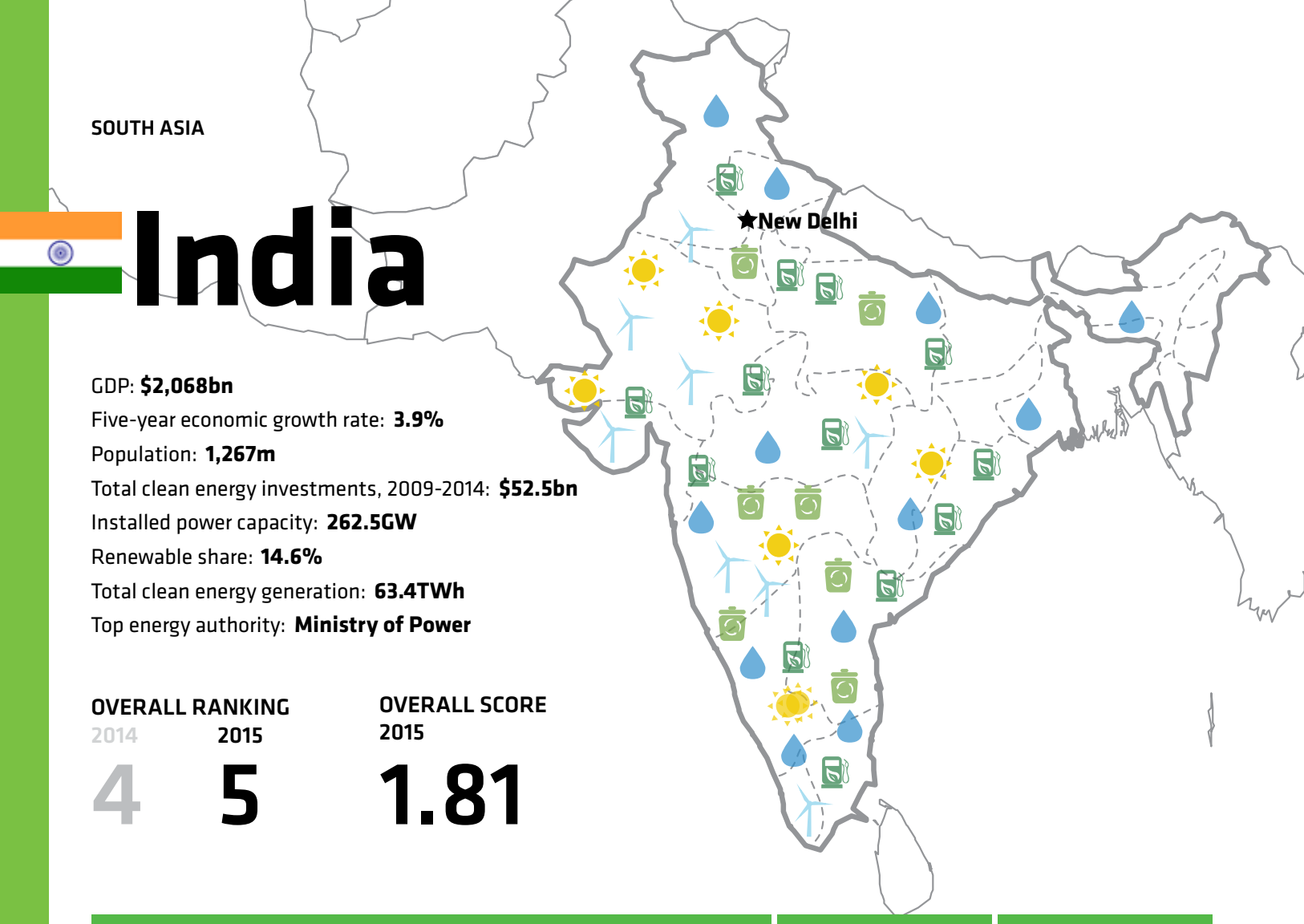
SOUTH ASIA

India



GDP: **$2,068bn**
Five-year economic growth rate: **3.9%**
Population: **1,267m**
Total clean energy investments, 2009-2014: **$52.5bn**
Installed power capacity: **262.5GW**
Renewable share: **14.6%**
Total clean energy generation: **63.4TWh**
Top energy authority: **Ministry of Power**

OVERALL RANKING 2014	OVERALL RANKING 2015	OVERALL SCORE 2015
4	5	1.81

PARAMETER	RANKING	SCORE
I. Enabling Framework	11	1.51
II. Clean Energy Investment & Climate Financing	19	0.66
III. Low-Carbon Business & Clean Energy Value Chains	05	4.10
IV. Greenhouse Gas Management Activities	08	2.60

SCORE SUMMARY

India scored 1.81 in *Climatescope* 2015, placing it 5th on the list of countries overall. The country's ranking fell one place on the list from 2014, largely due to decline of its score on Clean Energy Investment Parameter II in general and on Green Micro Finance Indicator, in particular.

On Enabling Framework Parameter I, India scored 1.51 thanks to a particularly good performance on Growth Rate of Power Demand Indicator. In fact, it had the second highest score on Parameter I among all nations in APAC.

On Clean Energy Investment and Climate Financing Parameter II, the country scored 0.66, down from 0.85 in 2014.

On Low-Carbon Business & Clean Energy Value Chains Parameter III, the country repeated its 2014 score of 4.10 (ranking fifth in both years globally) thanks to a well-developed value chain.

On Greenhouse Gas Management Activities Parameter IV, India scored 2.60, down from its 2.68 in 2014, because of a decline in its GHG Country Registry Indicator score.

For further information, access www.global-climatescope.org/en/country/india

OVERVIEW

India had 258GW of total power capacity at the end of 2014 of which renewables represented 34GW (13%). Overall, coal represented the largest share with 60%, followed by large hydro at 16%.

2014 was a watershed year for Indian politics and the implications for energy policy could be felt for years, perhaps even decades to come. Elections concluded in May handed Narendra Modi and his BJP a decisive victory and a mandate to form a new federal government.

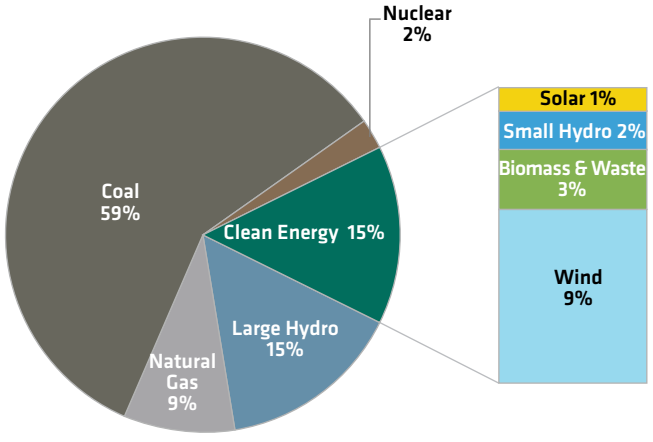
Modi has outlined broad ambitions to provide around-the-clock power and to expand electricity access to all 1.25bn Indians by 2019. This, in turn, has prompted major energy policy reform. Step one was a move to put ministries overseeing the coal, power and new and renewable energy sectors under a single minister. This has improved coordination between ministries and speeded decision making. It has also strengthened the presence of Ministry of New and Renewable Energy and brought it to the forefront.

Renewables represent an important part of the government's energy security ambitions while at the same time helping to address India's rapidly rising CO2 emissions. Distributed renewables, typically in the form of photovoltaics, also have the potential to electrify India's remote villages without the need of extending the grid.

Hence the government has set highly ambitious goals for adding renewable capacity. The country's previous target of adding 20GW solar by 2022 has been upped to 100GW while a new target for wind has been set at 60GW under the same time frame. Including 10GW of biomass and 5GW of small hydro, the overall aim is to add 175GW of renewable energy capacity by 2022.

INSTALLED POWER CAPACITY BY SOURCE, 2014 (%)

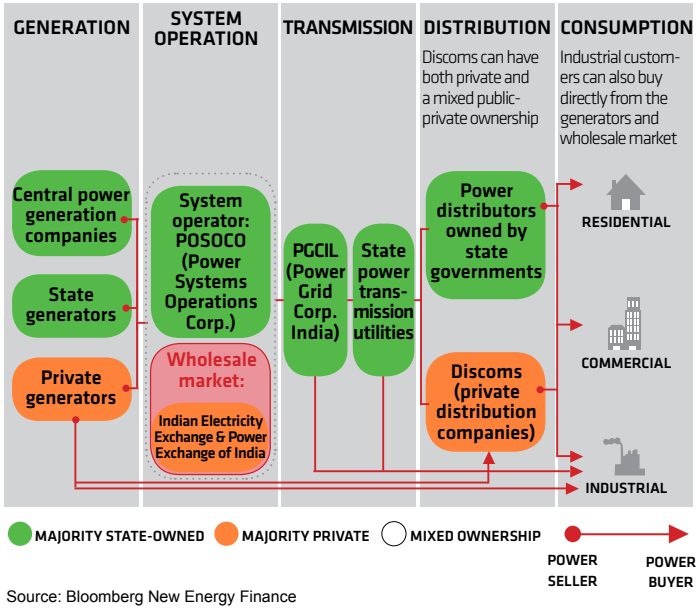
262.5GW total installed capacity



Source: Bloomberg New Energy Finance, Central Electricity Authority, Ministry of New and Renewable Energy
Note: Negligible values for oil & diesel and other fossil fuels cannot be graphically represented due to scale, see source data for the complete numbers.

POWER SECTOR STRUCTURE

Regulator: Central Electricity Regulatory Comission and State Regulatory Commissions



Source: Bloomberg New Energy Finance

KEY POLICIES

Auctions	The National Solar Mission is targeting development of 100GW of solar power by 2022. The federal government and various states are conducting several auctions to permit the necessary capacity.
Biofuel Blending Mandate	There is an overarching national target to achieve 20% biofuel content for both petrol and diesel by 2017. In January 2013, a directive was issued mandating the blending of 5% ethanol with petrol by 30 June 2013.
Debt-Equity Incentives	Various grants and capital subsidies have been made by central government to develop small-scale biogas, biomass & waste-based systems, solar lighting and rural electrification.
Energy Targets	India has set an overarching target of 175GW of renewable energy by 2022. this includes 100GW of solar, 60GW of wind, 10GW of biomass and 5GW of small hydro. The states also have their own targets and renewable purchase obligations.
Feed-in-Tariffs	State-level electricity regulations mandate FiTs that are applicable for a set period of time, for each energy source.
Net Metering	As many as 15 states in India have net-metering policies while others are developing them. The policies vary among states and in some cases offer additional incentives or feed-in tariffs.
Tax Incentives	Announced in as early as 1962, the accelerated depreciation now allows renewable energy developers to claim 80% depreciation resulting into deferment of taxes and interest cost savings. Clean energy projects are also eligible for 10year income tax holidays.

Source: Bloomberg New Energy Finance Policy Library

To fuel these targets, the government has quadrupled the clean-energy taxes on coal to INR 200/tonne from INR 50/tonne under the previous government. Revenues from this are pooled into a National Clean Energy Fund intended to finance most national level clean energy subsidies and support programs. Subsidies include capital grants for rooftop and small solar applications or creation of a payment security fund to cover payment defaults for utility scale projects.

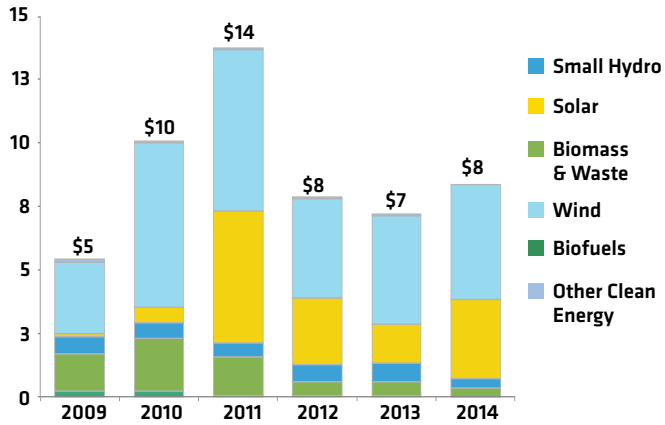
It has been estimated that thanks to strong sun, India has the potential to host no less than 749GW of solar power generating capacity. As of the end of 2014, however, the country had just 3GW installed. The 100GW solar by 2022 target outlined by the Modi government suggests 12GW of new build will be needed per year.

While the target is national, achieving it will rely to a large degree on the efforts of states who formulate their own solar targets and incentive policies. Most have taken an auction-based approach under which private developers bid to sell power to state distribution companies at the lowest possible rates. Rules of these tenders vary by state but usually 25-year fixed rate power purchase agreements (PPAs) are available. A few states have opted for feed-in tariffs over auctions to award solar contracts.

At the federal level, the National Solar Mission program runs parallel to state efforts and also offers reverse auctions and subsidies. By the end of 2014, 1.9GW capacity had been permitted under the Solar Mission with a target to add a further 17GW by 2019.

ANNUAL INVESTMENT IN CLEAN ENERGY, 2009-2014 ($bn)

$52bn total cumulative investment



Source: Bloomberg New Energy Finance
Notes: Total investments includes: Asset Finance, Corporate Finance and Venture Capital/ Private Equity Commitments.

LEAGUE TABLE

2014 Total Investments	$8,346m

Top Three Lead Debt Arrangers 2014 ($m)

1st	State Bank of India	$101m
2nd	WB Group	$75m
3rd	Yes Bank Ltd	$75m

Top Three Equity Sponsors 2014 ($m)

1st	Oil India Ltd	$71m
2nd	HydroChina Xibei Engineering Co	$65m
3rd	Dawood Power Ltd	$65m

Top Three Asset Finance Deals, 2014 ($m)

Rank	Sector	Project	Developer	Value
1st		Welspun Neemuch PV Plant Refinancing	Welspun Ltd	$563m
2nd		ReNew Bhesada Wind Farm	ReNew Power Ltd	$287m
3rd		Continuum Madhya Pradesh Wind Farm	Continuum Wind Energy Group	$238m

Source: Bloomberg New Energy Finance
Notes: Figures refer to disclosed asset finance investments committed in 2014 and include balance sheet commitments

The federal government is currently considering different approaches to reduce risks perceived associated with these long-term PPAs and their bankability. These include bundling of solar power with cheaper coal to make its price market attractive, offering upfront Viability Gap Funding capital grants or creating a payment security fund to cover defaults. The states are also developing solar parks with the help of the federal government. These parks offer clear land with all necessary infrastructure that can significantly reduce many challenges such as land acquisition or road connectivity.

Of the 100GW solar target, 40GW has been earmarked for rooftop solar. While the federal government offers capital subsidies for these projects, approximately 14 states offer net-metering policies that allow system owners to receive the benefit of the excess power they generate back into the grid. Approximately five states provide feed-in tariffs for rooftop projects or offer additional grants to the national subsidies.

Wind has traditionally been the flagship sector in India's renewable energy basket with 22GW installed as of the end of 2014. The sector has seen solid growth in the last several years with allowable accelerated depreciation having served as a key tax incentive for developers. This incentive allows the investors to defer tax liabilities by claiming 80% of the residual value of the project as depreciation. After it was withdrawn in 2012, new installations dropped dramatically in 2013. The new government restored the incentive in H2 2014 leading to a rebound and 2.3GW of new build in the year.

In 2015, some states are poised to raise wind feed-in tariffs offered for new projects and this is likely to boost installations. However the 60GW by 2022 target outlined by the Modi government remains ambitious. A National Wind Mission is currently in the works and is intended to accelerate progress toward the long-term goal.

FINANCIAL INSTITUTIONS IN CLEAN ENERGY

✓	**Banks**	✓	**Corporate Finance**
✓	**Funds**		**Impact Funds**
✓	**Private Equity / Venture Capital**		

Source: Bloomberg New Energy Finance
Note: Refers to types of institutions that finance clean energy projects. Check means that at least one institution is active in that segment in the country

Regarding the smaller clean energy sectors of biomass and small hydro, a variety of federal programs are either in place or in the works. Biomass and bagasse-based cogeneration are the main sources of bio power in the country. Growth in this sector depends on the availability of fuel and its supply chain; hence this sector is concentrated around agricultural locations.

India today classifies projects less than 25MW as small hydro. The federal government is currently working on a National Small Hydro Mission to accelerate growth in this sector.

Finally, India has an ongoing National Mission on Enhanced Energy Efficiency that focuses on various initiatives such as demand side energy management including labelling of appliances based on their efficiency. This has also led to the implementation of an innovative industrial energy efficiency initiative that will result into trading of so-called energy saving certificates.

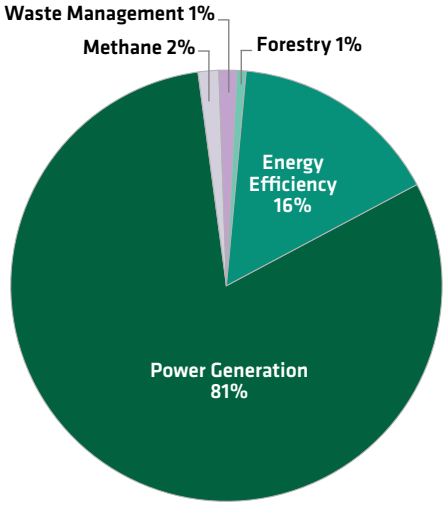
CLEAN ENERGY VALUE CHAINS BY SECTOR

Sector / Quantity	Available Sub-Sector, Unavailable Sub-Sector
Biofuels	**Producers ; Engineering ; O&M ; Equipment Manufacturing ;** Distribution and Blending
Biomass & Waste	**Project Development ; Engineering ; O&M ; Equipment Manufacturing ; Feedstock Supply**
Geothermal	Project Development ; Engineering ; O&M ; Resource Development ; Turbines ; Balance of Plant
Small Hydro	**Project Development ; Engineering ; O&M ; Turbines ; Balance of Plant**
Solar	**Project Development ; Engineering ; O&M ; Polysilicon/ingots ; Wafers ; Cells ; Modules ; Inverters ; Balance of Plant**
Wind	**Project Development ; Engineering ; O&M ; Turbines ; Blades ; Gearboxes ; Towers ; Balance of Plant**

Source: Bloomberg New Energy Finance
Note: Uncolored icons, on the left, refer to each sub-sector of a complete value chain for a given sector, spelled out on the right. Colored icons represent the number of available subsectors for a given clean energy sector value chain. Bold text, on the right, illustrates at least one organization in that sub-sector is active in the country.

CARBON OFFSET PROJECTS BY SECTOR

2,069 CDM and voluntary carbon offset projects



Source: UNEP Risoe, Bloomberg New Energy Finance

INDIA – PERFORMANCE BY STATE

The *Climatescope* assessment includes 10 Indian states where there has been significant clean energy activity. The 2015 edition features a reshuffling of the highest-ranked Indian states.

Tamil Nadu took the top ranking in 2015, displacing last year's leader, Karnataka, to second position. Madhya Pradesh climbed five places to third this year, thanks to its policies favoring wind, biomass and solar installations.

Uttar Pradesh climbed three places, from 10th to seventh rank.

In Madhya Pradesh and Uttar Pradesh, the overall installed clean energy capacity base is still low; their scoring gains came on a relative surge in new projects, investments and allocations.

Other states that lost rank this year are Rajasthan, Gujarat, Andhra Pradesh and Punjab; each of which fell by two places.

Independent of rankings, the numerical scores of all states except Karnataka increased from 2014 to 2015.

Tamil Nadu's overall first-place ranking is attributable to its top score on clean energy installed capacity and its well-developed value chain. While its rate of new installations has declined, Tamil Nadu boasts a mature wind sector and has the most installed wind capacity in the country.

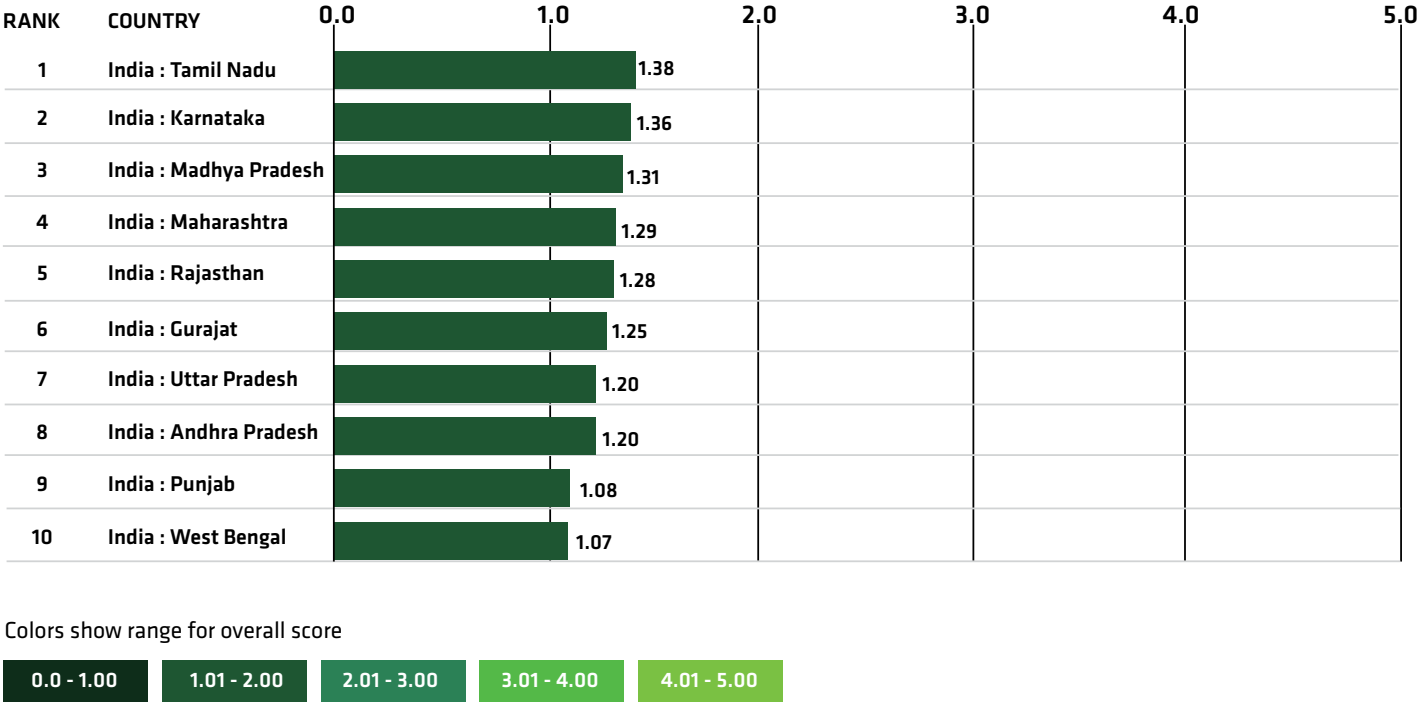
Karnataka had high scores on power sector structure, carbon offsets historical activity and value chains.

Madhya Pradesh scored the highest among Indian states on growth rate of clean energy investments. It also had the second highest score on growth rate of installed capacity and growth rate of electricity generation.

Uttar Pradesh scored highest on the growth rate of electricity generation indicator. It also had the second highest score on growth rate of clean energy investments.

Maharashtra delivered the highest indicator score on growth rate of power demand and scored in the upper reaches on clean energy value chain indicators.

2015 Global Climatescope scores
India states ranking



Colors show range for overall score

0.0 - 1.00 | 1.01 - 2.00 | 2.01 - 3.00 | 3.01 - 4.00 | 4.01 - 5.00