


 SEARCH


Weather  
Max: 26.5°C  
Min: 19.6°C



In Bangalore  
Rain lightly

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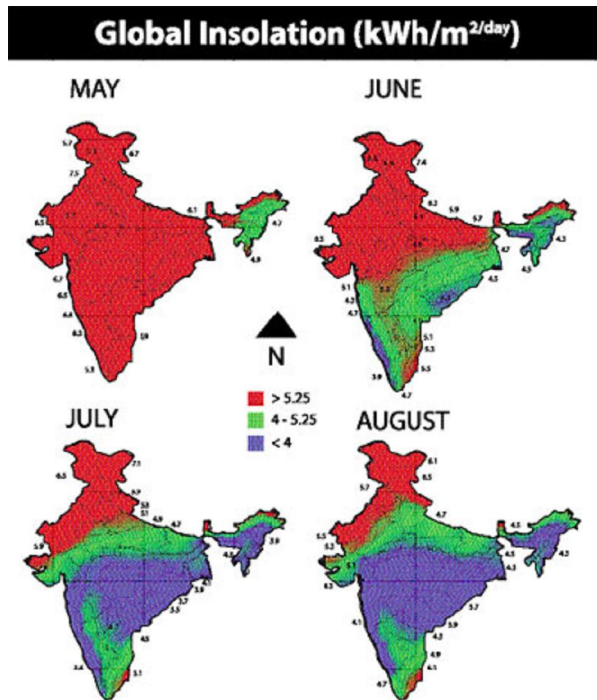
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Scientists find Gujarat, Gangetic plains have ideal conditions to harness solar energy

## Nation's solar power potential mapped

Subhash Chandra N S, Bangalore, May 20, DHNS :

*The Energy and Wetland Research Group (EWRG), Centre for Ecological Sciences (CES), Indian Institute of Science (IISc) have jointly mapped the solar hotspots of the country.*



Investment in solar power generation will now be less risky and eco-friendly as scientists from IISc have come out with priority regions to deploy solar energy devices across the country.

"By mapping the solar hotspots, we hope to facilitate commercial exploitation of energy with favourable techno-economic prospects and

organisational infrastructure support to augment solar power generation in the country," said Dr T V Ramachandra, senior scientist, EWRG, CES, IISc.

The detailed, three-month-long study provides access to solar potentiality by documenting the solar insolation, the much required parameter to generate solar energy. Trans-gangetic and Gujarat plains are among regions deemed to hold high potential.

The solar hotspots, found based on the exploitable potential using high resolution global insolation data from the US National Aeronautics and Space Administration (NASA), has found that the country's favourable geographical location has made it one of the best locations for solar energy. However, the nation suffers in installation of solar applications with just 66 megawatt peak (mwp). This includes 12.28 mwp grid-connected solar power and 2.92 mwp off-grid solar power plants (SPP).

Though the national solar mission (NSM) launched in January 2010 has boosted the solar power scenario in the country, investment has suffered due to lack of details on the energy potential.

The researchers had collected data for more than 900 grids covering the entire topography of India and found that the nation has a vast potential for solar power generation - about 58 per cent of total land area (1.89 million km sq). "It receives an annual average global insolation above 5 kWh per metre sq per day (m sq)," Ramachandra said.

The study, conducted along with two more researchers, Rishabh Jain and Gautham Krishnadas, has also documented the data of insolation for every month.

According to the monthwise data findings, during January, major parts of the southern peninsula receive insolation above 4.5 kWh per metre sq per day, while western coastal plains and ghats region receive 5.5 kWh per m sq and western Himalayas and North India receive the minimum of 2.5 kWh m sq.

During February, a major expanse of the Indian landscape receives above 5 kWh per m sq, while states like Himachal Pradesh, Uttarakhand, Jammu and Kashmir and the north-eastern region receive an insolation in the range of 3-4 kWh m per sq.

During April and May, more than 90 per cent of the country receives minimum insolation up to 5 kWh m sq which rises up to 7.5 kWh m sq, while the eastern Himalayas receive 4.7 kWh m per sq.

During the monsoon, the global insolation drops drastically in the south (with the exception of Tamil Nadu) and north-eastern regions to about 3.9 kWh m sq and it continues until September.

"The country receives annual sunshine of 2,600- 3,200 hours. Direct insolation with a minimum threshold value of 1,800 kWh m sq per year or 5 kWh m sq per day is recommended to achieve levelised electricity costs (LEC)," the report said.

### CSP and barren land

Suggesting that the concentrated solar power (CSP) - the technology that use lenses or mirrors to concentrate a large area of sunlight - is best suited for arid and semi arid regions, Ramachandra said that the transgangetic, western dry, plateau and Gujarat plains were best suited for this purpose.

The study said 4.89 million ha of barren and uncultivable land is available in Gujarat and Rajasthan. Even a small fraction of this land can support 1,222 MW capacity.

Despite being densely populated several states have barren and dry land with great power generation potential. Rajasthan has the most barren land with 2,595 ha, followed by Gujarat with 2,295 ha and Andhra Pradesh (2,056 ha). Maharashtra, Madhya Pradesh and Karnataka have 1,718 ha, 1,351 ha and 788 ha respectively.