

**PROSPECTS FOR FURTHER DEVELOPMENT OF SOLAR-WIND ENERGY SYSTEMS IN TIRUVANNAMALAI DISTRICT, TAMILNADU AND INDIA IN GENERAL**

**V. Saravanan<sup>1\*</sup>, M. Arumugam<sup>1</sup>, Andrey V. Brazhnikov<sup>2</sup>, Igor Bolvashenkov<sup>3</sup>**

*<sup>1</sup>Department of Electrical & Electronics Engineering, Arunai Engineering College, Tiruvannamalai (Anna University, Chennai), Tamilnadu, India*

*<sup>2</sup>Department of Electrotechnology & Electrical Engineering, Polytechnic Institute, Siberian Federal University (SFU), Krasnoyarsk, Russia*

*<sup>3</sup>Institute for Energy Conversion Technology, Technical University of Munich (TUM), Munich, Germany*

*\*vsaranaec@yahoo.co.in*

**Introduction**

India is progressing forward in solar and wind power generation, with a target of 160 GW by the year 2022. This paper gives insights and invites prospective solar and wind power developers/utilities to have their power generation systems in Tiruvannamalai district, Tamilnadu, India [1-6].

**Recommendations for Further Development of Solar-Wind Energy Systems**

The suggestions recommended for solar-wind renewable energy projects are: i) exemption from electricity tax, grid connectivity, open access, wheeling, and banking and cross-subsidy charges, ii) strengthening of policy commitments and incorporating latest technology insights and planning techniques, iii) integrated framework for standards and quality assurance/infrastructure, iv) solar and wind resource planning and grid operating protocols, v) National renewable energy financing mechanisms, private/public funding schemes and low cost financing and implementation of generation based incentive for PV systems, vi) Attraction of foreign direct investments, vii) no collateral security for development of solar energy parks, viii) single window clearance for solar projects, ix) must run status for PV systems, x) support to PV manufacturing, supply chain and cross cutting power electronic technologies, xi) proactive planning through National Smart Grid Mission, xii) quicker implementation of PV systems with advanced metering system, xiii) up gradation of power evacuation/transmission infra structure for green energy transmission corridor, xiv) availability of solar radiation data through GIS based stations, xv) organizing more consumer awareness campaigns and demonstration activities, xvi) creation of new training institutes and build institutional, technical and human capacity, xvii) support to R&D programmes with industry association, xviii) integration of solar technology with energy storage mechanisms, xix) identify Special Power Zone (SPZ), i.e new locations

for PV installations near to consumers ( encourage the concept of microgrid) having grid support in terms of power evacuation and reliability, xx) support the foreign institutional investors to have their PV installations in terms of BOOT model (Built, Own, Operate and Trade), xxi) removal of Anti-dumping duty on PV cells and modules. xxii) promote the co-utilization of land for solar energy projects, crop cultivation and rain water harvesting, xxiii) property tax abatement to domestic building owners that install consumer scale solar energy systems, xxiv) active introduction of the results of the latest scientific research and promising technical solutions in the field of renewable energy [7, 8].

## Conclusion

Renewable energy system based on Solar and Wind is a good choice for India to ensure power security and to facilitate greenhouse gas mitigation. India has to build a flexible and efficient electricity sector that can meet the country's burgeoning energy needs in a clean and green manner. It should also fulfill its international commitments for mitigating climate change.

## References

1. Installed Capacity, August 2018, Central Electricity Authority, Ministry of Power, Government of India, <http://www.cea.nic.in/monthlyinstalledcapacity.html> (Accessed on 27.09.2018).
2. <https://mnre.gov.in/> [Accessed on 10 October 2018].
3. [http://www.investingintamilnadu.com/tamilnadu/doc/why\\_tamilnadu/presentation-on-tamilnadu-31-july-2018.pdf](http://www.investingintamilnadu.com/tamilnadu/doc/why_tamilnadu/presentation-on-tamilnadu-31-july-2018.pdf) (Accessed on 27.09.2018).
4. <http://teda.in/teda-solicits-comments-on-the-draft-solar-policy-2018/> (Accessed on 27.09.2018).
5. [www.tiruvannamalai.tn.nic.in/District\\_statistical\\_Handbook\\_2016-2017.pdf](http://www.tiruvannamalai.tn.nic.in/District_statistical_Handbook_2016-2017.pdf) [Accessed on 28.08.2018].
6. V. Saravanan, M. Aravindan, V. Balaji, M. Arumugam, "Prospects of DC Microgrid in Tiruvannamalai District, Tamilnadu" in International R & D Conclave on "Emerging Opportunities and Challenges of R & D in Indian Power Sector" during 20th and 21st February 2018 at Vigyan Bhavan, Delhi organized by Central Electricity Authority, Ministry of Power, Government of India, pp. 527-535 (Session III: Distribution).
7. A.V. Brazhnikov, et al, "Windmill-Electric Generation Plant", Russian patent No RU 2649371 C1 dated 02.04.2018 (in Russian).
8. A.V. Brazhnikov, "Novel Principle of Aero/Hydro-Dynamic Lift Creation", Proceedings of the 2017 2nd International Conference on Applied Mechanics, Electronics and Mechatronics Engineering "AMEME2017", Beijing, China, October 22-23, 2017, 3 (in English).