Gujarat and Tamil Nadu. The study found that India possesses huge substantial energy which is renewable but its effective utilisation depends mainly on the supportive policies of the state and central governments, the investment made and infrastructure available. He stated that the policy incentives can influence the pace of renewable-energy investment and also the GST incentives tend to complement the existing renewable-energy policies.

Azad and Chakraborty (2020) in their paper tried to find out the relationship between green growth, energy policy made and its access to energy utilisation in India. They stated that reducing India's dependence on fossil fuels requires substantial changes in the existing energy system and that carbon-tax revenue could potentially be used to support clean-energy development leading to energy-related benefits to households. Thus they established an important connection between fiscal policy, environmental objectives and inclusive growth. The findings laid emphasis on meeting the green-growth objectives timely to stay as a prosperous nation.

Ojha, Pohit and Ghosh (2020) in their paper examined whether environmental taxation could lead to inclusive green growth in India. They analysed different ways of recycling carbon-tax revenues and indicated that the economic and environmental outcomes of green taxation depend significantly on how tax revenues are recycled. Investment in productive capacity and clean-energy sectors was considered an important mechanism for addressing the potential trade-off between environmental protection and economic growth. They laid importance of designing taxation policies that encourage environmental sustainability without unnecessarily increasing economic costs. They found a broader fiscal-policy foundation in order to analyse GST incentives as a potential support mechanism to attain green-growth agenda in India.

Wang and Liu (2021) in their paper examined the India's renewable-energy development using approaches like the multi-regional input-output and structural decomposition. Their study explored the various factors which may influence the renewable-energy consumption in India and its relationship with economic activities across different sectors. The findings indicate that the expansion of renewable energy requires not only technological advancement but also economic support from the government. The taxation of renewable-energy equipment will influence the costs across multiple industries. The study thereby supports that fiscal incentives for renewable energy can have a wider economic and sustainability implications.

Shekhar, Suri, Somani, Lee and Arora (2021) analysed the impact of the pandemic on India's renewable-energy sector. They examined the policy measures required for the recovery of country's economic status and thus showed that the pandemic created significant logistical and financial difficulties for renewable-energy projects. Renewable-energy additions declined during the lockdown whereas electricity demand also experienced a negative turn. Various financing constraints act as big challenges facing renewable-energy developers. They recommended a greater policy support through investment and operational subsidies and measures addressing the financial difficulties of distribution companies. GST incentives and efficient ITC/refund mechanisms can therefore complement the financial measures as suggested by them.

Bhatnagar and Sharma (2022) analysed the green investment in various renewable-energy projects. They stated that it is essential to support India's post-pandemic economic recovery. They stated that economic revival should also focus on addressing the climate change, environmental protection and inclusive growth. In their paper they identified renewable-energy infrastructure needs and energy-efficient technologies which could lead to scope for green investment. Moreover, they suggested that improved financial instruments, liquidity support and access to relatively low-cost green energy could encourage investment in renewable projects.

Dubey, Agrawal and Sharma (2023) in their research investigated India's renewable-energy portfolio. They laid special attention to various policies, incentives and energy security and found that India has huge untapped potential in solar, wind, bioenergy and other renewable resources. The government should take various initiatives in expanding this renewable-energy capacity and help India ensure long-term energy-security requirements. They found

out that stable infrastructure, standardised policies and supportive regulatory conditions are essential for achieving India's ambitious renewable-energy targets.

Prabhu and Mukhopadhyay (2023) in their research studied the various impacts of the India's planned transition of renewable resources on macroeconomic and environmental consequences. They found that replacing conventional energy with renewable sources can lead to huge benefits like greenhouse effects , etc. Their analysis estimated emission savings of approximately 11–23% under different solar and wind energy scenarios. They emphasised on the need for GST and other fiscal policies to support not only renewable-energy generation but also sustainable technologies and circular-economy activities.

III. OBJECTIVES OF THE STUDY

1. To study the impact of GST on renewable and sustainable technologies in India.
2. To study the GST Rate Structures applied on the renewable and sustainable technologies in India.
3. To assess GST incentives available to renewable energy options and sustainable industries in Indian economy.
4. To understand the impact of GST on the competitiveness in India.
5. To study how renewable energy development and sustainable industries relate to macroeconomic growth in India.

ANALYTICAL FRAMEWORK OF THE STUDY

The study reviewed tax policy mechanisms related to tax rate structures, ITC accumulation, tax burdens and statutory compliance norms. The study also considered how tax framework relates to various aspects of investment, domestic manufacturing, employment and long-term economic growth using the government's own assessments.

IV. GST TREATMENT OF RENEWABLE AND SUSTAINABLE TECHNOLOGIES

The introduction of GST represented a significant transformation in India's taxation system. For renewable energy sector and sustainable industries, GST has influenced the production costs, made certain investment decisions more complex, project structures to be catered to and overall business operations very much complex. GST led to changes in the tax rates, input tax credits, certain valuation procedures and complexity in requirements.

The implementation of the Goods and Services Tax was done on 1 July 2017 in India. It brought renewable and sustainable technologies within a unified indirect-tax framework. Under the initial GST structure some emphasis was laid on specified renewable-energy devices and their parts . They were provided at a concessional GST rate of 5%. The few categories covered included biogas plants, solar-power-based devices, solar-power generating systems, windmills waste-to-energy plants and devices, solar lanterns, ocean- and tidal-wave energy devices and photovoltaic cells whether assembled into modules or panels or not. This concessional treatment was intended to encourage the adoption of renewable technologies and support investment in the clean-energy sector.

During the early years of introduction of GST, there was uncertainty regarding the taxation of complete solar and wind power projects because these projects generally involved both goods and services. While specified renewable-energy equipment qualified for the 5% rate, EPC contracts for setting up solar and wind projects could involve different tax rates for their goods and service components. To address this issue the GST Council of India introduced a 70:30 valuation mechanism whereby under which 70% of the value of specified renewable-energy project contracts was treated as the value of renewable-energy goods and the remaining 30% was treated as services and other goods. This mechanism was approved by the GST Council in December 2018 and implemented from 1 January 2019.

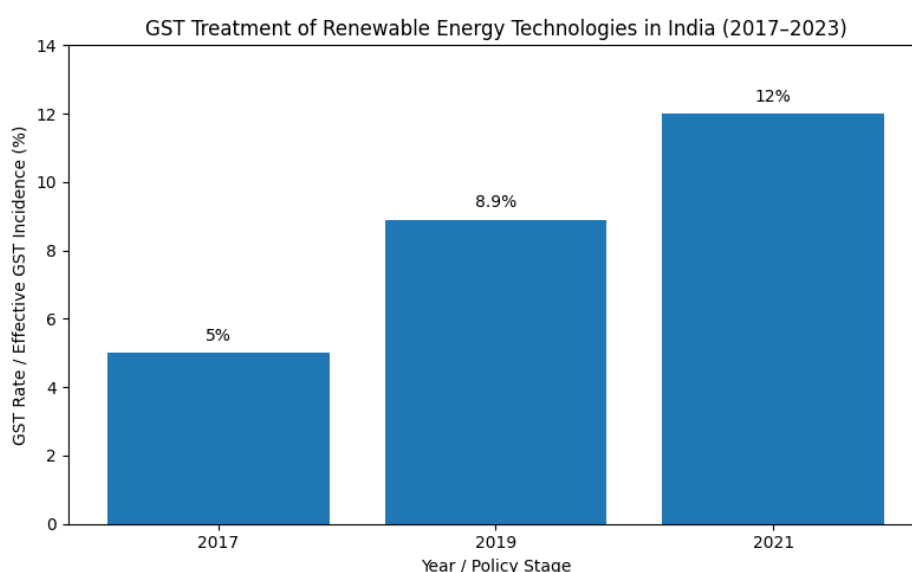
This 70:30 mechanism represented an important development in GST treatment because it attempted to standardise the tax treatment of composite renewable-energy projects. According to the GST analysis nearly 70% of the value of solar power plant EPC contracts represented goods covered by the renewable-energy entry while the remaining 30% represented other goods and services. The Council also considered industry data relating to wind projects and decided that a uniform 70:30 approach should apply to renewable-energy projects rather than adopting different ratios for different technologies. Under the rate structure prevailing before October 2021, the 70% goods component attracted 5% GST and the 30% services component attracted 18%, resulting in an effective GST incidence of approximately 8.9% on the overall contract value. This mechanism was intended to reduce the issues related to classification and provide greater certainty to renewable-energy developers.

In the year 2021 when the GST Council reviewed the taxation of renewable-energy equipment, they found out that there exists an inverted duty structure. Solar PV modules and other renewable-energy equipment were attracting GST at 5% whereas many inputs used in their manufacture attracted GST at higher rates of around 18%. This difference could result in the accumulation of Input Tax Credit (ITC) which would lead to changes in the requirements of working capital of manufacturer's firms. In order to rectify this imbalance, the GST Council recommended increasing the GST rate on specified renewable-energy equipment from 5% to 12%. This rate was applicable from 1 October 2021. The categories covered included solar PV modules, solar-power-based devices, solar generating systems, windmills, waste-to-energy plants and equipment, biogas plants, solar lamps, ocean- and tidal-energy devices, etc. The Council stated that correcting the inverted structure could also help the domestic manufacturing of renewable-energy equipment indirectly.

During the year 2021 to 2023 there was a shift from a concessional approach towards greater emphasis on correcting the tax structure and improving the flow of ITC. The discussions of the GST Council recognised the renewable-energy devices as an optimum measure of an inverted duty structure. They also suggested that such inversion could result in unutilised ITC and various cash-flow difficulties. The Council suggested that there should be concessional treatment of emerging clean-energy technologies such as battery energy storage, pumped-hydro storage and green hydrogen. The discussions indicated that although lower GST rates could support renewable-energy adoption they could create ITC accumulation at the same time leading to working-capital problems for domestic manufacturers.

The GST treatment of renewable and sustainable technologies during 2017–2023 can be viewed as a transition through three stages. An initial 5% concessional rate from 2017 and the introduction of the 70:30 valuation mechanism from 2019, the subsequent increase from 5% to 12% from October 2021 to address the inverted duty structure. The 2017 concessional rate supported the affordability and adoption of renewable technologies while the 70:30 mechanism attempted to resolve classification and valuation issues in composite projects. The 2021 rate revision focused on improving the tax-credit structure and reducing the accumulation of ITC. Thus GST became an important factor influencing the cost structure, working capital, investment environment and competitiveness of India's renewable-energy industry during this period. The above has been represented in the table give below.

Table1: GST Treatment (2017-2023)



V. FINDINGS OF THE STUDY

The analysis of GST treatment and tax incentives applicable to renewable and sustainable industries highlights several important findings:

• Promotion of Investment and Innovation:

A supportive GST structure may lead to reduced cost of renewable energy projects and hence improve the overall investment environment in the country. Various tax incentives can encourage both domestic and international investments while supporting research initiatives, any technological advancements and innovation in clean-energy technologies.

• Input Tax Credit Challenges:

The difference between GST rates applicable to inputs and renewable energy outputs can lead to the accumulation of unutilised ITC. With several inputs attracting GST at 12% to 18% while selected renewable energy devices are taxed at 5%, businesses may face higher requirements of working-capital and greater dependence on timely refunds.

- **Administrative Burden:**

It has been observed that the compliance costs may increase due to the complex documentation requirements and multiple filing procedures. Even the reconciliation requirements are too many and it takes a lot of time to meet various statutory obligations. Such expenses may thus, affect the small and medium-sized enterprises operating in the renewable technology sectors in a great manner.

- **Tax Treatment of Goods and Services may vary:**

In the sectors of renewable energy projects, the application of different GST rates to the different goods and services may lead to various challenges relating to valuation and classification of goods in an equitable and just manner. Thereby it is essential to have clear and consistent valuation rules to settle any kind of disputes and provide some certainty to businesses.

- **Support for Domestic Manufacturing and Employment:**

GST can contribute in a great manner in order to attain the objectives of Make in India project of the government of India. It can be done by reducing tax-related costs, strengthening the domestic supply chains, focusing on local product sales and leading to creation of more job opportunities for the youth of today.

- **Contribution to Long-Term Economic Development:**

GST framework if is stable can lead to alignment of India's taxation system with its sustainability objectives. GST policy can contribute in a significant manner in the economic domain by encouraging making investment in clean technologies, renewable energy infrastructure options and sustainable production. It can lead to economic development in the near future.

CONCLUSION

The study thereby concludes that the GST framework has a very important role in supporting the establishment and expansion of the renewable and sustainable industries in India. The Government of India should take certain measures like the levying of nominal tax rates, tax-related measures that can encourage investment in clean technologies and contribute to the expansion of the green economy. Certain challenges like the ITC accumulation, refund delays, compliance costs and differences in the tax treatment of goods and services continue to create operational difficulties for businesses.

Reduction of the GST rate on the renewable energy devices may lead to lowering the direct tax burden on eligible products and further improve their affordability. Also the lower output tax rate may widen the gap between GST paid on inputs and GST collected on outputs thus making efficient processing of the inverted-duty refunds.

A stable and predictable GST regime, supported by complementary industrial, financial, infrastructure and energy policies is therefore essential for strengthening India's green-growth agenda. Simplifying compliance procedures, improving the efficiency of ITC and refund

mechanisms, reducing classification-related uncertainty and maintaining appropriate tax incentives can create a more favourable environment for green businesses.

A coordinated policy approach can stimulate technological innovation, attract domestic and foreign investment, strengthen indigenous manufacturing capabilities, generate employment and contribute to India's broader objectives of sustainable economic development and long-term energy security.

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