

Environmental Performance Index 2020 and ranking of states of India.

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Effective and balanced utilization of the country's resources is at the Core of India's development strategy which also includes enhancing efforts towards compliance of national legislations and international commitments. Considering the influence of natural resources depletion and unabated pollution on health and many sectors of the economy an Environmental Performance Index (EPI) was constructed in 2013 to recognize the efforts made by the states to arrest degradation of the environment and rank them. An attempt has now been made to include four new criteria; Biodiversity, Agriculture, fisheries and Disaster management with 16 indicators and further refine the existing five criteria by adding seven more indicators taking the total of criteria to 9 ,indicators to 37 and evolve EPI 2020.

This article, in addition to detailing the methodology for constructing EPI 2020, which could serve as a monitoring tool to gauge the performance of states and central government yearly will also enable monitoring progress in achieving related SDG and Sendai targets and goals.

An attempt has also been made to compare the scores and ranking of EPI-2020 with Yale EPI 2018.

Keywords: Air and water quality, environment, GSDP, performance index, scores and ranks, EPI 2013, Yale EPI 2018, SDG, Sendai, Biodiversity, Disaster Management.

The Planning Commission Environmental Performance index PC-EPI¹ **2013** was evolved after careful perusal of all variables and categories considered under various studies in 2013. To begin with 5 criteria (Air pollution, Forests, water quality, waste management and climate change) comprising 16 indicators were chosen. and these integrated to arrive at a composite index. To make EPI-2013 comprehensive, Biodiversity, Agriculture, Fisheries and Disaster Management as criteria with 4 indicators each have now been added. In the existing criteria, Air Pollution, SPM has been split into PM 2.5 and PM10 as indicators, in water quality and waste management criteria one indicator each and two indicators in Climate Change have been added and **EPI, 2020** evolved. EPI 2020 now comprises, 9 criteria and 37 indicators.

To recognize the efforts made by the states to arrest degradation of the environment including Climate change effect ,while pursuing efforts to increase per capita GSDP a methodology to construct EPI 2020 +GDP index has now been evolved and based on scores states ranked.

The EPI 2020 {{and EPI 2020+GDP}} index now evolved will not only enable better understanding and efforts made by the states in Environmental health and Ecosystem Vitality(2018 EPI framework)² but also gauge the relationship between GSDP and sustainable development.

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As EPI, 2020 is based on indicators for which yearly data is mandated by law to be collected and published by the GOI, it could also serve as a tool for monitoring the SDG and Sendai Goals and targets set out to start with.

The relationship between economic growth and environmental sustainability of a country is complicated considering that large sections of the country's population depend on natural resources for their livelihood. Industrialization/urbanization if not associated with the requisite level of governance can influence the environmental health and sustainability of a state and the nation. It is well recognized that environmental degradation leads to additional economic hardships to the vulnerable sections of the population.

Environmental problems therefore should no longer be viewed by the states as a consequence of development alone, but there should be continued focus on pollution abatement, promotion of adherence to environmental standards, natural resources conservation and adopting the 5Rs (Reduce, Reuse, Recycle, Recover, and Remanufacture).

Environmental indicators, Methodology and weightage

Selection of the appropriate indicators, methodology and assigning scores for arriving at acceptable indicators under various criteria has been a subject of much debate and research. Many believe that environmental degradation due to pollution be measured by actual emission data and efforts made to meet the standards of hazardous substances, but others feel that it should include factors which influence its spread and intensity. Regional disparity and natural endowment of the state are also considered important when ranking the states.

Many recent publications^{3,4,5}, and the three methodologies: (a) environmental quality index (EQI)⁶, (b) environmental indicators – Organization for Economic Co-operation and Development (OECD)⁷ are mentioned and (c) 2018 environmental performance index (EPI) of Yale University² which has been evolved every two years and is discussed briefly in this article.

After a careful study of the above, to make EPI-2013 comprehensive, Biodiversity, Agriculture, Fisheries and Disaster Management as criteria with 4 indicators each have now been added. In the existing criteria, Air Pollution, SPM has been split into PM 2.5 and PM10 as indicators, in water quality and waste management criteria one indicator each and two indicators in Climate Change have been added and **EPI, 2020** evolved. EPI 2020 now comprises, 9 criteria and 37 indicators (Table-3) which calculates EPI scores for the selected criteria and indicators for all the states and Union Territories (UTs).

(a) Environmental quality index

Mukherjee and Chakraborty⁶ suggest that the EQI for the states is linearly dependent on a set of observable indicators and can be determined by adopting the Human Development Index (HDI) method, by putting the selected variable to start with under eight broad categories. The idea is that the 63 environmental variables under the 8 categories when combined would give a composite EQI ranking which is a measure of the environmental well-being of the states, i.e. those with higher scores are characterized by cleaner environment.

(b) Environment at a Glance Report

The Environment at a Glance report presents a digest of major environmental trends in OECD countries in areas such as climate change, air quality, biodiversity, water resources and circular economy. The analysis and key messages are based on indicators from the OECD Core Set of Environmental Indicators – a tool to monitor environmental progress and performance and to track the course towards sustainable development. It builds on the interactive Environment at a Glance web-based platform launched on 18 November 2019.

The OECD's core set of indicators on the environment comprises climate change, ozone layer depletion, eutrophication, acidification, toxic contamination, urban environmental quality, biodiversity, cultural landscapes, waste, water resources, forest resources, fish resources, soil degradation (desertification, erosion), material resources and socio-economic, sectoral and general indicators.

(c) 2018 environmental performance index

The 2018 Environmental Performance Index (EPI) ranks 180 countries on **24 performance indicators across ten issue categories** covering environmental health and ecosystem vitality. The 2020 EPI is expected sometime in June 2020. The EPI offers a scorecard that highlights scorers and strugglers in environmental performance, best practices, and provides guidance for countries that aspire to develop sustainably and achieve the SD Goals. The 2018 EPI data and methodology has generated new rankings founded on the advances in environmental science and analysis. The EPI builds on measures relevant to two core objectives – (i) reducing environmental stress to human health (the environmental health objective) and (ii) protecting ecosystems and natural resources (the ecosystem vitality objective).

Results of first ten countries are shown in **Table -1**. Switzerland leads the world based on strong performance across most issues, especially air quality and climate protection. In general, high scorers exhibit longstanding commitments to protecting public health, preserving natural resources, and decoupling greenhouse gas (GHG) emissions from economic activity.

As per the scores aggregated for the 24 indicators chosen under 10 **criteria Table-2**, India and Bangladesh are ranked at 177 and 199 respectively near the bottom of the rankings. Low scores on the EPI suggest the need for national sustainability efforts on a number of fronts, especially cleaning up air quality, protecting biodiversity, and reducing GHG emissions. As the EPI project has highlighted for two decades, better data collection, reporting, and verification across a range of environmental issues are urgently needed. The existing gaps are especially pronounced in the areas of sustainable agriculture, water resources, waste management, and threats to biodiversity. Supporting stronger global data systems thus emerges as essential to better management of sustainable development challenges.

The overall EPI rankings indicate which countries are doing best against the array of environmental pressure that every nation faces. From a policy perspective, greater value derives from drilling down into the data to analyze performance by specific issue, policy category, peer group, and country. Such an analysis can assist in refining policy choices, understanding the determinants of environmental progress, and maximizing the return on governmental investments.

Table-2: -India and Bangladesh Rank.

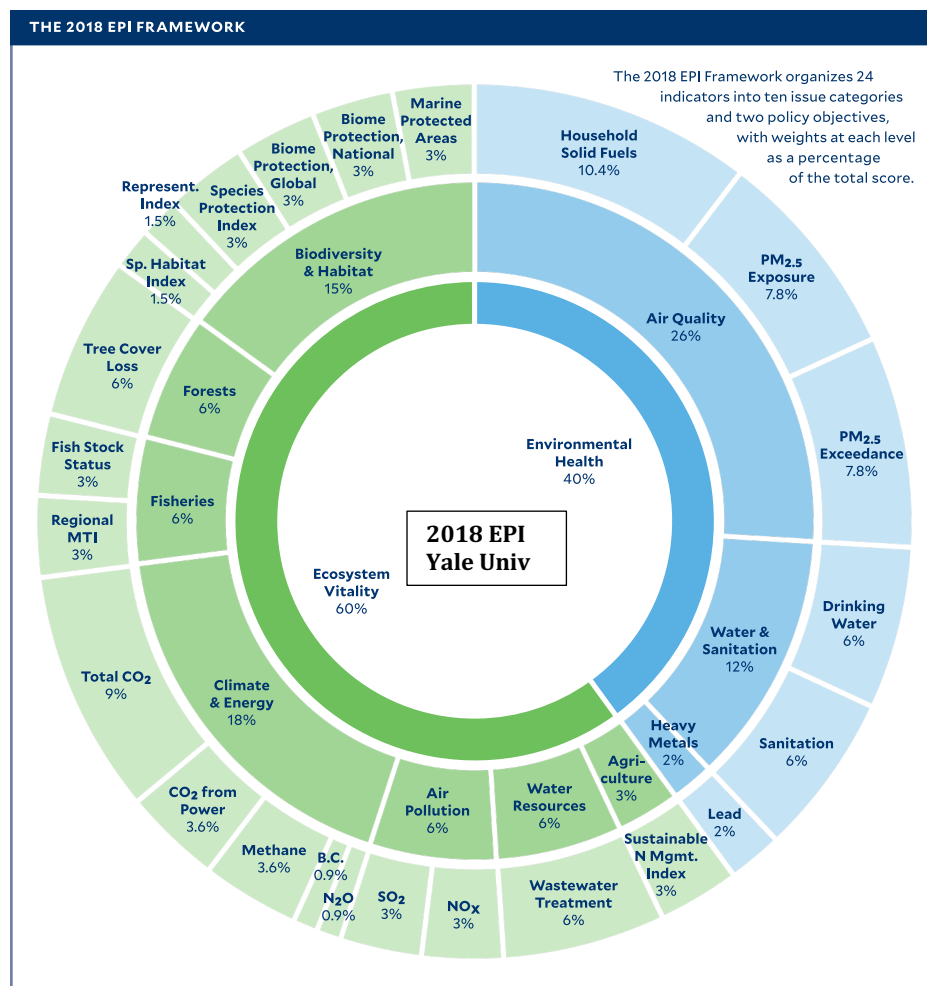
EPI RK	Country	Score	Reg.Std
170	Angola	37.44	40
171	Central African Republic	36.42	41
172	Niger	35.74	42
173	Lesotho	33.78	43
174	Haiti	33.74	12
175	Madagascar	33.73	44
176	Nepal	31.44	24
177	India	30.57	25
178	Dem. Rep. Congo	30.41	45
179	Bangladesh	29.56	26
180	Burundi	27.43	46

Table-1. EPI 2018 Yale top ten Countries and India

Country	epi rank	EPI score	Env. health	Eco System Vitality
India	177	30.57	9.32	44.74
Switzerland	1	87.42	93.57	83.32
France	2	83.95	95.71	76.11
Denmark	3	81.6	98.2	70.53
Malta	4	80.9	93.8	72.3
Sweden	5	80.51	94.41	71.24
UK	6	79.89	96.03	69.13
Luxembourg	7	79.12	95.07	68.48
Austria	8	78.97	86.38	74.03
Ireland	9	78.77	95.92	67.34
Finland	10	78.64	99.35	64.83

The 2018 EPI represents a composite index. After collection of data on 24 individual metrics of environmental performance, as shown in Figure-1, these metrics were aggregated into a hierarchy beginning with ten issue categories: Air Quality, Water & Sanitation, Heavy Metals, Biodiversity & Habitat, Forests, Fisheries, Climate & Energy, Air Pollution, Water Resources and Agriculture. These issue categories are then combined into two policy objectives—Environmental Health and Ecosystem Vitality—and then finally consolidated into the overall EPI. To allow for meaningful comparisons, scores were constructed for each of the 24 indicators, placing them onto a common scale where 0 indicates worst performance and 100 indicates best performance. How far a country is from achieving international targets of sustainability determines its placement on this scale. The indicator scores are then multiplied by weights, shown in fig -1, and added together to produce scores at the levels of the issue categories, policy objectives, and the final EPI. These scores serve as the basis for country ranks. Indicators are constructed from the most recently available data for each of the 24 metrics of environmental performance. To track changes over time, the same methods to historic data in order to show what the EPI score for each country would be in a baseline year, generally ten years prior to the current report. To evolve performance of every country and aggregating those data into measurements of global performance and score these global aggregations the same 0–100 scale as individual countries, showing the state of the world on each indicator has been carried out. The results of the 2018 EPI—the scores, rankings, trends, and global aggregates— translate environmental data into terms that are comprehensive and comprehensible.

A comparison of the EPI 2020 (9 Category and 37 Indicators) now constructed with 2018 EPI Yale University (10 Category and 24 Indicators) clearly indicates that the Avg national Score of India is 0.3818 , the highest being 0.4967 (1st ranked state) and lowest as 0.3172 (Haryana state) compared to yale study score which is 0.3057. India has been ranked 177 as per Yale report. Inclusion of Disaster Management as a Category and a relook at indicators and weightage could be considered in Yale EPI 2020.



The Environmental Performance Index-2020

The PC-EPI 2013

The PC EPI was evolved in 2013⁸ after careful perusal of all variables and categories considered under various studies. To begin with 5 categories comprising 16 indicators were chosen and the normal deviation and distance travelled method was used for indicators for which standards have been notified and in respect of indicators with no standards, i.e. forests, etc. a method was evolved and these integrated to arrive at a composite index. The idea was that the 16 indicators selected, when combined could give a composite EPI ranking of the states. The criteria were air pollution, water quality, forests, waste management and climate change. Indicators were sought to cover the full spectrum of issues underlying each of the major components of the environment, i.e. criteria identified. To ensure the use of the best-suited metrics, the indicator selection criteria applied were relevance (the indicator clearly tracks the environmental issue of concern), performance orientation (the indicator tracks ambient conditions or on-the-ground results to national standards and requirements) and data quality (the data used represent the measures taken by the states).

The Environmental Performance Index-2020

After a careful study of all the referred publications sited, to make PC-EPI-2013 comprehensive, Biodiversity, Agriculture, Fisheries and Disaster Management as criteria with 4 indicators each have now been added. In the existing criteria, Air Pollution, SPM has been split into PM 2.5 and PM10 as indicators, in water quality and waste management criteria one indicator each and two indicators in Climate Change have been added and **EPI, 2020** evolved. EPI 2020 now comprises **9 criteria and 37 indicators (Table-3)** which calculates EPI scores for the selected criteria and indicators for all the states and Union Territories (UTs). **Table-4** details the Datasets used for construction of Indicators. (appendix)

Table-3: - EPI 2020 Criteria and indicators

S. No	Criteria	Indicators	No. of variables
1	Air Pollution	1. NOx, 2. SOx, 3. PM2.5, PM10	4
2	Forests	1. TFC as % of state GA and Contribution to national FC, 2. Change in forest cover, 3. Growing Stock and 4. Afforestation efforts.	4
3	Water quality	1. % Dom. Waste water treated, and 2. Surface water quality (.DO , BOD & TFC). 3. Ground water extraction % and 4. % of 17 Cat. Of Ind. complying with WWT Standards.	4
4	Waste Management	1. MSW, 2. Bio-med.,3. Hazardous Wastes and 4.E- waste.	4
5	Climate Change	1. Preparation of SAPCCs, 2. % RE Gen Capacity, 3.CO2 Saved from LED, 4. % Grid connected Solar Power,5. Lives lost per Crore population.	5
6	Biodiversity	1.Indigenous livestock population change, 2. change in wetland 3. change in Protected Area Network and 4. % desertification.	4
7	Agriculture	1.Change in land under Agriculture,2. Vuln. Agri.Dist., 3. %' shares in total GSVA 17-18, 4. Land under Micro irrigation.	4
8	Fisheries	1. Fish Stock change, 2. Marine and Biodiversity Protected Area, 3. Funds for dev. of fisheries and 4. Valuation (Cr) of marine fish landing. 2017 +2018 and Share % of landing.	4
9	Disaster Management	1. Status of State and District DM plan, 2. Inst.Setup 3. Budget and 4. Avg. Forest fire incidence ,2016+17.	4
TOTAL	9		37

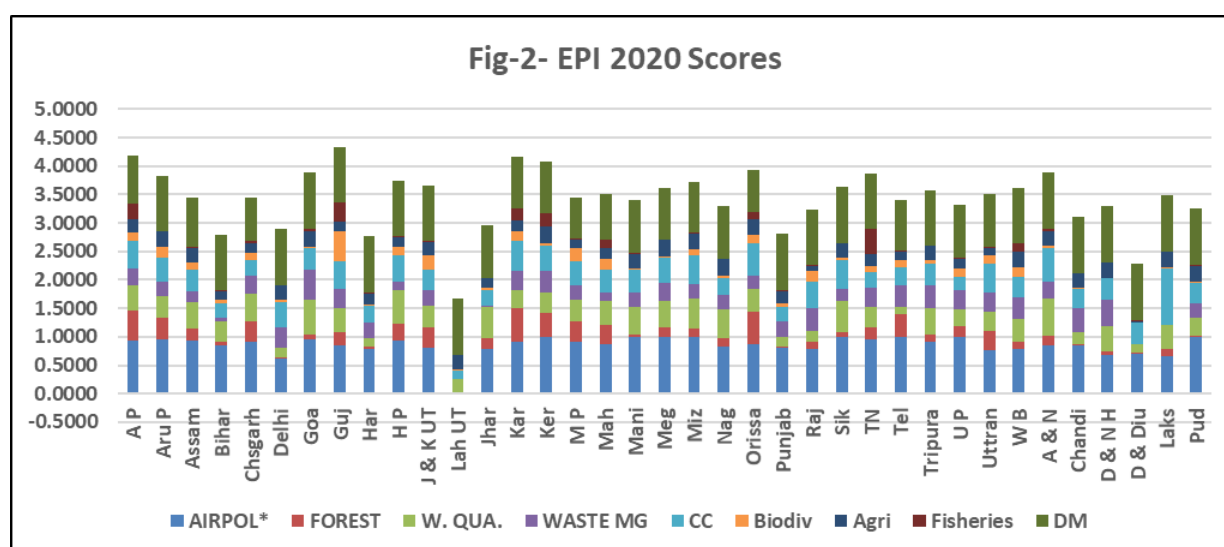
To allow for meaningful comparisons, scores were constructed (Table-4) for each of the 37 indicators, placing them onto a common scale where 0 indicates worst performance and 100 indicates best performance.

Table 5 presents EPI-2020 scores and ranking of the states and UTs as of Jan 2020 for the nine categories separately, based on arithmetic mean of scores of all the indicators covered under each category and ranking of the states, based on mean cumulative scores (Figure2).

With an EPI score of 0.4967, 0.4821, 0.4805, 0.4686 and 0.4555, Gujarat, Andhra Pradesh, Karnataka, Kerala and Orissa in that order have been ranked as the best-performing states respectively.

EPI 2020 with addition of **4 new Criteria and 16 new indicators** on analysis ranks Gujarat (0.4977), Tamil Nadu (0.4361), West Bengal (0.3902), Andhra Pradesh (0.3750), and Kerala (0.3719) as five top ranking states in that order.

Table 5.1-5.9 depicts the performance scores and ranking of the States and UTs of all the 37 indicators. The indicators considered for measuring the performance of AAQ are Sulphur dioxide (SOx), nitrogen oxide (NOx) PM2.5 and PM 10. The data in respect of all the four indicators is the annual average.



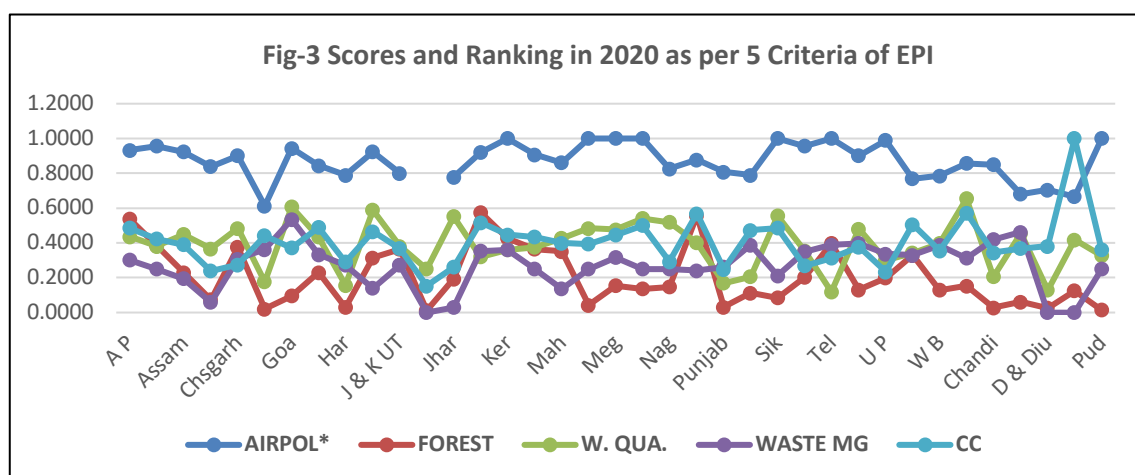
It is observed that all the states meet the prescribed national ambient air quality standards in respect of SOx of 50 µg/m³. In respect of NOx, Delhi, D&NH and D&D are the 3 UTs which do not meet the 40 µg/m³ national standard. In respect of PM 2.5 and PM10 except for Kerala, Manipur, Meghalaya, Mizoram, Sikkim, Telangana, Lakshadweep and Puducherry none of other states meets the national standard.

States that meet the standards have been given a score of 1 for each indicator and the average scores derived from the cumulative score and the states ranked. Kerala, Manipur, Meghalaya, Mizoram, Sikkim, Telangana and Puducherry with an average score of 1 are ranked as the best states/UTs in terms of air quality.

As discussed, the 5 criteria with 16 indicators in 2013 has now been compared after data updation and increased number of 21 indicators. (Table- 6). As can be seen, with score 0.5386, 0.5328, 0.5245, 0.4859 and 0.4790, Andhra Pradesh, Kerala, Goa, Karnataka and Arunachal Pradesh in that order emerge as the best performing States

Table-6:-Comparison of EPI-2013 and EPI- 2020

S.No	States	New 4 Cat		5 old Cat		EPI 2020	
		Score	Rank	Score	Rank	Score	Rank
1	Andhra Pradesh	0.3750	4	0.5386	1	0.4821	2
2	Aruna.Pradesh	0.3575	8	0.4790	5	0.4391	9
3	Assam	0.3140	27	0.4374	22	0.3956	21
4	Bihar	0.3043	32	0.3157	35	0.3186	34
5	Chhatisgarh	0.2733	36	0.4684	11	0.3909	22
6	Goa	0.3345	10	0.5245	3	0.4448	7
7	Gujarat	0.4977	1	0.4427	18	0.4967	1
8	Haryana	0.3067	28	0.3481	32	0.3172	35
9	Himachal Pradesh	0.3291	12	0.4515	15	0.4322	10
10	J & K UT	0.3701	7	0.4571	14	0.4197	14
11	Ladakh UT	0.3159	25	0.1258	37	0.1917	37
12	Jharkhand	0.2878	34	0.3415	33	0.3384	31
13	Karnataka	0.3710	6	0.4859	4	0.4805	3
14	Kerala	0.3719	5	0.5328	2	0.4686	4
15	Madhya Pradesh	0.2794	35	0.4691	9	0.3978	20
16	Maharashtra	0.3315	11	0.4419	19	0.4022	19
17	Manipur	0.3064	30	0.4351	23	0.3905	23
18	Meghalaya	0.3060	31	0.4685	10	0.4169	15
19	Mizoram	0.3242	15	0.4743	6	0.4306	11
20	Nagaland	0.3173	22	0.4488	16	0.3769	27
21	Orissa	0.3213	18	0.4735	7	0.4555	5
22	Punjab	0.3212	19	0.3673	30	0.3196	33
23	Rajasthan	0.3155	26	0.3491	31	0.3749	28
24	Sikkim	0.3268	13	0.4647	13	0.4212	13
25	Tamilnadu	0.4361	2	0.4700	8	0.4397	8
26	Telangana	0.2990	33	0.4347	24	0.3896	24
27	Tripura	0.3223	17	0.4444	17	0.4099	17
28	Uttar Pradesh	0.3166	24	0.4406	21	0.3776	26
29	Uttaranchal	0.3067	28	0.4008	27	0.4060	18
30	West Bengal	0.3902	3	0.4407	20	0.4133	16
31	Andn & Nicobar	0.3346	9	0.4663	12	0.4510	6
32	Chandigarh	0.3167	23	0.4150	26	0.3576	30
33	D & Nagar Haveli	0.3196	21	0.4003	28	0.3794	25
34	Daman & Diu	0.2627	37	0.2455	36	0.2673	36
35	Lakshadweep	0.3203	20	0.3182	34	0.4213	12
36	Delhi	0.3236	16	0.4342	25	0.3378	32
37	Pondicherry	0.3253	14	0.3911	29	0.3740	29



Four indicators: (i) sewage disposal, (ii) water quality of rivers, viz. dissolved oxygen (DO) and total coliform count, (iii) percentage of groundwater exploitation and % of 17 Cat.of Ind. complying with WWT Standards have been considered for the state-wise performance scores for water quality. According to the data made available none of the States have set up 100% treatment capacity for sewage. The scores highlight the dismal performance of the states with respect to sewage disposal.

With regard to surface river water quality violation, except for three states, Jharkhand, Mizoram and D&NH all others for which data are available do not comply with the standards prescribed. Delhi, Haryana, Punjab and Rajasthan extract groundwater more than recharge.

The indicators selected for ranking the states on forest performance are total forest cover (TFC) percentage of state GA and contribution to the national average, change in forest cover during 2015 to 2019, total growing stock and yearly average afforestation effort during 2017 to 2019. Based on deviation method average scores were computed for each indicator and the cumulative average scores used to rank the states. Karnataka, Orissa, Andhra Pradesh, Kerala and Telangana are ranked 1, 2, 3, 4 and 5 respectively (Figure-2)

Figure indicates waste management in the states and considers municipal solid waste (MSW) collection efficiency, treatment and disposal capacity, hazardous waste, biomedical waste and E-waste in terms of capacity set up for treatment and disposal. The results show that the states lack the capacity to treat MSW, hazardous waste and e-waste. Efforts have been made to handle, treat and dispose biomedical waste in terms of capacity set up for treatment but no effort has been made to collect and dispose both MSW and Hazardous waste by the states . as per the rules notified. Considering that Goa treats 80% of the MSW, treats 100% of the biomedical waste, has the capacity to dispose 73% of hazardous wastes generated, and ensures that E-waste generated is recycled in other state it is ranked as the best state (Figure 2) with respect to waste management.

Climate change mitigation was assessed in terms of availability of State Action Plan for Climate Change, % RE Gen. Capacity, Co2 saved by use of LED bulbs per 1000 Pop , % Grid connect Solar power installed and Lives lost per Cr. Lakshadweep, A&N, Orissa, Karnataka and Uttarakhand are ranked 1, 2, 3, 4 and 5 respectively (Figure 2).

The indicators selected for Biodiversity are change in Livestock, Wetland, Protected Area and % increase in desertification. Gujarat, J &K, Madhya Pradesh, Rajasthan and Maharashtra in this order are ranked as top 5 states.

Land under Agriculture, Vulnerable VH &H districts, Area under micro irrigation and % share in total GSVA (17-18) of the states are the four indicators chosen under agriculture. The scores of the five leading states, Nagaland, Arunachal Pradesh, Mizoram, Meghalaya and Kerala are low (0.2865-0.2751) and raises concerns regarding the sector.

The indicators selected under the fisheries category to assess progress by states/ UTs are; Change in fish stock (2015-17), Numbers and Area of marine protected and Biodiversity sites, funds released & utilized for fisheries development and value of marine fish landing (2017-18). Tamil Nadu, Gujarat, Andhra Pradesh, Kerala and Karnataka have been adjudged as the top five states in that order.

The analysis of Disaster Management indicators; State and District DM plans, SDMA & DDMA setup, Budget available for DM, and Forest fire incidence, indicates that efforts have been made by all the UTs and only the state of Sikkim.

Monitoring progress of related SDG and Sendai targets and goals.

EPI 2020 has been constructed based on 9 Category and 37 indicators. These relate to 12 SDG targets and 31 indicators. Table -7 indicates the SDG targets and corresponding indicators for each of the EPI 2020 Category and indicators. Thus EPI 2020 enables yearly assessing the progress made under the 31 indicators related to 12 SDG targets. Table-8 below indicates top 10 countries and India is ranked 115 with a score of 61.1 among 162 countries assessed.

The global indicator framework includes **231** unique indicators. The total number of indicators listed in the global indicator framework of SDG indicators is 247. Twelve indicators are repeated under two or three different targets e.g. 1.5.1/13.1.1, 1.5.3/13.1.2

As per the Sustainable Development Report 2019, Governments need to have access to timely, disaggregated data on the SDGs. Given the breadth of the goals this requires greater investments in statistical capacity in all countries as well as the development of national indicators of progress towards the SDGs.

The 2019 SDSN survey finds there is no common approach across countries for monitoring SDG implementation. The number of national indicators to monitor the SDGs varies greatly from 34 indicators in Belgium to 244 in Canada. The European Union, via Eurostat, has identified 100 indicators to monitor the implementation of the SDGs in the EU. The frequency and approach to measuring distance to SDG targets is also very different across countries. Few have undertaken quantitative assessments of distance to SDG targets.

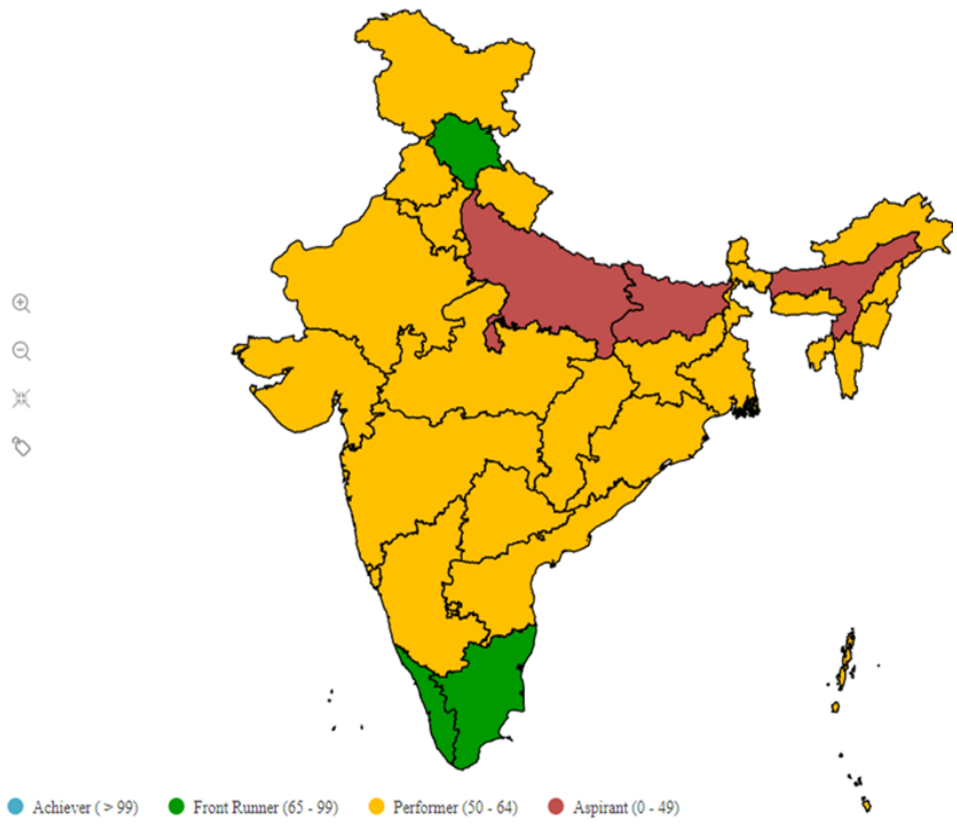
Rank	Country	Score
1	Denmark	85.2
2	Sweden	85.0
3	Finland	82.8
4	France	81.5
5	Austria	81.1
6	Germany	81.1
7	Czech Republic	80.7
8	Norway	80.7
9	Netherland	80.4
10	Estonia	80.2
115	India	61.1

The Niti Aayog, GOI, has setup an SDG India Index Dashboard. The indicator set for **SDG India Index 2019-2020** is large (100 indicators) as compared to SDG India Index 2018 (62 indicators) and hence the two indices are strictly not comparable. There are 40

indicators that are common across SDG India Index 2018 and SDG India Index 2019-2020. Fig-4 indicates the progress made by the 29 states in India.



Fig-4:- SDG India Index 2019-2020. Progress made by the 29 states in India.



Sendai Targets and Goals

In order to accelerate implementation of the Sendai Framework for Disaster Risk Reduction (2015-2030) at local level, the ten Essentials map prepared indicates directly the action and its indicators for monitoring progress on disaster risk reduction. They are the critical and independent steps that need to be undertaken to build and maintain resilience. This document provides the rationale for each Essential, pointing out strategic areas of intervention and identifying key actions. The actions identified under each Essential should be part of the overall disaster risk reduction planning process and influence urban development planning and design.

As indicated in Table-3 following 4 indicators under the category Disaster

1. Status of State DM Plan

2. Institutional setup state (SDMA) and District (DDMA)

3. Budget in Crores 18-19(Dec)

4. No. (2017) and average (2017 ,2016) Forest fire incidence,

Management of EPI 2020 which are also SDG indicators; 1.5.2, 1.5.3/13.1.1, 11.5.2, 11.b.1 and 11.2 are part of the following ten essentials map for monitoring DRR under Sendai Framework.

1. Organise for disaster resilience, 2. Identify, understand and use current and Strengthen future risk scenarios, 3 financial capability for resilience, 4. Pursue resilient urban development and design, 5. Safeguard natural buffers to enhance the Protective functions offered by natural capital , 6. Strengthen institutional capacity for resilience , 7. Understand and strengthen societal capacity For resilience , 8. Increase infrastructure resilience , 9. Ensure effective disaster response and 10. Expedite recovery and build back better.

EPI 2020 enables assessing 7 of the 10 indicators for monitoring DRR under Sendai framework. Table-5 and Table-5.9 highlights the scores and rank of each Indian State and UT.

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APPENDIX

Table 4: - Datasets used for construction of Indicators.

S.No	Criteria	Indicator	Data Set	Abbre
1	Air pollution	1.SOx Adherence to NAAQS 2.NOx 3.PM2.5 4.PM10	1.Sox, Ambient Concentration -Adherence to NAAQS by states. 2.NOx, Ambient Concentration -Adherence to NAAQS by states. 3.PM2.5, Ambient Concentration -Adherence to NAAQS by states. 4.PM10, Ambient Concentration- Adherence to NAAQS by states.	
2	Forest	1.Total Forest Cover (TFC) 2.Change in Forest cover 3.Growing Stock 4. Afforestation efforts	1 Forest %of State GA & Contribution to National Forest Cover. 2. Change in state Forest cover, 2017-2019. 3. Forest Stock state wise in Million cu.m 4.Afforestation efforts made during 2017-18 in Ha.	TFC
3	Water Quality	1.% Sewage Waste water treated 2.Surface water quality (DO, BOD& FC) 3.Ground Water extraction % 4. % of 17 Categories of Industries complying with WWT Standards	1.Sewage generation and treatment capacity state wise. 2.River water quality; Dissolved oxygen (DO), Biological Oxygen Demand (DOB)and Total Fecal Coliform (FC) state wise. 3.% Ground water (GW) extracted state wise. 4.% of 17 categories of polluting industries notified adhering to Waste Water Treatment (WWT) standards.	FC WWT
4	Waste Management	1.MSW generated, collected and treated. 2.Haz. waste generated and treated 3.Biomedical waste generated and treated 4.E-Waste generated, treated and recycled.	1.Municipal Solid waste (MSW) generated, collected and treated by states Per year. 2.Hazardous Waste generated and treated by industries yearly in the states. 3. Biomedical waste (BMW) generated and treated by hospitals in the states yearly. 4. Electronic waste (EW) generated, treated and recycled by states per year.	MSW HW BMW EW
5	Climate and Energy	1.Status of SAPCC 2.%RE Gen. Capacity 3. Co2 saved from LED bulbs per 1000 Pop. 4.Instal. Grid connect Solar power % 5.Lives lost per crore population.	1.Status of preparation of State Action plan for Climate Change. 2. % capacity state wise of Renewable energy generation. 3.State wise. Co2 emission saved by use of LED bulbs per 1000 P. 4. State wise % Grid connection of Solar power installed. 5.Lives lost due to calamities per crore of population in states.	SAPCC RE
6	Biodiversity	1.Indigenous livestock population change 2. Wetland Area state wise 3. Protected area state wise 4. % desertification	1. Yearly Change in Livestock population state wise. 2. Total wetland Area recorded in 2019 in each state. 3.Protected Area in 2018 state wise. 4.Total land lost to desertification and State wise percent.	
7	Agriculture	1.Land under Agriculture state wise 2.Agri districts and VH and H vulnerable districts. 3. Land (Ha) under Micro irrigation 4. % share in total Gross State Valuation of Agriculture 17-18	1.Land under Agriculture state wise 2.No. of Agri districts and Very high and highly vulnerable districts in each state. 3. State wise land under micro irrigation. 4.% share of Agriculture of all states in total Gross State Valuation (GSV) in 2017-18.	VH & H GSV
8	Fisheries	1.Change in Fish Stock in Tonnes 2. No. and Area of Marine, Protected and biodiversity Sites. 3. Funds released 2017-18 in Lakhs and % of funds received by states. 4. Valuation (in Cr) of marine fish landing in 2017 & 2018 and share of landing state wise	1. Change in Fish Stock in tonnes state wise. 2. State wise No. and Area of Marine, Protected and Biodiversity Sites notified. 3. Funds released under various fishery schemes in 2017-18 in Lakhs and % of funds received by each state. 4. Valuation (in Cr) of marine fish landing in 2017 & 2018 and share of landing state wise.	Cr
9	Disaster Management	1.Status of State Disaster Mg. Plan 2.Institutional setup state (SDMA) and District (DDMA) 3. Budget in Crores 18-19(Dec) 4. No. (2017) and average (2017 ,2016) Forest fire incidence	1.Status of preparation of State Disaster management Plan (SDMP) by the States. 2.Status of Setting up of State and District Disaster Management Authorities in the States. 3.Budget (Cr) allocated for Disaster Management to states in 2018-19. 4. No. (2017) and average (2017 ,2016) Forest fire incidence recorded state wise.	DM SDMP

Fig-5 FINAL EPI 2020 Scores and Ranking of States 29-4-20

S.No	States /Uts	AIRPOL*		FOREST		WATER QUALITY		WASTE MG		CLIMATE CHANGE		BIODIVERSITY		AGRICULTURE		FISHERIES		DISASTER MG		FINAL SC & RK	
		Avg Sc *	Rk	Avg.Sc	RK	Avg.Sc	RK	Avg.Sc	RK	Avg.Sc	RK	Avg.Sc	RK	Avg.Sc	RK	Avg.Sc	RK	Avg.Sc	RK	Score	Rank
1	Andhra Pradesh	0.9333	12	0.5370	3	0.4352	14	0.3018	18	0.4855	9	0.1466	11	0.2299	21	0.2697	3	0.8538	33	0.4659	2
2	Arunachal Pradesh	0.9565	9	0.3840	6	0.3817	20	0.2502	25	0.4227	16	0.1816	6	0.2825	2	0.0049	28	0.9609	21	0.4250	9
3	Assam	0.9231	13	0.2296	14	0.4485	13	0.1955	30	0.3904	19	0.1113	18	0.2553	17	0.0219	14	0.8677	32	0.3826	21
4	Bihar	0.8391	24	0.0744	28	0.3666	23	0.0599	33	0.2386	35	0.0802	19	0.1470	33	0.0105	23	0.9794	15	0.3106	34
5	Chhatisgarh	0.9020	17	0.3759	7	0.4840	8	0.3069	17	0.2735	31	0.1326	13	0.1767	29	0.0388	10	0.7452	35	0.3817	22
6	Delhi	0.6124	36	0.0202	35	0.1764	33	0.3622	8	0.4414	14	0.0325	27	0.2593	15	0.0030	32	0.9998	6	0.3230	32
7	Goa	0.9444	11	0.0957	26	0.6066	2	0.5344	1	0.3722	22	0.0279	29	0.2693	9	0.0422	9	0.9985	9	0.4324	7
8	Gujarat	0.8437	23	0.2304	13	0.4349	15	0.3326	13	0.4903	7	0.5263	1	0.1715	30	0.3316	2	0.9613	20	0.4803	1
9	Haryana	0.7901	28	0.0299	32	0.1570	35	0.2731	19	0.2904	30	0.0291	28	0.1831	26	0.0260	12	0.9886	11	0.3075	35
10	Himachal Pradesh	0.9231	13	0.3150	12	0.5882	3	0.1408	31	0.4664	11	0.1406	12	0.1828	27	0.0127	20	0.9801	14	0.4166	10
11	J & K UT	0.8009	27	0.3648	8	0.3803	21	0.2729	20	0.3674	24	0.2381	2	0.2504	19	0.0090	25	0.9831	12	0.4074	14
12	Ladakh UT			0.0117	37	0.2500	30	0.0000	36	0.1537	37	0.0137	35	0.2500	20	0.0000	35	1.0000	1	0.1866	37
13	Jharkhand	0.7790	31	0.1935	17	0.5515	5	0.0299	34	0.2615	33	0.0542	23	0.1553	32	0.0112	22	0.9307	24	0.3297	31
14	Karnataka	0.9198	15	0.5757	1	0.3199	28	0.3527	10	0.5166	4	0.1779	8	0.1779	28	0.2179	5	0.9104	29	0.4632	3
15	Kerala	1.0000	1	0.4270	4	0.3602	24	0.3603	9	0.4479	12	0.0586	21	0.2751	5	0.2416	4	0.9122	28	0.4536	4
16	Madhya Pradesh	0.9076	16	0.3636	9	0.3756	22	0.2506	23	0.4343	15	0.2244	3	0.1440	34	0.0185	17	0.7307	37	0.3833	20
17	Maharashtra	0.8608	20	0.3511	10	0.4265	16	0.1370	32	0.3988	17	0.1895	5	0.1852	25	0.1543	6	0.7969	34	0.3889	19
18	Manipur	1.0000	1	0.0430	30	0.4831	9	0.2504	24	0.3938	18	0.0212	31	0.2708	8	0.0102	24	0.9232	26	0.3773	23
19	Meghalaya	1.0000	1	0.1554	18	0.4767	11	0.3164	15	0.4454	13	0.0269	30	0.2784	4	0.0032	31	0.9155	27	0.4020	15
20	Mizoram	1.0000	1	0.1357	21	0.5404	6	0.2501	27	0.5013	6	0.1128	17	0.2796	3	0.0059	27	0.8987	30	0.4138	11
21	Nagaland	0.8254	25	0.1472	20	0.5197	7	0.2502	25	0.2924	29	0.0384	26	0.2865	1	0.0049	28	0.9396	22	0.3672	27
22	Orissa	0.8772	19	0.5571	2	0.4006	18	0.2403	28	0.5682	3	0.1570	9	0.2721	6	0.1227	8	0.7334	36	0.4365	5
23	Punjab	0.8075	26	0.0306	31	0.1690	34	0.2612	21	0.2486	34	0.0688	20	0.2233	22	0.0124	21	0.9804	13	0.3113	33
24	Rajasthan	0.7894	29	0.1126	25	0.2063	32	0.3887	5	0.4727	10	0.1897	4	0.0925	36	0.0033	30	0.9764	17	0.3591	28
25	Sikkim	1.0000	1	0.0841	27	0.5549	4	0.2118	29	0.4866	8	0.0466	25	0.2623	12	0.0000	35	0.9985	9	0.4050	13
26	Tamilnadu	0.9565	9	0.2026	15	0.3553	25	0.3488	11	0.2688	32	0.1190	16	0.1937	23	0.4614	1	0.9705	19	0.4307	8
27	Telangana	1.0000	1	0.3973	5	0.1188	37	0.3884	6	0.3122	28	0.1291	15	0.1578	31	0.0149	19	0.8941	31	0.3792	24
28	Tripura	0.9020	17	0.1307	22	0.4795	10	0.3977	4	0.3767	21	0.0515	24	0.2565	16	0.0085	26	0.9726	18	0.3973	17
29	Uttar Pradesh	0.9892	8	0.1992	16	0.3003	29	0.3374	12	0.2346	36	0.1313	14	0.1865	24	0.0212	15	0.9277	25	0.3697	26
30	Uttaranchal	0.7682	32	0.3291	11	0.3423	26	0.3296	14	0.5060	5	0.1480	10	0.1307	35	0.0165	18	0.9317	23	0.3891	18
31	West Bengal	0.7857	30	0.1285	23	0.3970	19	0.3861	7	0.3545	26	0.1782	7	0.2721	6	0.1339	7	0.9766	16	0.4014	16
32	Andaman & Nicob	0.8571	21	0.1522	19	0.6541	1	0.3135	16	0.5716	2	0.0547	22	0.2614	14	0.0232	13	0.9989	8	0.4319	6
33	Chandigarh	0.8502	22	0.0272	33	0.2067	31	0.4195	3	0.3443	27	0.0141	33	0.2526	18	0.0000	35	1.0000	1	0.3460	30
34	Dadra & Nagar H	0.6802	34	0.0601	29	0.4546	12	0.4626	2	0.3678	23	0.0151	32	0.2622	13	0.0011	34	1.0000	1	0.3671	25
35	Daman & Diu	0.7047	33	0.0256	34	0.1294	36	0.0001	35	0.3807	20	0.0137	35	0.0067	37	0.0303	11	1.0000	1	0.2546	36
36	Lakshadweep	0.6667	35	0.1251	24	0.4184	17	0.0000	36	1.0000	1	0.0137	35	0.2656	11	0.0018	33	1.0000	1	0.3879	12
37	Pondicherry	1	1	0.0148	36	0.3284	27	0.2509	22	0.3615	25	0.0138	34	0.2689	10	0.0188	16	0.9997	7	0.3619	29

Table-5.1: -AAQs Performance

AAQS ($\mu\text{g}/\text{cum}$) PERFORMANCE SCORES FOR STATES- FINAL-21/2/2020																	
Sl No	State/UT	SOX			NOX			PM2.5			PM 10		Final				
		($\mu\text{g}/\text{cum}$)	NAAQS	Score-1	($\mu\text{g}/\text{cum}$)	NAAQS	Score-2	Ann. Avg	NAAQS	Score-3	Ann. Avg	NAAQS	Score-4	Avg Sc. 1-3	Avg. Sc 1-4	Rank 1-3	Rank 1-4
1	A. Pradesh	7	50	1.0000	22	40	1.0000	75	60	0.8000		40		0.9333		12	
2	Aru. Pradesh	3	50	1.0000	7	40	1.0000	69	60	0.8696		40		0.9565		9	
3	Assam	7	50	1.0000	15	40	1.0000	78	60	0.7692		40		0.9231		13	
4	Bihar	9	50	1.0000	26	40	1.0000	116	60	0.5172	78	40	0.5128	0.8391	0.7575	24	17
5	Chhattisgarh	9	50	1.0000	22	40	1.0000	85	60	0.7059	45	40	0.8889	0.9020	0.8987	17	9
6	Delhi	7	50	1.0000	68	40	0.5882	241	60	0.2490	101	40	0.3960	0.6124	0.5583	36	19
7	Goa	7	50	1.0000	13	40	1.0000	72	60	0.8333	26	40	1.0000	0.9444	0.9583	11	3
8	Gujarat	15	50	1.0000	26	40	1.0000	113	60	0.5310	37	40	1.0000	0.8437	0.8827	23	11
9	Haryana	10	50	1.0000	17	40	1.0000	162	60	0.3704		40		0.7901		28	
10	H. Pradesh	2	50	1.0000	12	40	1.0000	78	60	0.7692	30	40	1.0000	0.9231	0.9423	13	4
11	J&K	4	50	1.0000	18	40	1.0000	149	60	0.4027		40		0.8009		27	
12	Ladakh																
13	Jharkhand	21	50	1.0000	38	40	1.0000	178	60	0.3371		40		0.7790		31	
14	Karnataka	3	50	1.0000	21	40	1.0000	79	60	0.7595	37	40	1.0000	0.9198	0.9399	15	5
15	Kerala	4	50	1.0000	16	40	1.0000	48	60	1.0000		40		1.0000		1	
16	M. Pradesh	11	50	1.0000	19	40	1.0000	83	60	0.7229	38	40	1.0000	0.9076	0.9307	16	6
17	Maharashtra	15	50	1.0000	36	40	1.0000	103	60	0.5825	40	40	1.0000	0.8608	0.8956	20	10
18	Manipur	3	50	1.0000	19	40	1.0000	29	60	1.0000		40		1.0000		1	
19	Meghalaya	5	50	1.0000	12	40	1.0000	59	60	1.0000		40		1.0000		1	
20	Mizoram	2	50	1.0000	6	40	1.0000	38	60	1.0000		40		1.0000		1	
21	Nagaland	2	50	1.0000	7	40	1.0000	126	60	0.4762		40		0.8254		25	
22	Orissa	6	50	1.0000	18	40	1.0000	95	60	0.6316	41	40	0.9756	0.8772	0.9018	19	8
23	Punjab	8	50	1.0000	3	40	1.0000	142	60	0.4225		40		0.8075		26	
24	Rajasthan	8	50	1.0000	11	40	1.0000	163	60	0.3681		40		0.7894		29	
25	Sikkim	6	50	1.0000	3	40	1.0000	33	60	1.0000		40		1.0000		1	
26	Tamil Nadu	10	50	1.0000	5	40	1.0000	69	60	0.8696	32	40	1.0000	0.9565	0.9674	9	2
27	Telengana	8.68	50	1.0000	11.3	40	1.0000	32	60	1.0000	98	40	0.4087	1.0000	0.8522	1	12
28	Tripura (H)	23	50	1.0000	14	40	1.0000	85	60	0.7059	43	40	0.9302	0.9020	0.9090	17	7
29	UP	11	50	1.0000	19	40	1.0000	62	60	0.9677	40	40	1.0000	0.9892	0.9919	8	1
30	Uttarakhand	24	50	1.0000	39	40	1.0000	197	60	0.3046	119	40	0.3361	0.7682	0.6602	32	18
31	West Bengal	7	50	1.0000	3	40	1.0000	168	60	0.3571		40		0.7857		30	
32	A & Nicobar		50	1.0000	12.8	40	1.0000	105	60	0.5714	55	40	0.7273	0.8571	0.8247	21	13
33	Chandigarh	2	50	1.0000	16	40	1.0000	109	60	0.5505	64	40	0.6250	0.8502	0.7939	22	14
34	D&NH	15	50	1.0000	80	40	0.5000	111	60	0.5405	33	40	1.0000	0.6802	0.7601	34	16
35	Daman & Diu	14	50	1.0000	73	40	0.5479	106	60	0.5660	32	40	1.0000	0.7047	0.7785	33	15
36	Lakshadweep	NA	50	0.0000	14	40	1.0000	33	60	1.0000		40		0.6667		35	
37	Puducherry	4.69	50	1.0000	31.1	40	1.0000	36	60	1.0000				1.0000		1	

Table- 5.2 FOREST 2020 Final

Forest		Total Forest Cover								Change in forest Cover				Forest Stock Million cum					in Ha			Overall	
S.No	States	GA sq.km	SFR 2019	% of GA	score	Cont to NFC	Score	Score-1	RK	SFR 2017	Change %	Score-2	RK	Forest Stock	TOF stock	Total Stock	Score-3	RK	Area 17-18	Score-4	RK	Avg.Sc	RK
1	Andhra Pradesh	162968	29137	17.88	0.1979	4.091	0.3761	0.2870	20	990	3.52	0.9659	2	156	62.3	218.3	0.4268	12	229409	0.4685	3	0.5370	3
2	Arunachal Pradesh	83743	66688	79.63	0.8816	9.363	0.8607	0.8712	1	-276	-0.41	-0.3354	36	420.8	90.7	511.5	1.0000	1	0	0.0000		0.3840	6
3	Assam	78438	28327	36.11	0.3998	3.977	0.3656	0.3827	15	222	0.79	0.2166	7	133.1	30.2	163.3	0.3193	16	0	0.0000		0.2296	14
4	Bihar	94163	7306	7.76	0.0859	1.026	0.0943	0.0901	32	7	0.1	0.0068	23	28.5	37.5	66	0.1290	20	35114	0.0717	8	0.0744	28
5	Chhatisgarh	135191	55611	41.14	0.4554	7.808	0.7178	0.5866	4	64	0.12	0.0624	14	323.7	86.3	410	0.8016	5	26037	0.0532	10	0.3759	7
6	Delhi	1483	195.44	13.18	0.1459	0.027	0.0025	0.0742	33	3.03	1.57	0.0030	24	0.5	1.3	1.8	0.0035	32		0.0000		0.0202	35
7	Goa	3702	2237	60.43	0.6690	0.314	0.0289	0.3489	18	8	0.36	0.0078	21	9.5	3.8	13.3	0.0260	30	15	0.0000		0.0957	26
8	Gujarat	196022	14857	7.58	0.0839	2.086	0.1918	0.1378	27	100	0.68	0.0976	10	52	114	166	0.3245	15	177148	0.3618	4	0.2304	13
9	Haryana	44212	1602	3.62	0.0401	0.225	0.0207	0.0304	36	14	0.88	0.0137	19	5.4	15.5	20.9	0.0409	29	17000	0.0347	14	0.0299	32
10	Himachal Pradesh	55673	15434	27.72	0.3069	2.167	0.1992	0.2531	23	334	2.21	0.3259	5	315.6	23.2	338.8	0.6624	9	9200	0.0188	17	0.3150	12
11	J & K UT	53258	21122	39.66	0.4391	2.966	0.2726	0.3558	17	348	1.68	0.3395	4	232.8	146.1	378.9	0.7408	7	11371	0.0232	15	0.3648	8
12	Ladakh UT	169421	2490	1.47	0.0163	0.350	0.0321	0.0242	37	23	0.93	0.0224	18			0	0.0000			0.0000		0.0117	37
13	Jharkhand	79714	23611	29.62	0.3279	3.315	0.3047	0.3163	19	58	0.25	0.0566	15	117.1	64.4	181.5	0.3548	14	22729	0.0464	11	0.1935	17
14	Karnataka	191791	38575	20.11	0.2227	5.416	0.4979	0.3603	16	1025	2.73	1.0000	1	327.7	89.6	417.3	0.8158	3	62108	0.1268	5	0.5757	1
15	Kerala	38863	21144	54.41	0.6023	2.969	0.2729	0.4376	12	823	4.05	0.8029	3	167.1	51.9	219	0.4282	11	19235	0.0393	13	0.4270	4
16	Madhya Pradesh	308245	77482	25.14	0.2783	10.878	1.0000	0.6392	2	68	0.09	0.0663	13	285.6	97.5	383.1	0.7490	6		0.0000		0.3636	9
17	Maharashtra	307713	50778	16.50	0.1827	7.129	0.6554	0.4190	13	96	0.19	0.0937	11	252.6	164.5	417.1	0.8154	4	37393	0.0764	7	0.3511	10
18	Manipur	22327	16847	75.46	0.8353	2.365	0.2174	0.5264	6	-499	-2.88	-0.4868	37	53.2	7.8	61	0.1193	22	6442	0.0132	19	0.0430	30
19	Meghalaya	22429	17119	76.33	0.8450	2.404	0.2210	0.5330	5	-27	-0.16	-0.0263	34	38.7	17.3	56	0.1095	24	2743	0.0056	23	0.1554	18
20	Mizoram	21081	18006	85.41	0.9456	2.528	0.2324	0.5890	3	-180	-0.99	-0.1756	35	19.1	42.8	61.9	0.1210	21	4020	0.0082	22	0.1357	21
21	Nagaland	16579	12486	75.31	0.8337	1.753	0.1612	0.4974	9	-3	0.02	-0.0029	33	36.9	11.4	48.3	0.0944	25		0.0000		0.1472	20
22	Orissa	155707	51619	33.15	0.3670	7.247	0.6662	0.5166	7	274	0.53	0.2673	6	258	81.5	339.5	0.6637	8	382364	0.7809	2	0.5571	2
23	Punjab	50362	1849	3.67	0.0406	0.260	0.0239	0.0323	35	12	0.65	0.0117	20	12.9	20	32.9	0.0643	26	6845	0.0140	18	0.0306	31
24	Rajasthan	342239	16630	4.86	0.0538	2.335	0.2146	0.1342	28	58	0.35	0.0566	15	46.3	81.9	128.2	0.2506	17	4387	0.0090	21	0.1126	25
25	Sikkim	7096	3342	47.10	0.5214	0.469	0.0431	0.2823	21	-2	-0.06	-0.0020	32	26.3	2	28.3	0.0553	27	365	0.0007	25	0.0841	27
26	Tamilnadu	130058	26364	20.27	0.2244	3.702	0.3403	0.2823	21	83	0.32	0.0810	12	127.8	66.3	194.1	0.3795	13	33147	0.0677	9	0.2026	15
27	Telangana	112077	20582	18.36	0.2033	2.890	0.2656	0.2345	25	163	0.8	0.1590	8	60.5	39.7	100.2	0.1959	19	489673	1.0000	1	0.3973	5
28	Tripura	10486	7726	73.68	0.8157	1.085	0.0997	0.4577	11	0	0	0.0000		21.7	6.5	28.2	0.0551	28	4858	0.0099	20	0.1307	22
29	Uttar Pradesh	240928	14806	6.15	0.0680	2.079	0.1911	0.1296	29	127	0.87	0.1239	9	135.8	88.3	224.1	0.4381	10	51513	0.1052	6	0.1992	16
30	Uttarakhand	53483	24303	45.44	0.5031	3.412	0.3137	0.4084	14	8	0.03	0.0078	21	418.3	19.9	438.2	0.8567	2	21397	0.0437	12	0.3291	11
31	West Bengal	88752	16902	19.04	0.2108	2.373	0.2182	0.2145	26	55	0.33	0.0537	17	76.6	38.1	114.7	0.2242	18	10653	0.0218	16	0.1285	23
32	Andaman & Nicobar	8249	6743	81.74	0.9049	0.947	0.0870	0.4960	10	1	0.01	0.0010	25	55.9	0.6	56.5	0.1105	23	713	0.0015	24	0.1522	19
33	Chandigarh	114	22.03	19.32	0.2139	0.003	0.0003	0.1071	30	0.47	2.18	0.0005	26	0.3	0.1	0.4	0.0008	33	176	0.0004	26	0.0272	33
34	Dadra & Nagar Haveli	491	207	42.16	0.4667	0.029	0.0027	0.2347	24	0	0	0.0000		1.9	0.8	2.7	0.0053	31	200	0.0004	26	0.0601	29
35	Daman & Diu	111	20.49	18.46	0.2044	0.003	0.0003	0.1023	31	0	0	0.0000		0	0.1	0.1	0.0002	35	15	0.0000		0.0256	34
36	Lakshadweep	30	27.1	90.33	1.0000	0.004	0.0003	0.5002	8	0	0	0.0000		0	0.1	0.1	0.0002	35	0	0.0000		0.1251	24
37	Pondicherry	490	52.41	10.70	0.1184	0.007	0.0007	0.0595	34	-1.26	-2.35	-0.0012	31	0.1	0.3	0.4	0.0008	33	63	0.0001	27	0.0148	36

Table-5.3 Water Quality 2020

SI No	State /UT	Sewage Gen & Tret			Surface water quality										GW*		% Ind.meeting WW Std	F.Sc & RK		
		Sewage Gen. (MLD)	Treatment Capacity	Score-1	Rivers Monitored	DO		Total Coliform		Score	BOD			Score-2	% GW withdrawal - Avail.	Score-3	% of 17 Cat.of Ind.complig with WWT Standards	Score-4	Final Avg. Score	Rank
						% Violation	Score	Violation (%)	Count		Violation (%)	Count	Score							
1	A. Pradesh	1978.2	654	0.3306	16	12.3	0.8770	4.16	288	0.9584	42.56	632	0.5744	0.8033	44.15	0.5585	95.14	0.0486	0.4352	14
2	Aru. Pradesh				NA	NA		NA	NA				1.0000	0.3333	0.28	0.9972	80.38	0.1962	0.3817	20
3	Assam	386.6		0.0000	31	2.51	0.9749	5.31	188	0.9469	50.16	315	0.4984	0.8067	11.25	0.8875	90.01	0.0999	0.4485	13
4	Bihar	1117.1	137.5	0.1231	9	1.5	0.9850	55.6	135	0.4440	10.90	211	0.8910	0.7733	45.76	0.5424	97.24	0.0276	0.3666	23
5	Chhattisgarh	391.29	69	0.1763	8	0.67	0.9933	0	132	1.0000	3.00	120	0.9700	0.9878	44.43	0.5557	78.4	0.216	0.4840	8
6	Delhi	3800	2330	0.6132	1	68.4	0.3160	100	38	0.0000	92.00	140	0.0800	0.1320	119.61	-0.1961	84.34	0.1566	0.1764	33
7	Goa	23.68	18.18	0.7677	13	3.7	0.9630	3.7	27	0.9630	7.00	168	0.9300	0.9520	33.50	0.6650	95.82	0.0418	0.6066	2
8	Gujarat	1908.5	782.5	0.4100	23	21.3	0.7870	26.46	257	0.7354	25.00	235	0.7500	0.7575	63.89	0.3611	78.91	0.2109	0.4349	15
9	Haryana	670.21	312	0.4655	2	5.88	0.9412	100	31	0.0000	43.00	53	0.5700	0.5037	136.91	-0.3691	97.22	0.0278	0.1570	35
10	H. Pradesh	28.94	35.63	1.2312	11	2.26	0.9774	7.14	126	0.9286	2.00	255	0.9800	0.9620	86.37	0.1363	97.67	0.0233	0.5882	3
11	J&K	241.79	0	0.0000	5	10	0.9000	0	0	1.0000	57.00	7	0.4300	0.7767	29.47	0.7053	96.09	0.0391	0.3803	21
12	Ladakh																	1	0.2500	30
13	Jharkhand	908.68	0	0.0000	13	0	1.0000	0	58	1.0000	0.00	156	1.0000	1.0000	27.73	0.7227	51.66	0.4834	0.5515	5
14	Karnataka	2023.8	55.62	0.0275	19	2.5	0.9750	12.5	272	0.8750	20.00	337	0.8000	0.8833	69.87	0.3013	93.26	0.0674	0.3199	28
15	Kerala	806.49	0	0.0000	45	9.12	0.9088	4.91	285	0.9509	8.00	442	0.9200	0.9266	51.27	0.4873	97.32	0.0268	0.3602	24
16	M. Pradesh	1379.6	195.1	0.1414	30	5.2	0.9480	0	238	1.0000	34.00	327	0.6600	0.8693	54.76	0.4524	96.06	0.0394	0.3756	22
17	Maharashtra	10200	4254.3	0.4171	30	9.04	0.9096	0	567	1.0000	87.00	1447	0.1300	0.6799	54.62	0.4538	84.49	0.1551	0.4265	16
18	Manipur	26.74	0	0.0000	6	0	1.0000	0	10	1.0000	16.00	57	0.8400	0.9467	1.44	0.9856	100	0	0.4831	9
19	Meghalaya	32.09	0	0.0000	5	0	1.0000	0	765	1.0000	40.00	3.74	0.6000	0.8667	2.28	0.9772	93.71	0.0629	0.4767	11
20	Mizoram	5.71	0	0.0000	2	0	1.0000	0	16	1.0000	0.00	16	1.0000	1.0000	3.82	0.9618	80.01	0.1999	0.5404	6
21	Nagaland	14.98	0	0.0000	3	12.5	0.8750	0	0	1.0000	0.00	32	1.0000	0.9583	0.99	0.9901	86.96	0.1304	0.5197	7
22	Orissa	739.15	53	0.0717	21	0.47	0.9953	25.7	214	0.7430	13.00	512	0.8700	0.8694	42.18	0.5782	91.71	0.0829	0.4006	18
23	Punjab	1685.7	453.8	0.2692	4	4.35	0.9565	49.57	115	0.5043	49.00	140	0.5100	0.6569	149.00	-0.4900	76.03	0.2397	0.1690	34
24	Rajasthan	1530.2	54	0.0353	4	1.9	0.9810	0	52	1.0000	13.00	80	0.8700	0.9503	140.00	-0.4000	76.06	0.2394	0.2063	32
25	Sikkim				4	0	1.0000	0	99	1.0000	84.00	168	0.1600	0.7200	0.06	0.9994	50	0.5	0.5549	4
26	Tamil Nadu	1261.9	362.72	0.2874	5	3.38	0.9662	0.38	265	0.9962	16.00	282	0.8400	0.9341	80.94	0.1906	99.1	0.009	0.3553	25
27	Telangana														65.45	0.3455	87.03	0.1297	0.1188	37
28	Tripura	24		0.0000	2	0	1.0000	0	15	1.0000	61.00	28	0.3900	0.7967	7.88	0.9212	80	0.2	0.4795	10
29	UP	3851.7	1252.7	0.3252	14	19.3	0.8070	59.4	352	0.4060	73.00	579	0.2700	0.4943	70.18	0.2982	91.65	0.0835	0.3003	29
30	Uttarakhand	186.04	24.33	0.1308	2	0	1.0000	70.2	47	0.2980	36.00	99	0.6400	0.6460	56.83	0.4317	83.94	0.1606	0.3423	26
31	West Bengal	2525.6	567.8	0.2248	8	4.5	0.9550	92.3	156	0.0770	41.00	260	0.5900	0.5407	44.60	0.5540	73.16	0.2684	0.3970	19
32	A & N	12	10.42	0.8683	NA	NA		NA	NA				1.0000	0.3333	2.74	0.9726	55.77	0.4423	0.6541	1
33	Chandigarh	429.76	164.79	0.3834	NA	NA		NA	NA				1.0000	0.3333	89.00	0.1100	100	0	0.2067	31
34	D & NH				1	0	1.0000	0	0	1.0000			1.0000	1.0000	31.34	0.6866	86.84	0.1316	0.4546	12
35	D & D				NA	NA		NA	NA		100.00	7	0.0000	0.0000	61.40	0.3860	86.84	0.1316	0.1294	36
36	Lakshadweep				NA	NA		NA	NA				1.0000	0.3333	65.99	0.3401		1	0.4184	17
37	Pondicherry	64.44	0	0.0000	4	0	1	0	0	1	20	5	0.8	0.9333	74.33	0.2567	87.66	0.1234	0.3284	27

Table-5.4 Waste Management* * Niti.gov.in 2020

S.No.	State	MSW TPD 2017-18				Hazardous waste Mg.MTA			Bio-Medical Waste-KGD			Electronic waste			Final Score Rank	
		Gen	Collect.	Treat.	Score-1	Gen.	T.dispd	Score-2	Quan.	Treat.	Score-3	Quan(ton)	T & recy	Score-4	Score	Rank
1	A. Pradesh	6440	6331	500	0.0776	595749	29080.8	0.0488	10662	10662	1.0000	12780.30		0.0809	0.3018	18
2	Aru. Pradesh	13	11	0	0.0000		0		645.4	645.4	1.0000	131.70		0.0008	0.2502	25
3	Assam	650	350	0	0.0000	49043	0	0.0000	8565	6581.3	0.7684	2176.70		0.0138	0.1955	30
4	Bihar	1670	0	0	0.0000	3106	0	0.0000	33799	7439.4	0.2201	3055.60		0.0193	0.0599	33
5	Chhattisgarh	1896	1704	168	0.0886	103861	10029.3	0.0966	1104.5	1136.3	1.0288	2149.90	1650	0.0136	0.3069	17
6	Delhi	8370	8300	3240	0.3871	5528	0	0.0000	24667	24667	1.0000	9729.20		0.0616	0.3622	8
7	Goa	450	400	182	0.4044	26031	19011.2	0.7303	874	874	1.0000	427.40		0.0027	0.5344	1
8	Gujarat	10480	10480	2565	0.2448	4350000	124876	0.0287	29070	29070	1.0000	8994.30	37262	0.0569	0.3326	13
9	Haryana	3103	3103	188	0.0606	70957	244	0.0034	11663	11663	1.0000	4506.90	49981	0.0285	0.2731	19
10	Him. Pradesh	276	207	125	0.4529	24455	0	0.0000	30188	3027.6	0.1003	1595.10		0.0101	0.1408	31
11	J & K	1792	1322	320	0.1786	4496	0	0.0000	4618.6	4172.7	0.9035	1521.50		0.0096	0.2729	20
12	Ladakh													0.0000	0.0000	36
13	Jharkhand	3570	3570	65	0.0182	252467	152	0.0006	12498	1098	0.0879	2021.60		0.0128	0.0299	34
14	Karnataka	8697	7288	3000	0.3449	315453	2573.75	0.0082	67339	67339	1.0000	9118.70	44621	0.0577	0.3527	10
15	Kerala	1339	655	390	0.2913	115394	18750	0.1625	40990	38869	0.9483	6171.80		0.0391	0.3603	9
16	M. Pradesh	6678	4351	0	0.0000	251234	9516	0.0379	14824	13569	0.9153	7800.60	8985	0.0494	0.2506	23
17	Maharashtra	21867	21867	6993	0.3198	499133	449.7	0.0009	61918	6118	0.0988	20270.60	47810	0.1283	0.1370	32
18	Manipur	176	125	0	0.0000	0			529.14	529.14	1.0000	231.70		0.0015	0.2504	24
19	Meghalaya	208	175	55	0.2644	459		0.0000	1061.7	1062	0.9999	211.60		0.0013	0.3164	15
20	Mizoram	552	276	0	0.0000	0			747.63	748	1.0000	79.60		0.0005	0.2501	27
21	Nagaland	344	193	0	0.0000	10		0.0000	626.5	626.5	1.0000	145.10		0.0009	0.2502	25
22	Orissa	2575	2284	30	0.0117	646112	2027	0.0031	14197	13171	0.9277	2937.80	3000	0.0186	0.2403	28
23	Punjab	4456	4435	3.72	0.0008	113367	0	0.0000	15203	15203	1.0000	6958.50	150	0.0440	0.2612	21
24	Rajasthan	5037	2491	490	0.0973	762027	532714	0.6991	22503	16167	0.7185	6326.90	68670	0.0400	0.3887	5
25	Sikkim	49	49	0.3	0.0061	1051	0	0.0000	235.21	197.76	0.8408	78.10		0.0005	0.2118	29
26	Tamil Nadu	14500	14234	1607	0.1108	576733	114774	0.1990	46819	46819	1.0000	13486.20	52427	0.0854	0.3488	11
27	Telangana	6628	6225	3175	0.4790	249996	0	0.0000	15719	15719	1.0000	11800.00	11800	0.0747	0.3884	6
28	Tripura	415	368	250.4	0.6034	273	0	0.0000	1607	1582.9	0.9850	378.30		0.0024	0.3977	4
29	Uttar Pradesh	19180	19180	5197	0.2710	241867	3169.35	0.0131	43554	43554	1.0000	10381.10	86130	0.0657	0.3374	12
30	Uttarakand	918	918	0	0.0000	20907	116.55	0.0056	2946	3837	1.3024	1641.10	28000	0.0104	0.3296	14
31	West Bengal	9500	8075	851	0.0896	126573	49004	0.3872	29774	29895	1.0041	10059.40	600	0.0637	0.3861	7
32	A& N	70	70	5	0.0714	0			187	221	1.1818	92.20		0.0006	0.3135	16
33	Chandigarh	370	360	250	0.6757	2116	0	0.0000	2503	2503	1.0000	359.70		0.0023	0.4195	3
34	D & NH	85	85	0	0.0000	4056.371	3448.47	0.8501	322	322	1.0000	29.40		0.0002	0.4626	2
35	Daman & Diu											40.80		0.0003	0.0001	35
36	Lakshadweep	21	0	0	0.0000	0	0		423	0	0.0000	7.40		0.0000	0.0000	36
37	Puducherry	495	485	0		26425	52	0.0020	5400	5400	1.0000	284.20		0.0018	0.2509	22

Table- 5.5 Climate Change

S.No	State/UT	SAPCC	Score-1	% RE Gen. Capacity	Score-2	Co2 saved LED bulbs per 1000 Pop	score-3	Instal. Grid connect Solar power %	Score-4	Lives lost per Cr	Score-5	1-5 final Sc	corr	Rank	Niti Final Avg. Sc 2-5	Niti Rank
1	A. Pradesh	Yes	1	39.74	0.3974	42.77	0.4277	33.99	0.3399	6	0.9932	0.6316	0.4855	9	70	2
2	Aru. Pradesh	Yes	1	75.12	0.7512	38.81	0.3881	2.22	0.0222	362	0.5877	0.5498	0.4227	16	31	26
3	Assam	Yes	1	30.79	0.3079	20.98	0.2098	7.74	0.0774	49	0.9442	0.5079	0.3904	19	47	14
4	Bihar	No	0	8.67	0.0867	19.00	0.19	33.1	0.331	49	0.9442	0.3104	0.2386	35	43	18
5	Chhattisgarh	No	0	5.45	0.0545	41.89	0.4189	30.53	0.3053		1.0000	0.3557	0.2735	31	29	27
6	Delhi	Yes	1	12.89	0.1289	59.52	0.5952	14.7	0.147		1.0000	0.5742	0.4414	14	30	8
7	Goa	No	0	0.84	0.0084	42.29	0.4229	98.96	0.9896		1.0000	0.4842	0.3722	22	41	19
8	Gujarat	Yes	1	31.69	0.3169	66.10	0.661	25.23	0.2523	36	0.9590	0.6378	0.4903	7	63	5
9	Haryana	No	0	21.88	0.2188	57.18	0.5718	9.8	0.098		1.0000	0.3777	0.2904	30	34	25
10	H. Pradesh	No	0	94.02	0.9402	120.58	1.2058	0.75	0.0075	105	0.8804	0.6068	0.4664	11	61	6
11	J&K	No	0	73.41	0.7341	65.47	0.6547	0.76	0.0076	6	0.9932	0.4779	0.3674	24	59	3
12	Ladakh				0.0000		0		0		1.0000	0.2000	0.1537	37		
13	Jharkhand	No	0	13.19	0.1319	40.82	0.4082	16.09	0.1609	0	1.0000	0.3402	0.2615	33	27	28
14	Karnataka	Yes	1	62.92	0.6292	37.16	0.3716	36.06	0.3606	1	0.9989	0.6721	0.5166	4	71	1
15	Kerala	Yes	1	44.79	0.4479	44.47	0.4447	6.19	0.0619	36	0.9590	0.5827	0.4479	12	56	10
16	M. Pradesh	Yes	1	33.65	0.3365	22.67	0.2267	26.18	0.2618	0	1.0000	0.5650	0.4343	15	47	14
17	Maharashtra	Yes	1	29.04	0.2904	18.55	0.1855	13.08	0.1308	11	0.9875	0.5188	0.3988	17	50	12
18	Manipur	Yes	1	40.41	0.4041	11.80	0.118	3.92	0.0392	0	1.0000	0.5123	0.3938	18	37	21
19	Meghalaya	Yes	1	73.95	0.7395	15.70	0.157	0.03	0.0003	0	1.0000	0.5794	0.4454	13	36	24
20	Mizoram	Yes	1	65.51	0.6551	59.05	0.5905	1.5	0.015	0	1.0000	0.6521	0.5013	6	45	16
21	Nagaland	No	0	52.34	0.5234	47.11	0.4711	1.12	0.0112	91	0.8964	0.3804	0.2924	29	51	11
22	Orissa	Yes	1	30.12	0.3012	124.84	1.2484	14.87	0.1487	2	0.9977	0.7392	0.5682	3	69	3
23	Punjab	No	0	38.87	0.3887	4.95	0.0495	18.01	0.1801	1	0.9989	0.3234	0.2486	34	57	9
24	Rajasthan	Yes	1	44.93	0.4493	22.62	0.2262	39.92	0.3992	0	1.0000	0.6149	0.4727	10	60	7
25	Sikkim	Yes	1	90.64	0.9064	25.87	0.2587	0.01	0.0001	0	1.0000	0.6330	0.4866	8	38	20
26	Tamil Nadu	No	0	49.05	0.4905	5.97	0.0597	19.82	0.1982	0	1.0000	0.3497	0.2688	32	45	16
27	Telangana			40.98	0.4098	6.34	0.0634	55.73	0.5573	0	1.0000	0.4061	0.3122	28	66	4
28	Tripura (H)	Yes	1	12.41	0.1241	27.62	0.2762	10.02	0.1002	44	0.9499	0.4901	0.3767	21	37	21
29	UP	No	0	25.25	0.2525	11.97	0.1197	15.95	0.1595	5	0.9943	0.3052	0.2346	36	48	13
30	Uttarakand	Yes	1	70.98	0.7098	51.45	0.5145	12.72	0.1272	53	0.9396	0.6582	0.5060	5	59	8
31	West Bengal	Yes	1	17.74	0.1774	10.13	0.1013	5.08	0.0508	21	0.9761	0.4611	0.3545	26	37	21
32	A & Nicobar	Yes	1	30.34	0.3034	71.56	0.7156	69.9	0.699	0	1.0000	0.7436	0.5716	2	72	2
33	Chandigarh	No	0	68.5	0.6850	28.75	0.2875	26.67	0.2667	0	1.0000	0.4478	0.3443	27	54	4
34	D&NH	No	0	1.92	0.0192	37.30	0.373	100	1	0	1.0000	0.4784	0.3678	23	41	6
35	Dam & Diu	No	0	7.49	0.0749	40.11	0.4011	100	1	0	1.0000	0.4952	0.3807	20	46	5
36	Lakshadweep	Yes	1	100	1.0000	250.45	2.5045	100	1		1.0000	1.3009	1.0000	1	100	1
37	Pondicherry	No	0	0.86	0.0086	34.31	0.3431	100	1	0	1.0000	0.4703	0.3615	25	39	7

Table-5.6 Bio-diversity criteria

S.No	States	Livestock				Wetland in Ha			Protected Areas				% desertification			Final BD	
		Population	Change	Sc-1	Rank	Rec 2019	Sc-2	Rank	Area 2018	score	Sc-3	Rank	Area	Score	sc-4	Avg. Scr	Rank
1	Andhra Pradesh	48.19	15.79	0.0994	3	72358	0.0598	6	6298.25	0.6067	0.3683	15	1.37	0.0045	0.0591	0.1466	11
2	Arunachal Pradesh	1.26		0.0026	24	68022	0.0562	7	9778.57	0.9420	0.5719	4	12.62	0.0413	0.0959	0.1816	6
3	Assam	13.83		0.0285	13	67857	0.0560	8	3817.93	0.3678	0.2233	16	25.23	0.0826	0.1372	0.1113	18
4	Bihar	27.16	10.67	0.0560	7	3992	0.0033	25	3237.32	0.3119	0.1893	18	5.35	0.0175	0.0721	0.0802	19
5	Chhatisgarh	13.49		0.0278	14	64398	0.0532	10	6659.37	0.6415	0.3895	12	1.6	0.0052	0.0598	0.1326	13
6	Delhi	0.37		0.0008	26	18	0.0000	33	27.82	0.0027	0.0016	32	22.25	0.0729	0.1275	0.0325	27
7	Goa	0.21		0.0004	29	1025	0.0008	30	754.91	0.0727	0.0442	24	3.49	0.0114	0.0660	0.0279	29
8	Gujarat	21.65	-0.95	0.0446	11	1210675	1.0000	1	17098.54	1.6472	1.0000	1	1.83	0.0060	0.0606	0.5263	1
9	Haryana	8.88		0.0183	16	1885	0.0016	29	281.46	0.0271	0.0165	28	7.75	0.0254	0.0800	0.0291	28
10	Himachal Pradesh	5.12		0.0106	18	8221	0.0068	24	8387.48	0.8080	0.4905	8	0	0.0000	0.0546	0.1406	12
11	J & K	9.9		0.0204	15	36262	0.0300	16	14168	1.3649	0.8286	2	5.71	0.0187	0.0733	0.2381	2
12	Ladakh			0.0000	35		0.0000	33		0.0000	0.0000	36		0.0000	0.0546	0.0137	35
13	Jharkhand	15.83		0.0326	12	16528	0.0137	20	1882.15	0.1813	0.1101	21	1.8	0.0059	0.0605	0.0542	23
14	Karnataka	25.62	4.7	0.0528	8	53119	0.0439	13	9570.57	0.9220	0.5597	5	0.14	0.0005	0.0551	0.1779	8
15	Kerala	3.48		0.0072	20	23157	0.0191	18	2486.4	0.2395	0.1454	19	2.45	0.0080	0.0626	0.0586	21
16	Madhya Pradesh	35.62	11.81	0.0734	6	162573	0.1343	3	10815.68	1.0419	0.6325	3	0.86	0.0028	0.0574	0.2244	3
17	Maharashtra	36.76	1.61	0.0758	5	116837	0.0965	4	8878.04	0.8553	0.5192	7	3.58	0.0117	0.0663	0.1895	5
18	Manipur	0.97		0.0020	25	12424	0.0103	21	224.81	0.0217	0.0131	29	1.49	0.0049	0.0595	0.0212	31
19	Meghalaya	1.55		0.0032	21	21470	0.0177	19	361.58	0.0348	0.0211	26	3.35	0.0110	0.0656	0.0269	30
20	Mizoram	0.28		0.0006	28	12456	0.0103	21	1245.75	0.1200	0.0729	23	95.52	0.3128	0.3674	0.1128	17
21	Nagaland	1.35		0.0028	23	11522	0.0095	23	222.36	0.0214	0.0130	30	22.48	0.0736	0.1282	0.0384	26
22	Orissa	23.39		0.0482	10	64627	0.0534	9	8085.35	0.7789	0.4729	9	-0.33	-0.0011	0.0535	0.1570	9
23	Punjab	8.61		0.0178	17	3068	0.0025	27	326.6	0.0315	0.0191	27	55.35	0.1812	0.2358	0.0688	20
24	Rajasthan	49.14	-1.6	0.1013	2	56341	0.0465	11	9539.45	0.9190	0.5579	6	-0.46	-0.0015	0.0531	0.1897	4
25	Sikkim	0.34		0.0007	27	2609	0.0022	28	2183.1	0.2103	0.1277	20	0.34	0.0011	0.0557	0.0466	25
26	Tamilnadu			0.0000	35	45219	0.0374	14	6464.97	0.6228	0.3781	13	1.8	0.0059	0.0605	0.1190	16
27	Telangana	24.94	22.21	0.0514	9	28239	0.0233	17	6708.38	0.6462	0.3923	11	-1.63	-0.0053	0.0493	0.1291	15
28	Tripura	1.46		0.0030	22	3879	0.0032	26	603.64	0.0582	0.0353	25	33.55	0.1099	0.1645	0.0515	24
29	Uttar Pradesh	58.53	-1.35	0.1207	1	42224	0.0349	15	6318.36	0.6087	0.3695	14	-16.69	-0.0546	0.0000	0.1313	14
30	Uttarakand	4.94		0.0102	19	54129	0.0447	12	7605.14	0.7326	0.4448	10	11.53	0.0378	0.0924	0.1480	10
31	West Bengal	41.62	23.32	0.0858	4	438476	0.3622	2	3423.77	0.3298	0.2002	17	3.08	0.0101	0.0647	0.1782	7
32	Andaman & Nicob	0.19		0.0004	29	89022	0.0735	5	1543.33	0.1487	0.0903	22	0	0.0000	0.0546	0.0547	22
33	Chandigarh	0.031		0.0001	33	60	0.0000	33	26.01	0.0025	0.0015	33	0	0.0000	0.0546	0.0141	33
34	Dadra & Nagar Ha	0.078		0.0002	32	322	0.0003	31	92.16	0.0089	0.0054	31	0	0.0000	0.0546	0.0151	32
35	Daman & Diu	0.01		0.0000	35		0.0000	33	2.19	0.0002	0.0001	35	0	0.0000	0.0546	0.0137	35
36	Lakshadweep	0.052		0.0001	33		0.0000	33	0.01	0.0000	0.0000	36	0	0.0000	0.0546	0.0137	35
37	Pondicherry	0.13		0.0003	31	127	0.0001	32	3.9	0.0004	0.0002	34	0	0.0000	0.0546	0.0138	34

Table-5.7 Agriculture														
Sl No	State/UT	G.Area Sq Km	Agri Land ,000 Ha	Sc-1	Agri Dist.	Agri Vul.Dis .VH &H	sc-2	Rev.Sc	Ha. in Micro irrg	Sc-3	% share in total GSVA 17-18	Sc-4	Final Score	Final Rank
1	A. Pradesh	275069	9047	0.0329	13	5	0.3846	0.6154	1584949	0.1565	34.37	0.1150	0.2299	21
2	Aru. Pradesh	83743	423	0.0051	14	0	0.0000	1.0000	613	0.0001	37.29*	0.1248	0.2825	2
3	Assam	78438	3364	0.0429	23	2	0.0870	0.9130	1221	0.0001	19.41*	0.0650	0.2553	17
4	Bihar	94163	6579	0.0699	37	21	0.5676	0.4324	114576	0.0113	22.23	0.0744	0.1470	33
5	Chhattisgarh	135191	5538	0.0410	16	7	0.4375	0.5625	297343	0.0294	22.16	0.0742	0.1767	29
6	Delhi	1483	53	0.0357	0			1.0000		0.0000	0.47	0.0016	0.2593	15
7	Goa	3702	197	0.0532	1	0	0	1.0000	2315	0.0002	7.09*	0.0237	0.2693	9
8	Gujarat	196022	12661	0.0646	25	14	0.5600	0.4400	1281136	0.1265	16.40*	0.0549	0.1715	30
9	Haryana	44212	3656	0.0827	19	9	0.4737	0.5263	594911	0.0587	19.27*	0.0645	0.1831	26
10	H. Pradesh	55673	812	0.0146	12	4	0.3333	0.6667	9290	0.0009	14.62	0.0489	0.1828	27
11	J&K	53258	1075	0.0202	12	1	0.0833	0.9167	80	0.0000	19.36*	0.0648	0.2504	19
12	Ladakh	169421		0.0000	2		0	1.0000		0.0000		0.0000	0.2500	20
13	Jharkhand	79714	4343	0.0545	18	9	0.5	0.5000	32412	0.0032	18.94	0.0634	0.1553	32
14	Karnataka	191791	12827	0.0669	27	14	0.5185	0.4815	1286640	0.1270	10.82	0.0362	0.1779	28
15	Kerala	38863	2266	0.0583	14	0	0.0000	1.0000	3128	0.0003	12.46*	0.0417	0.2751	5
16	M. Pradesh	308245	17252	0.0560	45	30	0.6667	0.3333	521425	0.0515	40.40*	0.1352	0.1440	34
17	Maharashtra	307713	21099	0.0686	33	17	0.5152	0.4848	1545369	0.1526	10.37	0.0347	0.1852	25
18	Manipur	22327	390	0.0175	9	0	0	1.0000	318	0.0000	19.63*	0.0657	0.2708	8
19	Meghalaya	22429	1056	0.0471	7	0	0	1.0000	615	0.0001	19.86	0.0665	0.2784	4
20	Mizoram	21081	367	0.0174	8	0	0	1.0000	4428	0.0004	29.99*	0.1004	0.2796	3
21	Nagaland	16579	694	0.0419	8	0	0	1.0000	5449	0.0005	30.90*	0.1034	0.2865	1
22	Orissa	155707	6784	0.0436	30	1	0.0333	0.9667	112649	0.0111	19.98	0.0669	0.2721	6
23	Punjab	50362	4285	0.0851	17	5	0.2941	0.7059	48281	0.0048	29.18*	0.0977	0.2233	22
24	Rajasthan	342239	25511	0.0745	32	31	0.9688	0.0313	1836750	0.1813	24.76	0.0829	0.0925	36
25	Sikkim	7096	97	0.0137	4	0	0	1.0000	9086	0.0009	10.33	0.0346	0.2623	12
26	Tamil Nadu	130058	8112	0.0624	29	11	0.3793	0.6207	503206	0.0497	12.58	0.0421	0.1937	23
27	Telangana	112077	6877	0.0614	10	5	0.5000	0.5000	221910	0.0219	14.28	0.0478	0.1578	31
28	Tripura (H)	10486	272	0.0259	4	0	0.0000	1.0000	2095	0.0002		0.0000	0.2565	16
29	UP	240928	18939	0.0786	70	30	0.4286	0.5714	99027	0.0098	25.7	0.0860	0.1865	24
30	Uttarakand	53483	1549	0.0290	13	7	0.5385	0.4615	7863	0.0008	9.41	0.0315	0.1307	35
31	West Bengal	88752	5655	0.0637	17	1	0.0588	0.9412	53317	0.0053	23.42	0.0784	0.2721	6
32	A & Nicobar	8249	28	0.0034	1			1.0000		0.0000	12.6*	0.0422	0.2614	14
33	Chandigarh	114	1	0.0088				1.0000		0.0000	0.54*	0.0018	0.2526	18
34	D&NH	491	24	0.0489	1	0	0	1.0000		0.0000		0.0000	0.2622	13
35	Dam & Diu	112	3	0.0268	1	1	1	0.0000		0.0000		0.0000	0.0067	37
36	Lakshadweep	32	2	0.0625				1.0000		0.0000		0.0000	0.2656	11
37	Pondicherry	480	29	0.0604	1	0	0	1.0000		0.0000	4.5	0.0151	0.2689	10

Table5.8 Fisheries 2020

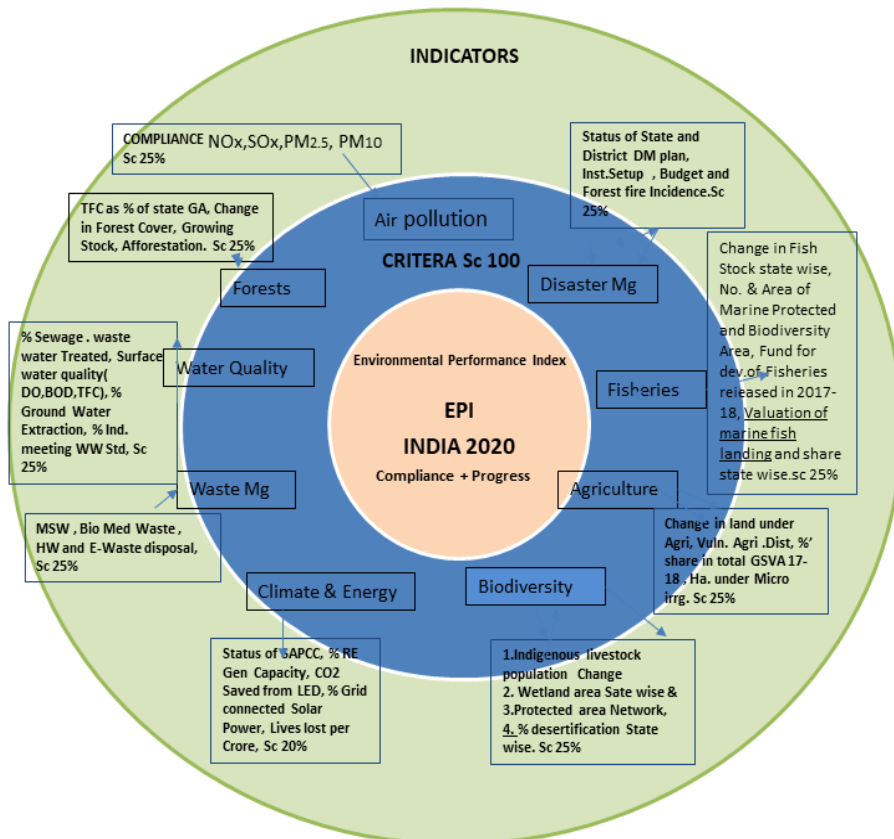
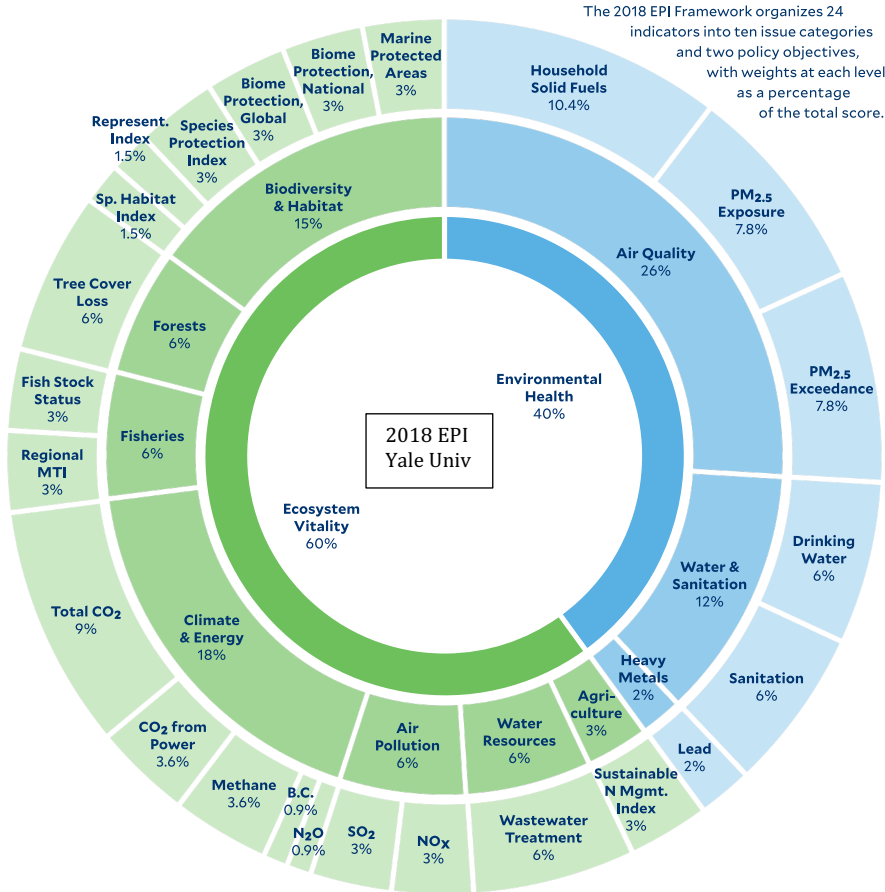
Sl No	State/UT	FishSt. 17+18	FishSt. 15+16	kg in Fish Stock/Ton	Score-1	Rank	No. of Mr. Procect+ bio	Area	Score-2	Rank	Fund 17+18 Lak	% of F.Rank	Score-3	Rank	Yak(C) marine fish land. 17+18	Share % of banding	Score-4	Rank	Final Sc.	F. Rank	
1	A. Pradesh	3449558	2352263	1097295	0.5643	1	20	1874.8	0.0909	5	2162.88	7.1651	0.1907	3	432	2662	5.1	0.233	6	0.2697	3
2	Aru. Pradesh	4250	4050	200	0.0001	30			0.0000		222.9	0.7384	0.0197	24				0		0.0049	28
3	Assam	327263	294200	33063	0.0170	11			0.0000		799.66	2.6491	0.0705	8				0		0.0219	14
4	Bihar	587850	506887	80963	0.0416	6			0.0000		2.25	0.0075	0.0002	33				0		0.0105	23
5	Chhattisgarh	457167.2	342299	114868.2	0.0591	4			0.0000		1091.92	3.6172	0.0963	5				0		0.0388	10
6	Delhi	801	710	91	0.0000	31			0.0000		136.29	0.4515	0.0120	29				0		0.0030	32
7	Goa	124607	11111	113496	0.0584	5	4	100.78	0.0049	10	265.24	0.8787	0.0234	19	1729	920	1.8	0.082	9	0.0422	9
8	Gujarat	819068	809540	9528	0.0049	17	17	3849.1	0.1867	3	1527.43	5.0600	0.1347	4	6639	11536	21.9	1	1	0.3316	2
9	Haryana	190000.9	121000	69000.9	0.0355	9			0.0000		779.36	2.5818	0.0687	9				0		0.0260	12
10	H. Pradesh	12765.36	11799	966.36	0.0005	23			0.0000		572.26	1.8957	0.0505	13				0		0.0127	20
11	J&K	20700	20080	620	0.0003	27			0.0000		404.69	1.3406	0.0357	17				0		0.0090	25
12	Ladakh			0	0.0000	31			0.0000			0.0000	0.0000					0		0.0000	35
13	Jharkhand	190000	115995	74005	0.0381	7			0.0000		75	0.2485	0.0066	31				0		0.0112	22
14	Karnataka	602522.2	580570	21952.2	0.0113	14	10	206.9	0.0100	9	3324.31	11.0126	0.2931	2	6397	6442	12.2	0.557	4	0.2179	5
15	Kerala	562621	727570	-164949	-0.0848	37	19	802.9	0.0389	8	812.34	2.6911	0.0716	7	9699	10827	20.6	0.941	2	0.2416	4
16	M. Pradesh	143419.7	115017	28402.7	0.0146	12			0.0000		672.02	2.2262	0.0592	11				0		0.0185	17
17	Maharashtra	606012	579685	26327	0.0135	13	16	1680.8	0.0815	6	226.81	0.7514	0.0200	22	6807	5771	11	0.502	11	0.1543	6
18	Manipur	33000	32035	965	0.0005	23			0.0000		456.15	1.5111	0.0402	16				0		0.0102	24
19	Meghalaya	11961	11343	618	0.0003	27			0.0000		139.6	0.4625	0.0123	28				0		0.0032	31
20	Mizoram	7643.35	6828	815.35	0.0004	25			0.0000		261.39	0.8659	0.0230	20				0		0.0059	27
21	Nagaland	8990.5	8220	770.5	0.0004	25			0.0000		219.4	0.7268	0.0193	25				0		0.0049	28
22	Orissa	684962	521279	163683	0.0842	2	17	4163.5	0.2020	2	1077.68	3.5701	0.0950	6	9931	1255	2.4	0.11	7	0.1227	8
23	Punjab	136638.5	120088	16550.5	0.0085	15			0.0000		465.36	1.5416	0.0410	15				0		0.0124	21
24	Rajasthan	54035.34	42461	11574.34	0.0060	16			0.0000		83.28	0.2759	0.0073	30				0		0.0033	30
25	Sikkim	380	402	-22	0.0000	31			0.0000		0	0.0000	0.0000					0		0.0000	35
26	Tamil Nadu	712036.9	709163.1	2873.79	0.0015	20	16	2058.6	0.0999	4	11342.8	37.5757	1.0000	1	1245	8576	16.3	0.744	3	0.4614	1
27	Telangana	270037	236752	33285	0.0171	10			0.0000		479.78	1.5894	0.0423	14				0		0.0149	19
28	Tripura (H)	76800	69055	7745	0.0040	18			0.0000		341.92	1.1327	0.0301	18				0		0.0085	26
29	UP	628749.1	504808	123941.1	0.0637	3			0.0000		238.14	0.7889	0.0210	21				0		0.0212	15
30	Uttarakand	4578.53	4138	440.53	0.0002	29			0.0000		746.16	2.4718	0.0658	10				0		0.0165	18
31	West Bengal	1742092	1671420	70672	0.0363	8	8	4214.6	0.2044	1	649.32	2.1510	0.0572	12	2679	2759	5.2	0.237	5	0.1339	7
32	A & Nicobar	39504	37325	2179	0.0011	21	106	1565.6	0.0759	7	179.89	0.5959	0.0159	26				0		0.0232	13
33	Chandigarh	136	128	8	0.0000	31			0.0000			0.0000	0.0000					0		0.0000	35
34	D&NH	0	0	0	0.0000	31	1	92.16	0.0045	11		0.0000	0.0000					0		0.0011	34
35	Dam & Diu	24680.07	23031	1649.07	0.0008	22	1	2.18	0.0001	13	226.69	0.7510	0.0200	22	5783	1156	2.2	0.1	8	0.0303	11
36	Lakshadweep	20774	15938.46	4835.54	0.0025	19	1	0.01	0.0000		53.57	0.1775	0.0047	32				0		0.0018	33
37	Pondicherry	49922.71	53807.9	-3885.19	-0.0020	36	1	4	0.0002	12	150	0.4969	0.0132	27	1089	733	1.4	0.064	10	0.0188	16

Table-5.9 Disaster Management															Niti Score & Rank		
Sl No	State/UT	S. Plan	Disst	D. Plan	Sc-1	SDMA	Sc-2	Bdgt Cr	Score3	Forest fire incd ,2017	Avg. Forest fire incidence	Sc-4	Final Score	Rank	Sc-18/60	Sc-19/70	F.RK
1	A. Pradesh	yes	13	13	1	Yes	1	1017.4	0.9130	1877	1788	0.5020	0.8538	33	64	67	3
2	Aru. Pradesh	yes	25	25	1	Yes	1	159.49	0.9864	733	513	0.8571	0.9609	21	51	53	26
3	Assam	yes	33	33	1	Yes	1	239.4	0.9795	1887	1827	0.4913	0.8677	32	49	55	23
4	Bihar	yes	38	38	1	Yes	1	0	1.0000	272	296.5	0.9174	0.9794	15	48	50	28
5	Chhattisgarh	yes	26	26	1	Yes	1	224.48	0.9808	4373	3591	0.0000	0.7452	35	58	56	21
6	Delhi	yes	11	11	1	Yes	1		1.0000	5	3.5	0.9990	0.9998	6	62	61	5
7	Goa	yes	2	2	1	Yes	1	1.8	0.9998	32	21	0.9942	0.9985	9	64	65	7
8	Gujarat	yes	33	33	1	Yes	1	449.95	0.9615	574	418	0.8836	0.9613	20	64	64	9
9	Haryana	yes	22	22	1	Yes	1	160.2	0.9863	185	114	0.9682	0.9886	11	55	57	18
10	H. Pradesh	yes	12	12	1	Yes	1	329.83	0.9718	170	184.5	0.9486	0.9801	14	69	69	2
11	J&K	yes	20	20	1	Yes	1	252.9	0.9784	113	165	0.9540	0.9831	12	53	59	8
12	Ladakh	yes	2	2	1	Yes	1		1.0000		0	1.0000	1.0000	1			
13	Jharkhand	yes	24	24	1	Yes	1	189.45	0.9838	1133	936.5	0.7392	0.9307	24	50	53	26
14	Karnataka	yes	30	30	1	Yes	1	669.22	0.9428	1333	1082	0.6986	0.9104	29	64	66	6
15	Kerala	yes	14	14	1	Yes	1	3097.5	0.7352	456	310.5	0.9135	0.9122	28	69	70	1
16	M. Pradesh	yes	52	52	1	Yes	1	457.2	0.9609	4781	3728	-0.0383	0.7307	37	52	58	15
17	Maharashtra	yes	36	36	1	Yes	1	772.65	0.9340	3487	2681	0.2534	0.7969	34	64	64	9
18	Manipur	yes	16	16	1	Yes	1	9.9	0.9992	1094	1100	0.6938	0.9232	26	59	60	13
19	Meghalaya	yes	11	11	1	Yes	1	12.6	0.9989	1454	1210	0.6630	0.9155	27	52	54	25
20	Mizoram	yes	8	8	1	Yes	1	9	0.9992	1587	1453	0.5955	0.8987	30	59	56	21
21	Nagaland	yes	11	11	1	Yes	1	205.89	0.9824	930	804	0.7761	0.9396	22	51	57	18
22	Orissa	yes	30	30	1	Yes	1	778.5	0.9335	4416	3590	0.0003	0.7334	36	51	58	15
23	Punjab	yes	22	22	1	Yes	1	321.99	0.9725	320	182.5	0.9492	0.9804	13	60	62	12
24	Rajasthan	yes	33	33	1	Yes	1	574.65	0.9509	260	163	0.9546	0.9764	17	59	57	18
25	Sikkim	yes	4	4	1	Yes	1	54.93	0.9953	8	4	0.9989	0.9985	9	58	65	7
26	Tamil Nadu	yes	37	37	1	Yes	1	707.4	0.9395	301	207	0.9423	0.9705	19	66	67	3
27	Telangana	yes	31	31	1	Yes	1	226.5	0.9806	1748	1451	0.5959	0.8941	31	61	67	3
28	Tripura (H)	yes	8	8	1	Yes	1	16.2	0.9986	431	388.5	0.8918	0.9726	18	55	58	15
29	UP	yes	75	75	1	Yes	1	351.45	0.9700	1170	930.5	0.7408	0.9277	25	42	55	23
30	Uttarakand	yes	13	13	1	Yes	1	139.35	0.9881	376	938.5	0.7386	0.9317	23	60	64	9
31	West Bengal	yes	23	23	1	Yes	1	269.1	0.9770	364	253	0.9295	0.9766	16	56	60	13
32	A & Nicobar		3	3	1	Yes	1		1.0000	8	16	0.9955	0.9989	8	58	61	5
33	Chandigarh		1	1	1	Yes	1		1.0000	1	0.5	0.9999	1.0000	1	68	70	1
34	D&NH		1	1	1	Yes	1		1.0000	0	0	1.0000	1.0000	1	57	63	3
35	Dam & Diu		2	2	1	Yes	1		1.0000	0	0	1.0000	1.0000	1	63	61	5
36	Lakshadweep		1	1	1	Yes	1		1.0000	0	0	1.0000	1.0000	1	62	63	3
37	Pondicherry		4	4	1	Yes	1		1.0000	9	4.5	0.9987	0.9997	7	65	66	2

Table-7: -Weightage of Criteria and Indicators and related SDG targets and Indicators.

S.No	SDG & Targets	Category	Criteria SLA	Total Wtg	Indicators	SDG Indicator	Indicator Wtg
1	3,3.9,7,9,9.4 & 11, 11.1 & 11.6 12,12.2,12.4 &12.5	Air Pollution	Airpol	100%	1.SOx Adherence to NAAQS 2.NOx 3.PM2.5 4.PM10	3.9, 9.4, 11., 11.6 12.4, 12.5	25% 25% 25% 25%
2	15,15.1,15.2,15. B 1,2,3,13	Forests	Forest	100%	1.TFC as %of State GA & Contribution to NFC 2.Change in Forest cover 3.Growing Stock 4. Afforestation efforts	12.2, 15.1,15.2, 15. B	25% 25% 25% 25%
3	3, 3.3,3.9 6,6.1,6.26.3,6.5, 6. A	Water Quality	Watqua	100%	1.% Sewage Waste water treated 2.Surface water quality (DO, BOD& TFC) 3.Ground Water extraction % 4. % of 17 Categories of Industries complying with WWT Standards	3.3,3.9,6.1,6.26.3, 6.5 ,6. A	25% 25% 25% 25%
4	12.	Waste Management	Wastmg	100%	1.MSW generated, collected and treated. 2.Haz. waste generated and treated 3.Biomedical waste generated and treated 4.Electronic waste generated, treated and recycled.	12.4 12.4.1 12.4.2 12.5	25% 25% 25% 25%
5	2,3,7,7.2,9,11,12, 12.2, 12.5, 1 & 1.5,11 & 11.5,13 , & 13.1, 14,15	Climate and Energy	Clieng	100%	1.Status of SAPCC 2.%RE Gen. Capacity 3. Co2 saved from LED bulbs per 1000 Pop. 4.Instal. Grid connect Solar power % 5.Lives lost per crore population.	7.2, 12.2,12.5 (1.5.1),11.5.1 &13.1.1	20% 20% 20% 20% 20%
6	14, 14.5 13,15.1,15.2, 15.5 16.4,	Biodiversity	Biodty	100%	1.Indigenous livestock population change 2. Wetland Area state wise 3. Protected area state wise 4. % desertification	14.5 15.1,15.2, 15.5	25% 25% 25% 25%
7	2, 2.3,2.4, 2.5, 2.A & 2. B	Agriculture	Agrcul	100%	1.Land under Agriculture state wise 2.Agri districts and VH and H vulnerable districts. 3. Ha. under Micro irrigation 4. % share in total Gross State Valuation of Agriculture 17-18	2.3,2.4, 2.5, 2.A & 2.B, 2.4.1	25% 25% 25% 25%
8	1,2,8,12, 14,14.4, 14.6, 14.7 & 14.8	Fisheries	Fishre	100%	1.Change in Fish Stock in Tonnes 2. No. and Area of Marine, Protected and biodiversity Sites. 3. Funds released 2017-18 & % of funds received by states. 4. Valuation (in Cr) of marine fish landing of 2017 & 2018 and share of landing state wise.	14.4,14.5, 14.6, 14.7	25% 25% 25% 25%
9	1 &1.5 11, 11.5 & 11. b	Disaster Management	Disamg	100%	1.Status of State DM Plan 2.Institutional setup state (SDMA) and District (DDMA) 3. Budget in Crores 18-19(Dec) 4. No. (2017) and average (2017 ,2016) Forest fire incidence,	1.5.2, 1.5.3 11.5.2 13.1.2 11.b.1 & .2	25% 25% 25% 25%
10	Total	9 Criteria			37 Indicators		

THE 2018 EPI FRAMEWORK



**Fig.-1:- .Organization of the 2018 EPI, with abbreviations (TLAs), weights (Wt.)
Within each level of aggregation**

Policy Objective	Issue Category	TLA	Wt.	Indicator	TLA	Wt	Pg.
Environmental Health HLT (40%)	Air Quality	AIR	65%	Household Solid Fuels	HAD	40%	5
				PM _{2.5} Exposure	PME	30%	6
				PM _{2.5} Exceedance	PMW	30%	7
	Water & Sanitation	H2O	30%	Drinking Water	UWD	50%	9
				Sanitation	USD	50%	10
Heavy Metals	HMT	5%	Lead Exposure	PBD	100%	11	
Ecosystem Vitality ECO	Biodiversity & Habitat	BDH	25%	Marine Protected Areas	MPA	20%	12
				Biome Protection (National)	TBN	20%	13
				Biome Protection (Global)	TBG	20%	15
				Species Protection Index	SPI	20%	17
				Representativeness Index	PAR	10%	18
				Species Habitat Index	SHI	10%	19
	Forests	FOR	10%	Tree Cover Loss	TCL	100%	20
	Fisheries	FSH	10%	Fish Stock Status	FSS	50%	21
				Regional Marine Trophic Index	MTR	50%	23

