



# A REVIEW ON ONE SUN ONE WORLD ONE GRID

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**ABSTRACT :-** With a growing population and its needs, India is moving towards more pollution and less non-renewable resources left for the future generations. In this chaotic state, one thing certain is that India's power requirement will grow. Renewable energy plays a significant job in giving supportable and clean energy and moderating environmental change. As energy lies at the core of the environment predicament, creating 100 GW of sun oriented energy by 2022 is an honorable yet aggressive objective of India under Paris Accord of Climate Change. It is clear that the advancement of the Indian sunlight based energy area depends on the mix of regulative system, monetary instruments, nearby assembling area, ecologically sound innovation, and so on. In spite of the developing impulse of sun oriented energy in India, there are still holes in its administration. In this article, the writer centers around the ongoing status, difficulties and future possibilities of sun based energy improvement in India and summarizes the way forward with proposals to address some of these gaps.

**Keywords:** - Sun · Solar energy · Renewable energy · Climate Change · India · Challenges · Laws and Policies · Technology · Electric grid · Biodiversity · Environmental protection · Governance



## I. INTRODUCTION

Energy plays a vital role on the discussion of climate change. Energy is fundamental to the existence of society, as without it, industry, commerce and society cannot function. While the energy sector is vital for development, its emissions are large and constantly growing. Sixty-eight percent of India's emissions between 2005-2013 came in from the energy sector. It is highly unlikely that electricity demand will ever come down with growing population and its needs. Notwithstanding, because of the upsurge in the adverse consequence of regular wellsprings of energy, the development and advancement of sustainable power is becoming huge in the ongoing worldwide setting.

The unreasonable utilization of non-renewable energy sources in the past has raised worries about consumption of fossil assets for people in the future. Non-sustainable assets should be supplanted by inexhaustible wellsprings of energy, which are perpetual in nature. Reestablish capable energy comes from normal sources or cycles that are continually renewed like daylight, wind and sea. The perfect representations of inexhaustible wellsprings of energy are sunlight based energy, wind power, hydropower, geo-sea nuclear power, bio-energy, and so on across the globe. All inexhaustible wellsprings of energy enjoy their benefits and hindrances and which kind of environmentally friendly power is best relies especially upon the neighborhood conditions and the scale. Topographically, India is an ideal country for sun powered energy as it is situated between the Tropic of Cancer and the Tropic of Capricorn. There is lot of daylight all year (right around 300 bright days/year) which can be transformed into intensity or power. Sun oriented energy can contend and outflank non-inexhaustible and other renewable sources of energy in terms of cost and environmental footprint. The geographical location of India and continuous fall in solar energy prices make solar energy by far the most optimum source of power.

Several countries have been making advances in the field of solar energy. Wide-ranging examples include solar technologies across scales and innovative adoption models in Italy and Germany, large numbers of solar user communities in the UK and the Netherlands, various models to increase solar use in Thailand, and strong pushes in Morocco and Kenya. Mirrored solar dishes, perovskite solar cell, grid storage batteries, solar transport, portable solar are some of the innovation in solar technologies around the world. However, India's focus has been towards domestic manufacturing of solar cells and modules in the past years due to high import rate of cheap solar cells and modules from China and other nations. Recently, India has initiated developments on other solar technologies such as energy storage, grid connectivity to rural areas, electric vehicle, etc.



Globally, India stands at No. 5 in terms of total renewable energy installed capacity, behind only China, U.S, Japan and Germany. The 24th conference of the United Nations Framework Convention on Climate Change (UNFCCC), held in Katowice, Poland and the G20 Summit 2018 that took place in Buenos Aires, Argentina saw India's Prime Minister Mr. Narendra Modi pitching his brainchild, the International Solar Alliance (ISA), under the vision of "One World, One Sun, One Grid" (connecting solar energy supply across borders).

According to India's Intended Nationally Determined Contribution goals as per the Paris Accord on Climate Change (COP 21), India made a pledge to lower carbon intensity by 33-35% in 2030 from its 2005 level, generate 40% of power from non-fossil fuels by 2030 and aspires to achieve 175 GW of renewable energy capacity by 2022 (this includes 100 GW from solar, 60 GW from wind, 10 GW from bio-power and 5 GW from small hydro power). However, doubts have been raised about the feasibility of these massive goals. The institutional loopholes which have been ailing the progress of energy transmission in India are bound to hinder the mission unless there is a clear strategy roadmap and integrated planning to implement the same

In this article, the author focuses on the development of solar energy in India and how India may achieve its climate change goals with present and future barriers. Part II explains the development of renewable energy laws and policies in India. Part III highlights the risk and challenges for solar energy that could still derail India's evolving role in solar energy sector. Part IV provides recommendations from around the globe to achieve more secure and equitable solar energy future in India. Finally, the article concludes with the need of improvements in legislative framework, domestic manufacturing and environmentally sound technology for the development of solar sector in India.

## **II. LITERATURE SURVEY**

After Stockholm Declaration 1972 and Rio Declaration 1992, renewable energy planning process has become epic centre in the domestic and international policy arena. India, is a quasi-federal country, where legislative and executive powers are delineated between the Centre and States. The Seventh Schedule of the Indian Constitution designates subjects over which the legislative power is assigned to the Union (List I), State (List II), and to both under the Concurrent (List III). Electricity is a concurrent subject under Entry 38 in List III, therefore, both Union and States can legislate on this matter.<sup>12</sup> At the Union level, the Ministry of New and Renewable Energy (MNRE) is the world's first ministry set

up exclusively for the development of new and renewable energy by the Government of India (GoI).<sup>13</sup> MNRE's vision is to develop new and renewable energy technologies, processes, material, components, products & services at par with international specifications and performance parameters in order to supplement the energy requirement of India.<sup>14</sup> At the state level in India, there are nodal agencies and departments which operate under the purview of the respective state governments for the effective implementation of all renewable energy and cogeneration schemes.

### III. SYSTEM DESIGN

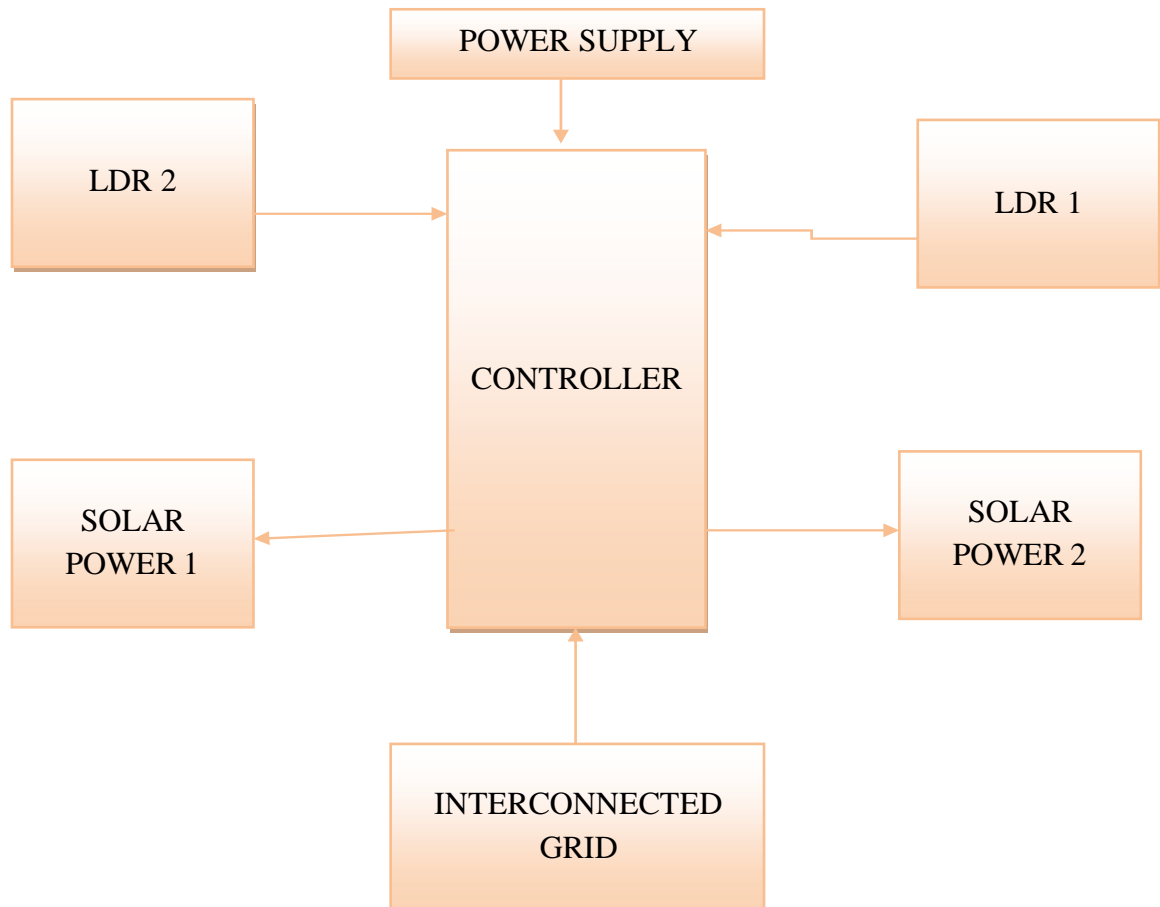


Fig.1 System Design



In this project one nation one sun one word we sensing sun rise sun set which is sensor LDR 1 and LDR2

LDR 1 sense one country and LDR 2 sense Indian country if parent sun then supplies selected for sun set country so also for country 2 so its get energy generation in one place and utilized another place.

### **3.1 Development of renewable energy laws and policies in India**

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In addition, the Ministry of Power (MoP), GoI is responsible for the administration of the Energy Conservation Act 2001, the Electricity Act 2003, and National Tariff Policy 2006, all three play a key role in promoting procurement of renewable energy-based power. The Ministry of Environment, Forests and Climate Change (MoEF&CC), GoI is the nodal agency of the Central Government for overseeing the implementation of India's environmental and forestry laws, policies, programmers and also responsible for providing environmental clearances for renewable energy projects.

Considering the vast potential of energy savings and benefits of energy efficiency, the Government of India enacted the Energy Conservation Act, 2001. The Act provides for the legal framework, institutional arrangement and a regulatory mechanism at the Union and State level to embark upon energy efficiency drive in the country. Another key legislation is the Electricity Act 2003, which mandates the State Electricity



Regulatory Commissions (SERCs) to promote generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person. The National Tariff Policy (NTP) 2006 requires the SERCs to fix a minimum percentage of Renewable Purchase Obligation (RPO) from such sources taking into account availability of such resources in the region and its impact on retail tariffs and procurement by distribution companies at preferential tariffs determined by the SERCs.

In 2008, the former Prime Minister of India Dr. Manmohan Singh launched the National Action Plan on Climate Change (NAPCC). The NAPCC addresses on existing and future policies and programmes directed at climate change mitigation and adaptation. NAPCC also outlines the policies to address climate mitigation from fossil fuel to non-fossil fuel-based economy by utilizing renewable energy sources. Under the National Solar Mission of NAPCC, the flagship policy initiative, the Jawaharlal Nehru National Solar Mission (JNNSM) was launched in 2010 to address energy security issues and this mission is being implemented by MNRE, GoI. The Mission has set a target of 20 GW and stipulates implementation and achievement of the target in 3 phases (first phase up to 2012-13, second phase from 2013 to 2017 and the third phase from 2017 to 2022) for various components, including grid connected solar power. However, the target of 20 GW of solar power has been revised to 100 GW during COP 21 in 2015. The marketplace responded towards India's climate change goals with dramatically dropping renewable energy generation prices for wind and solar, with the cost of solar electricity plummeting from 17.91 INR/KWh to 2.44 INR/KWh in 2017.

Additionally, for achieving reduction in GHG emissions goal of India, the PM Mr. Modi and the former President of France Mr. François Hollande has launched the International Solar Alliance (ISA) in November 2015. Later in January 2016,

Both of them laid the foundation stone of ISA headquarters at Gurugram, India. ISA has been envisioned as a dedicated platform that aims to contribute towards the common goal of increasing utilization and promotion of solar energy and solar applications in the prospective member countries to help the world transform to a low-carbon and a greener society. As of January 2019, seventy-one countries have signed and forty-eight have ratified the ISA Framework Agreement.



#### IV. CONCLUSION

India is a key player in global climate change mitigation, and it is crucial to understand its energy and emissions future. Development of solar sector in India is becoming visible formation of International Solar Alliances or by promising to battle environmental change model relevantly. India's populace is 1.34 billion now and India will slip past China to turn into the most crowded country by 2024. Energy requests will increment quickly as the populace increments.

At this point India's Solar energy introduced limit is 26 GW and it expects to accomplish 100 GW by 2022. India most certainly has the tremendous potential for sun powered energy, yet to accomplish the fantasy of "One World, One Sun, One Grid", India needs lucidity parents in law and strategy with respect to sun oriented energy improvement. The focal point of sun oriented energy advancement in India ought to be focused on towards innovation improvement, favorable to movement of Indian assembling, utilizing network ability to guarantee solid access to the poor and R&D for environmentally sound technologies in solar sector. As of now, little is known about the environmental impact of solar energy. However, based on the available evidence, we know that the impact of solar energy can be greatly reduced if new development is focused on lands that are already degraded and lack threatened species. More research on specific impacts of solar energy developments are need of the hour, particularly given the rapid growth of solar energy around the globe.



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