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"Investment Roadblocks and Business-driven Demands for Renewable Power Generation in India: The Way Forward for a Clean Energy/Low-Carbon Technology in India"

A case study on one of the world's biggest solar parks - Pavagada in Karnataka- and the lessons to learn and (un) learn from the scrutiny

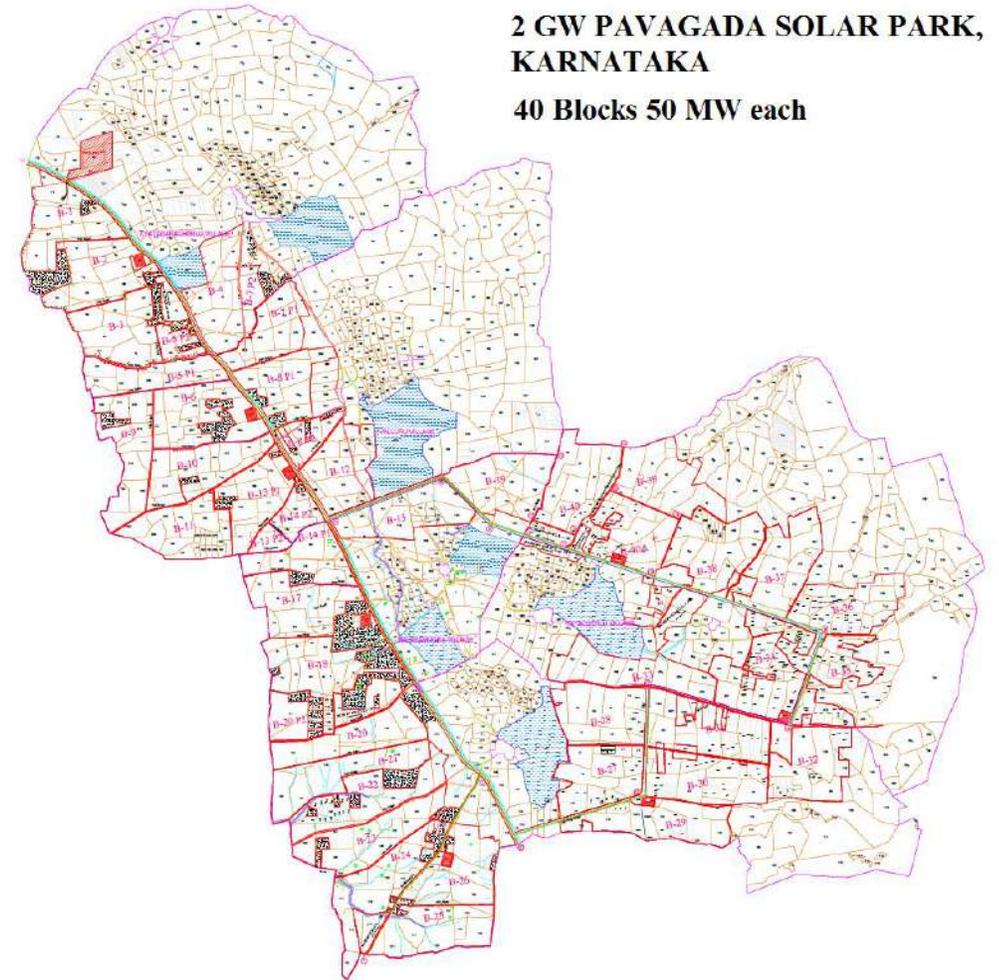


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Karnataka's Largest Solar Park

- Pavagada Solar park spreads across nearly 13,000 acres in its eastern district Tumkur.
- Pavagada, is a plateau surrounded by rocky hill chains made up of metamorphic rocks of closepet granite and a grand landscape of grassland spursed with trees and shrubs.
- The region is drained by the Uttara Pinakini River, a non perennial River of the region.
- The district houses the Madhugiri State Forest, the Devarayanadurga State Forest, the Kaggaladu Heronry, the Huliyr Durga Forest and the Jayamangali Blackbuck Reserve and several wetlands.
- Pavagada was once known for its wolves that lifted children from its villages.
- This taluk has experienced drought for more than 5 decades and has been a curse for the farmers
- The state government's plan of a 2000 MW solar park, to generate 2700 MW has changed the economic, ecological, socio-cultural landscape.



How was it done?

- Karnataka Solar Power Development Corporation Limited (KSPDCL), a parastatal was incorporated in the year 2015 under the Companies Act, 2013 as a Joint Venture Company between SECI (Solar Energy Corporation of India), Government of India and KREDL (Karnataka Renewable Energy Development Limited), GoK with an objective to plan, develop and operate solar parks in the state of Karnataka under MNRE Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects in the country.
- KSPDCL has been designated as Solar Power Park Developer (SPPD) for facilitation and implementation of the 2000 MW Pavagada Ultra Mega Solar Park to be developed at Vallur, Balasamudra, Tirumani, Rayacharlu and Kyataganacharlu Villages of Nagalmadike Hobli, Pavagada Taluk of Tumkur District, Karnataka.
- KSPDCL, as a part of this alliance, with an estimated investment of Rs16.5bn (\$2.5bn) solar park development, has identified and taken possession of land required (on lease basis) and has developed various infrastructures like the internal transmission system, water supply, road connectivity, street lights, drainage system amongst others.
- KSPDCL has negotiated the land lease from land owners on a 28 year lease rental basis and has allotted the land to the SPDs who are selected through the bidding process conducted by NTPC / SECI / KREDL (as the case may be) through the Grid Connected Solar Photo Voltaic Projects for 2000 MW Pavagada Ultra Mega Solar Park in Karnataka.
- 2000 MW Solar Park is divided into 8 blocks of 250 MW which are further subdivided into 50 MW sub blocks.
- A senior officer from the revenue department was handpicked for this herculean task of influencing all the households with perseverance and detailed planning.



<https://edition.cnn.com/2019/04/24/middleeast/gallery/global-solar-megaprojects/index.html>

What the local community shares?

- For the farmers, leasing the land for the solar park means the land is locked for 28 years with a rent of Rs.21,000/- per year and a 2-3% increase every year.
- Even lands in family disputes have been given away on lease in the hope of receiving some money every year.
- Local villagers share how they were not consulted but skilfully persuaded into the lease arrangement.
- Local people share that a department official personally came repeatedly house to house gently coaxing land owners to lease the land.
- Farmers share that there was little space for negotiation as the amount was fixed by the Revenue department.
- A job is possible, was what they heard, but not promised for all the unskilled work required in the construction of the solar park for those farming families who have parted with the land.
- For the landless there is little hope of a job.
- In reality most labour is from Orissa, Bihar, West Bengal and other States. Very few local people have managed to get a job



Who benefits? Who Loses?

- Those with large plots have benefitted as they have invested the lease money and bought tractors, diggers and SUVs, which are rented regularly to the solar companies, but small plot holders have gained little.
- A few have turned into sub-contractors for local labour
- A large number of youngsters have migrated to Bangalore in search of construction labour, driver and security guard and other odd jobs.
- Many feel exploited, especially those living in the Schedule Caste colony of Vollur Village. This opens another dimension of how caste based segregation in a village has further marginalised some communities.



Local Livelihoods

- Pastoralists have nothing left in the region for their animals. They now have to walk long distances in the heat with their animals to reach patches of the vegetation left of the fencing and demarcation. One samaritan in Nagalamadike village had invested money to construct a small bund to help retain water on his land for the village animals.
- Many others have sold their animals as it has become difficult to meet fodder and water needs.
- Migration in search of labour to many, means leaving behind families with young and old members.
- Amidst the sea of glass are disturbing sights of small tin sheds run by local women selling tea, ghutka and biscuit packets.
- Young truck drivers bringing in the material from ports of Chennai and Vishakapatnam and their managers, workers flock in these shops marking their arrivals and departures over tea looking into their mobile phones and chatting away to take a break from the heat.



Water needs, a forgotten plea!

- There is no source of clean drinking water close by and the local water supply tank is contaminated with worms.
- Access to clean water translates to spending of Rs.5/- per pot and not everyone can afford it or bring it from the distance across the village especially in the hot summer months.
- Women also walk long distances in search of water
- Many even complain that there is very high flourosis as the water as very high content of nitrates and fluorides but little has been done to solve this problem.
- Old and young disabled from fluorosis inhabit the villages



Ecological destruction

- A total of 13,000 acres spanning five villages has been stripped of its vegetation, fenced and levelled
- Most of it is covered with solar panels, while the remaining are being transformed with diggers and levellers working to adorn this new look.
- The process of fencing and levelling has disrupted much of the drainage system disturbing the small bunds, rajakaluves, loose boulder structures and other structures that had been thoughtfully placed in the past to ensure water retention in the area.
- Each block is fenced with barbed wire rising to nearly 8 feet high
- Water to wash the panels to keep it dust free is extracted from the ground by each of the SPDs in each of the blocks and is softened before using it as the water has high TDS (Total Dissolved Solids).



Environmental Principles, Policies, Laws and court orders disregarded

- The key principles of environmental justice, an array of laws and policies, Standing Committee Reports by the parliament, the supreme court, high court and NGT judgements have all set certain precedents to ensure environmental and social justice concerns are not evaded in the context of the current paradigm of development.
- Despite these legal safeguards, solar energy projects in India are exempted from Environment and Social Impact Assessments that would have required some consultations from local communities.
- The Pavagada project has only obtained a No Objection Certificate from the Forest Department
- A Hydrogeological Report recommends a detailed investigation to assess the availability and occurrence of groundwater in the region, and a soil test to check resistance and corrosiveness pertaining to the installation of the solar projects but no such studies have been conducted.
- As the panel ages and nears the end of its lifetime, the toxicity in these panels is a serious concern to the environment and pose occupational risks to the workers too. Solar panel waste has no plan for safely disposing. The hazardous material used in them are not easy to recycle and can contaminate the water, soil and air if discarded with other electronic waste.



Lessons for replication and scaling up

- The region is known for dry land agriculture growing Ragi, ground nut, paddy and vegetables and pastoralism with communities having a good understanding of the geographical and ecological conditions.
- With low rainfall and very little irrigated land, a logical procedure in addressing the challenges of drought and a land based sustained livelihood for these communities would have been to involve departments such as the Department of Agriculture, Department of Horticulture, Department of Minor Irrigation, Meteorological Department, the Central Ground Water Board and the Panchayats, and explore possibilities.
- Even a mere consultation with these departments may have resulted in finding a mid path before embarking on such a massive project. It would have only been justifiable to conduct a feasibility study for a solar park of this size, which would have helped determine the viability of the idea and helped ensure the project is legally, technically, economically and socially feasible.
- It would have helped identify constraints and address them with creative ideas of co-farming, co-grazing and other new opportunities and the local people's participation in the context of climate change and building resilience.
- As the country moves forward advancing these solar parks there is a big risk of repeating the same mistakes of ignoring environmental justice concerns. The environmental concerns raised with mega thermal/nuclear/hydel projects in the past remain the backbone of risk mitigation of the renewable energy projects such as solar and they can help in the easy transition without denying justice to the local communities.
- A careful critical, consistent and solution based path has to be traced to balance solar park expansion and local land preservation along with environmental and social justice as priorities.

