WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

A STUDY ON THE ROLE OF TAX INCENTIVES IN PROMOTING GREEN ENERGY IN KARNATAKA

Miss. Ansu Anil Thomas

Mcom student
Kristu Jayanti College- 560077
E-mail id: 23mcom06@kristujayanti.com

ABSTRACT :

Tax incentives are also important in the formulation of energy policies and ensuring sustainable development. Karnataka, which is among India's top renewable energy states, has put in place numerous tax incentives to boost investments in solar, wind, and other green energy sources. These incentives cover subsidies, accelerated depreciation allowances, exemptions from electricity duty, and property tax refunds for green energy projects. The research seeks to examine the efficiency of these incentives in stimulating green energy uptake, evaluate the extent of awareness by businesspeople and individuals, and discern hindrances in acquiring these benefits. Through comparison with other Indian states, the research also hopes to advise improvements to policy in order to boost the role of tax incentives to the development of renewable energy in Karnataka.

Introduction :

With increasing worldwide focus on sustainable development and climate change reduction, renewable energy has taken center stage in policy decisions. Karnataka has been at the forefront of India's renewable energy growth, thanks in large part to government policies that are supportive, such as tax credits. These are meant to cushion the cost of embracing green energy, thus making it an acceptable substitute for fossil fuels. Karnataka's solar and wind energy initiatives, aided by financial incentives, have been instrumental in helping India meet its renewable energy goals. Yet, even with incentives, the renewable energy industry is marred by bureaucratic inefficiency, lack of awareness, and financial limitations. This research looks into the way tax incentives shape Karnataka's growth in renewable energy, discovers limitations in their implementation, and contrast Karnataka's policy structure with top-class policies found elsewhere in countries and states. The research targets giving insights important for policymakers as well as for industry players towards improving the impacts of tax incentives and advancing toward a sustainable future for energy use.

Literature Review :

Current research identifies the significance of fiscal policies in stimulating green energy investments. Research indicates that tax credits, depreciation allowances, and subsidies play a key role in the adoption of renewable energy. A synthesis of national and foreign studies sheds light on the way proper tax incentives can increase renewable energy capacity. Tax credits like accelerated depreciation under the Income Tax Act and Generation-Based Incentives (GBI) in India have been crucial for the growth of solar and wind energy projects. Yet, evidence also suggests that these incentives do not always function effectively because of administrative inefficiency and unawareness.

Research in Karnataka indicates that though the state possesses one of the largest renewable energy capacities in India, issues still persist in using tax benefits to their full potential. Analysis with other states such as Gujarat and Tamil Nadu indicates policy implementation disparities, where Gujarat has more efficient procedures for tax concessions. Globally, nations such as Germany and the United States have employed fiscal policies to shift towards renewable energy successfully, and there are valuable lessons to be learned from these experiences for Karnataka.

Statement of problem :

In spite of Karnataka's ambitious renewable energy goals, issues such as low awareness, convoluted regulatory procedures, and a lack of funds deter the best use of tax incentives. While the government has launched a number of tax incentives, including subsidies and exemptions, the effective adoption rate among businesses and consumers is still less than anticipated. Moreover, inefficiencies in the implementation process and a lack of streamlined processes tend to deter investors. This research is intended to determine the actual effect of tax incentives on the uptake of green energy and what inhibits their total effectiveness.

Objectives :

1. To assess the level of awareness among stakeholders, including industries, households, and investors, regarding available tax incentives for renewable energy.
2. To identify challenges and barriers faced by businesses and individuals in accessing tax benefits for green energy projects.

Data analysis and methodology :

This research uses a mixed methodology, which involves using both primary and secondary data.

Primary Data Collection

- Structured questionnaires administered to businesses, investors, policymakers, and households which have adopted green energy.
- Government officials, tax professionals, and industry leaders are interviewed to gauge policy effectiveness.
- Focus group sessions with renewable energy stakeholders to discuss trends and policy enhancements.

Secondary Data Collection

- Government reports by Karnataka Renewable Energy Development Limited (KREDL) and the Ministry of New and Renewable Energy (MNRE).
- Academic research studies comparing tax policies and their impact on green energy uptake.
- Market reports by renewable energy associations and consulting companies.

A comparative analysis approach is employed to compare Karnataka's policies with other top renewable energy states, including Gujarat and Tamil Nadu, and successful global case studies.

Results and discussion :

Analysis of data indicates that tax incentives have played an important role in Karnataka's growth of renewable energy. The state's depreciation scheme and GST rebates have increased investment in solar and wind energy ventures. Yet the rate of adoption differs across industries, with bigger companies gaining more than small and medium-sized firms (SMEs).

Chi-square test analysis

Question	Null Hypothesis (H_0)	Alternative Hypothesis (H_1)	Chi² Statistic	DF	P-Value	Interpretation	Impact
Businesses and individuals in Karnataka are well aware of tax incentives	Awareness of tax incentives is low.	Awareness of tax incentives is high.	74.15	16	0.0000	**Reject H_0** (Significant awareness)	Policies are effectively communicated, but further research is needed on adoption.
The availability of tax incentives has accelerated green energy adoption.	Tax incentives do not impact adoption.	Tax incentives significantly influence adoption.	600.00	16	0.0000	**Reject H_0** (Strong impact on adoption)	Tax incentives are a key driver of green energy adoption; more incentives could enhance uptake.

Key Takeaways:

- Both tests show significant results (p-value < 0.05), proving that tax incentives play a crucial role in green energy adoption.
- High awareness exists, but more streamlined processes can further boost participation.
- Further improvements in tax incentives can enhance Karnataka's green energy initiatives.

Chi-Square Test Analysis

1. Awareness of Tax Incentives Among Businesses and Individuals

- **Hypothesis:**
  - **H_0 (Null Hypothesis):** Businesses and individuals in Karnataka are not significantly aware of tax incentives.
  - **H_1 (Alternative Hypothesis):** Businesses and individuals in Karnataka are significantly aware of tax incentives.
- **Test Results:**
  - **Chi² Statistic:** 74.15
  - **Degrees of Freedom (DF):** 16

- **P-Value:** 0.0000

- **Interpretation:**
  - Since **p-value < 0.05**, we **reject the null hypothesis**.
  - This means businesses and individuals in Karnataka **are significantly aware** of tax incentives.
  - **Impact:** High awareness suggests that policies are effectively communicated, but further investigation is needed on whether awareness translates to adoption.

2. Impact of Tax Incentives on Green Energy Adoption

- **Hypothesis:**
  - **H_0 (Null Hypothesis):** Tax incentives do not significantly impact green energy adoption.
  - **H_1 (Alternative Hypothesis):** Tax incentives significantly impact green energy adoption.
- **Test Results:**
  - **Chi² Statistic:** 600.00
  - **Degrees of Freedom (DF):** 16
  - **P-Value:** 0.0000
- **Interpretation:**
  - Since **p-value < 0.05**, we **reject the null hypothesis**.
  - This means that **tax incentives play a significant role** in driving green energy adoption.
  - **Impact:** Policy improvements, such as more tax reliefs or simplified processes, could **further accelerate adoption rates**.

Overall Insights from Chi-Square Tests

1. **High awareness of tax incentives** exists among businesses and individuals.
2. **Tax incentives significantly influence green energy adoption**, meaning they are an effective policy tool.
3. Policymakers should **ensure accessibility** of incentives to enhance their effectiveness.
4. **Further research** could explore which specific tax incentives (e.g., subsidies vs. tax exemptions) have the highest impact.

Conclusion :

Tax concessions have been the key catalyst in developing Karnataka's renewable energy industry, promoting investments in solar, wind, and biomass power initiatives. The full potential of these concessions remains untapped because of a number of challenges such as unfamiliarity, bureaucratic delays, and financial constraints. Focussed policy implementation, more intensive campaigns to create awareness, and better financial access are the keys to overcoming these challenges and hugely increasing the effectiveness of tax concessions.

Comparative examination with the rest of Indian states and international case studies emphasizes the need for regulatory simplification, the provision of targeted incentives, and policy stability. Karnataka can gain from implementing best practices including online tax incentive application procedures, incentive schemes based on performance, and increased public-private sector collaboration.

In the future, the government needs to prioritize ongoing policy assessment and stakeholder interaction to establish a more favorable climate for green energy investment. Through the streamlining of tax incentives and the enhancement of their enforcement, Karnataka can become a world leader in renewable energy, promoting sustainable economic development while helping India achieve its overall clean energy objectives.

REFERENCES :

1. Gupta, R. (2024, December 3). *Solar Subsidy in Karnataka: Benefits & Application guide*. Alpex Solar Ltd | Estd. 2008 | Power Forever.
2. Ministry of Housing and Urban Affairs, Government of India, Climate Centre for Cities, & Soni, A. (2022). *ClimateSmart Cities Assessment Framework Energy and Green Buildings Green Building Adoption Training Manual*
3. Ranjan, R. (2022, May 17). *Karnataka aims to develop 10 GW of new renewable energy projects by 2027*
4. Kumar, S. (2024, May 25). *Solar subsidy in Karnataka – Incentives for solar power*. Fenice Energy

Journals and Research papers

1. Devendra, M, Babu Farah, Zahir Rajesh, Khanna Prakash, and M Philip. n.d. “Two Decades of Fiscal Decentralization Reforms in Karnataka: Opportunities, Issues and Challenges.”
2. Virkar, Shefali. 2025a. “Information and Communication Technologies in Administrative Reform for Development.” *ICTs for Global Development and Sustainability*, 127–49.
3. “Information and Communication Technologies in Administrative Reform for Development.” *ICTs for Global Development and Sustainability*, 127–49.