CDF
CENTRE FOR DEVELOPMENT FINANCE at the INSTITUTE FOR FINANCIAL MANAGEMENT AND RESEARCH

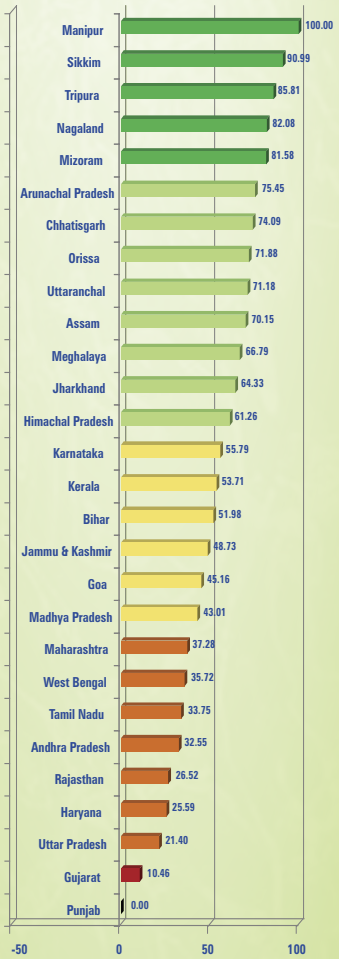
Environmental Sustainability Index for Indian States

Informing Environmental Action

Environmental Sustainability Index tracks the environmental performance of the 28 states of India and ranks them based on their sustainability.

The Environmental sustainability index tracks the environment performance of 28 states of India and projects the ability of the states to protect their environment in the coming years. The rankings are relative and done on a scale of 0 to 100, allowing for states to see how well they are doing in comparison to other states. A state with higher ESI ranking means it has managed its natural resource stock judiciously; face less stress on it environment systems and less impact on human health. On the contrary, a state with lower ESI indicates that it has depleted its stock of natural resources and has accumulated waste and pollution which has created stress on ecosystem and human health. The best performing state in the 2008 ranking is Manipur, followed by Sikkim and Tripura. The lowest ranking states are Punjab, Gujarat and Haryana.

ESI 2008 Scores of 28 States



States	ESI Scores	ESI Rank
Manipur	100.00	1
Sikkim	90.99	2
Tripura	85.81	3
Nagaland	82.08	4
Mizoram	81.58	5
Arunachal Pradesh	75.45	6
Chhattisgarh	74.09	7
Orissa	71.88	8
Uttaranchal	71.18	9
Assam	70.15	10
Meghalaya	66.79	11
Jharkhand	64.33	12
Himachal Pradesh	61.26	13
Karnataka	55.79	14

States	ESI Scores	ESI Rank
Kerala	53.71	15
Bihar	51.98	16
Jammu & Kashmir	48.73	17
Goa	45.16	18
Madhya Pradesh	43.01	19
Maharashtra	37.28	20
West Bengal	35.72	21
Tamil Nadu	33.75	22
Andhra Pradesh	32.55	23
Rajasthan	26.52	24
Haryana	25.59	25
Uttar Pradesh	21.40	26
Gujarat	10.46	27
Punjab	0.00	28

Online Portal : www.greenindiastandards.com

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ESI is a composite index that tries to capture the state of the environment in multiple dimensions, aggregates it into a single index that is interpretable and comparable across all the states. Sub-indices (Indicators and Policy Components) enable states to get a more nuanced picture of their performance.

44 Variables → **15 Indicators** → **5 Policy Components** → **ESI**

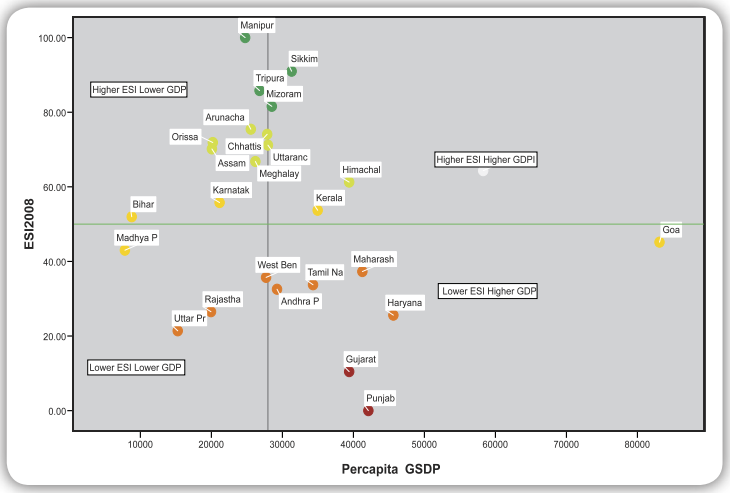
Variables are the basic unit that measure the state of environment

Each Indicator is constructed by aggregating 2-4 underlying variables

Policy Components are thematic categories composed of few indicators

ESI is equally weighted average of 15 underlying Indicators

The ESI for Indian States reveals that none of the state is on a sustainable trajectory; at the same time none of the states have performed very poor on all dimensions. Most states have done well in some areas and need to improve a lot in many other issues. Most of the larger states and high-growth states with concentration of industrial and agricultural activities are featured at the bottom of the ranking. The states which are relatively greener are going to face the challenge of integrating growth into sustainability; customized policies need to be drafted taking such concerns into account.



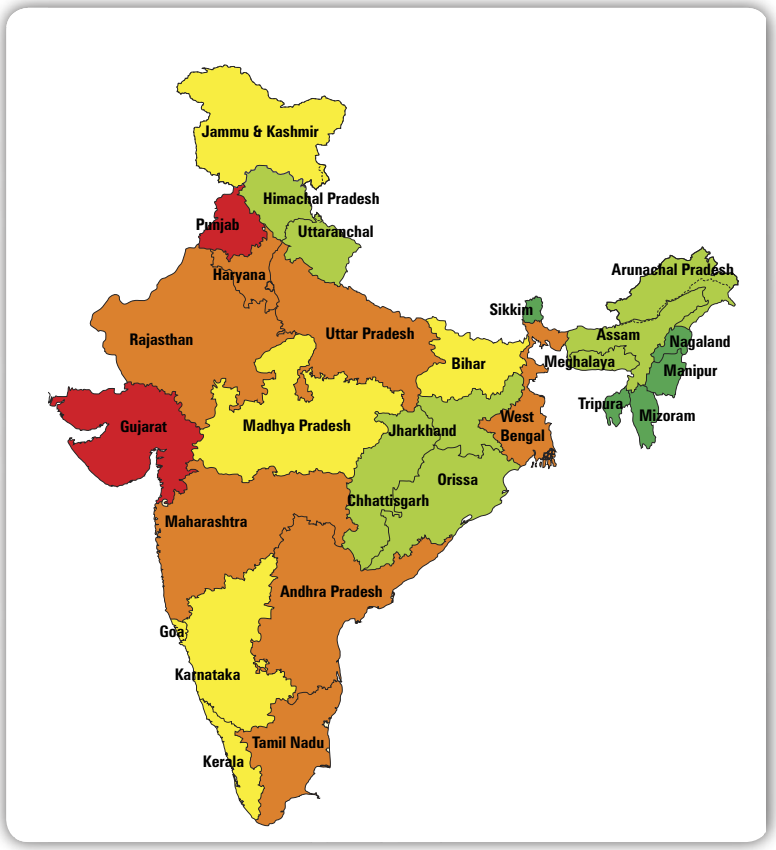
ESI is an attempt to quantify environmental sustainability and inform environment action by creating a baseline of state's relative position in a sustainability trajectory. It also has a strong policy focus and is designed to advocate analytical and empirical foundation for environmental policy making.

ESI is designed to help the policymakers in:

- Understand a state's sustainability in terms of natural resource management, pollution load, vulnerability and institutional capacity
- Identify priority environmental issues and areas of action
- Create a baseline for cross-state and cross-sectoral performance comparisons
- Categorize states along multiple environmental indicators
- Analyse strengths and areas that need improvement
- Identify best practices and successful policy models
- Evaluate adequacy and sufficiency of current policies
- Reinforce the economy-environment linkage and importance of integrated policy making

ESI for Indian States is constructed with three basic objectives:

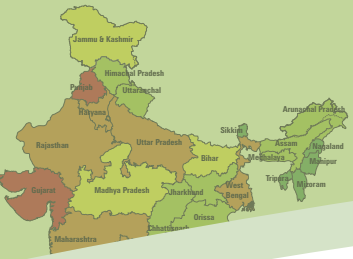
1. Quantify environmental sustainability, measure it along multiple dimensions and aggregate into simple interpretable index.
2. Facilitate benchmarking for cross-state comparison and create a baseline for tracking environmental sustainability.
3. Complement Human Development Index and Per-capita Income, as a tool to map sustainable development along social, economic and ecological well-being.



ESI for Indian state is a pioneer effort in establishing the linkages between data and decisions in environmental sectors. Its robustness is limited by data inadequacy, conceptual questions on measuring sustainability, methodological short-comings and necessary interpretations of relative rankings. The state of the environment is multidimensional and is difficult to capture in a single index. The ESI is not designed to provide an exhaustive picture of a state's environmental issues, but rather to help reveal trends and draw attention to phenomena that require further analysis and possible action. It aims to create awareness among policy makers, researchers and practitioners and should guide policy makers in setting achievable sustainable development standards and strategies for the states.

The full report, methodology and datasets can be downloaded from www

CDF has also developed an interactive website www.greenindiastandards.com where the rankings of each state can be viewed. It also enables the browser to explore a detailed environmental profile of each state plus its performance across each indicator and policy categories and make inter-state comparisons for any number of states along any number of chosen indicators and policy categories.



ESI is calculated from 15 Indicators which are aggregated from the 44 variables and can be interpreted along the 5 policy components.

Sl No.	44 Variables	Sl No.	15 Indicators	Sl No.	5 Policy Components
1	Population density	1	Population Pressure	1	Population Pressure
2	Population growth				
3	Total fertility rate				
4	% Change in forest area	2	Natural Resource Endowment	2	Environmental Stress
5	% of Forest land encroached				
6	Annual ground water draft				
7	NOx emission per capita	3	Air Pollution		
8	SO2 emission per capita				
9	CO2 emission per capita				
10	Number of motorized vehicles				
11	Untreated waste water discharged	4	Water Pollution		
12	Fertilizer consumption				
13	Pesticide consumption				
14	Per capita municipal solid waste	5	Waste Generation		
15	Per capita hazardous waste				
16	% of protected area to forest	6	Land Use	3	Environmental Systems
17	% of land under grazing to total land				
18	% of land under agriculture to total land				
19	Total replenishable ground water				
20	Average annual rainfall	7	Natural Resource Endowment		
21	% of Wetland area to total land				
22	% of state under forest cover				
23	Annual concentration of SO2 levels	8	Air Quality		
24	Annual concentration of NO2 levels				
25	Annual concentration of SPM levels				
26	Annual concentration of RSPM levels				
27	Biological Oxygen Demand	9	Water Quality		
28	Electrical Conductivity				
29	Total Suspended Solids				
30	% of degraded area	10	Disaster Management	4	Health Vulnerability
31	Area affected by flood and heavy rains				
32	% of total districts affected by drought				
33	Hazard prone area				
34	Incidence of acute respiratory diseases	11	Health Vulnerability		
35	Incidence of acute water diseases				
36	Per capita energy consumed	12	Energy Management	5	Environmental Governance
37	% of renewable energy in total energy				
38	Energy-GDP ratio				
39	Area under joint forest management	13	People's Initiative		
40	Presence of environmental NGOs				
41	% of defaulting industries	14	Government's Initiative		
42	Fund allocation by Union government				
43	Fund allocation by state government				
44	% Change in total GHG emissions	15	GHG emissions		

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