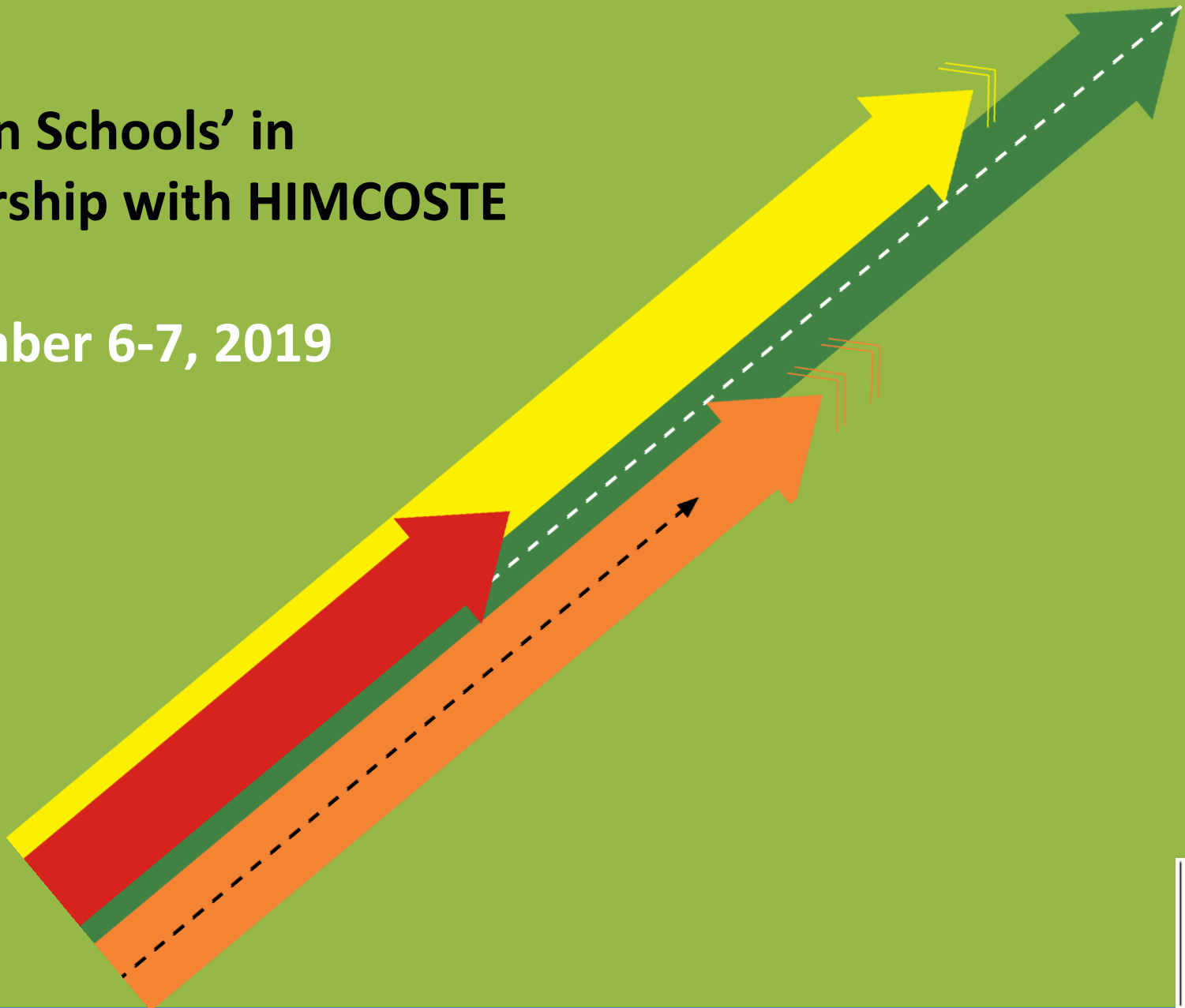




Green Schools Programme

**'Solar in Schools' in
partnership with HIMCOSTE**

September 6-7, 2019





Components – RE initiative

- GSP Audit online Registration – for participation
- Understanding Energy and RE - Resource material (RE book, Board game, video, etc.)
- Exposure to Solar Roof top energy generation
- Participation in Science fair – in parallel with the Children Science Congress
- Recognition to schools - Incentives





CSE: set up in 1980. By Anil Agarwal. Engineer-journalist. Wanted to create an institution that could bridge the gap between information and knowledge. In the mid-1990s we realized that we need to connect the circle and create space for knowledge based activism-

information-knowledge-action-information

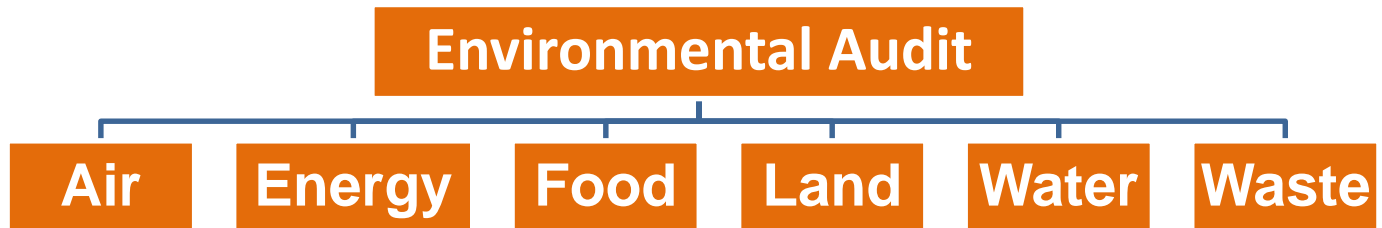




Green Schools Programme

What is an Environmental Audit ?

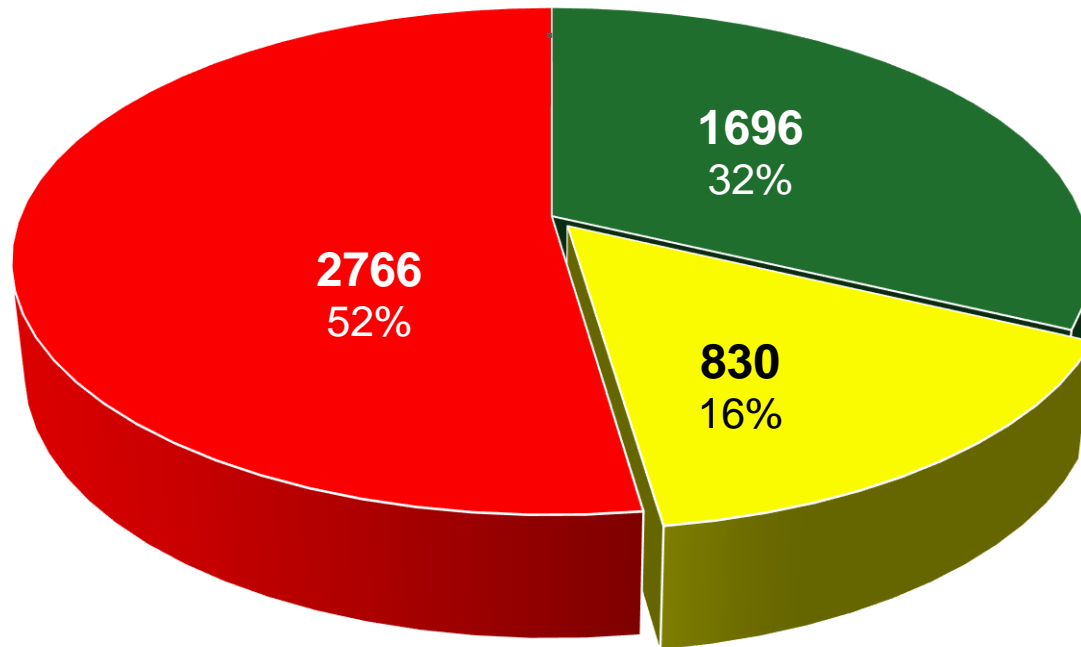
An assessment of the extent to which an organization is observing practices which minimize harm to the environment





All India School Participation in the GSP Audit 2018

Total number of schools registered :



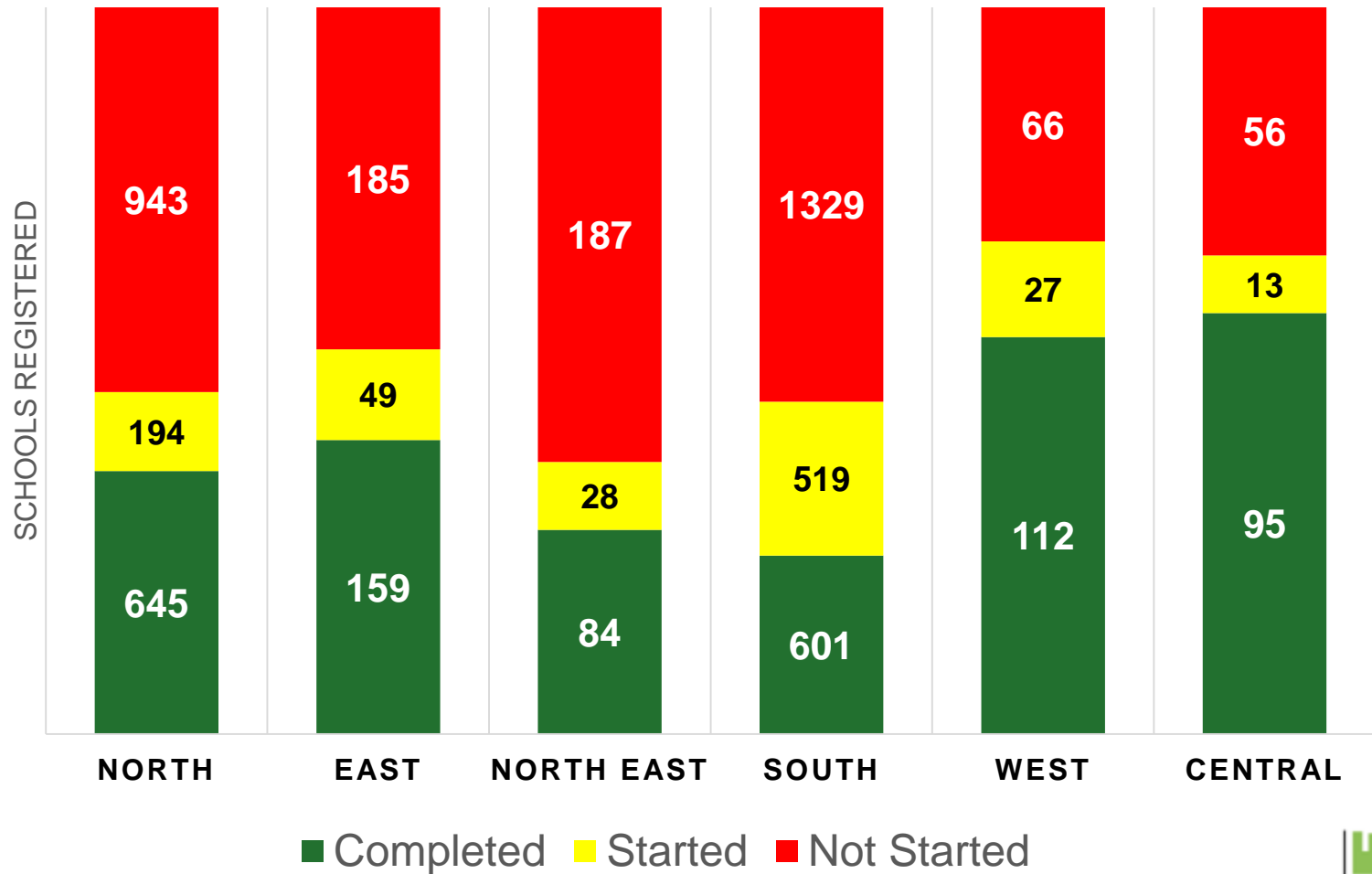
■ Completed ■ Started ■ Not Started

- 1696 (32%) schools completed the GSP Audit 2018
- 830 (15.7%) schools started the audit but did not complete it
- 2766 (52.3%) schools did not start the audit





All India Region-wise Participation of Schools in GSP Audit 2018





Pan India GSP Participation in 2018

■ Registered ■ Submitted

29

states and 5 UTs participated in the GSP Audit

5000+

schools are part of the GSP Network

67,000

students, teaching and non-teaching staff participated in 2018-19

118

schools were rated green in 2018-19

1. Jammu and Kashmir

2015: 10/5 2017: 36/27
2016: 25/15 2018: 52/30

2. Uttarakhand

2015: 32/11 2017: 63/40
2016: 49/17 2018: 70/44

3. Punjab

2015: 321/122 2017: 304/78
2016: 459/96 2018: 383/118

4. Chandigarh

2015: 10/3 2017: 10/6
2016: 14/4 2018: 10/7

5. Haryana

2015: 29/19 2017: 111/45
2016: 374/42 2018: 301/60

6. Himachal Pradesh

2015: 87/42 2017: 268/135
2016: 75/18 2018: 372/117

7. Delhi

2015: 94/54 2017: 114/48
2016: 120/62 2018: 179/68

8. Rajasthan

2015: 60/24 2017: 147/87
2016: 91/45 2018: 181/77

9. Gujarat

2015: 13/5 2017: 43/18
2016: 30/13 2018: 66/32

10. Dadra and Nagar Haveli

2015: 0/0 2017: 1/0
2016: 1/1 2018: 2/0

11. Madhya Pradesh

2015: 43/19 2017: 116/57
2016: 90/42 2018: 153/95

12. Daman and Diu

2018: 1/0

13. Maharashtra

2015: 36/16 2017: 99/53
2016: 80/44 2018: 126/73

14. Goa

2015: 1/0 2017: 10/3
2016: 4/2 2018: 12/7

15. Kerala

2015: 13/5 2017: 61/34
2016: 68/21 2018: 89/46

16. Lakshdweep

2015: 1/0 2017: 0/0
2016: 1/0 2018: 2/1

17. Karnataka

2015: 22/11 2017: 64/42
2016: 52/18 2018: 96/46

21. Uttar Pradesh

2015: 66/29 2017: 183/105
2016: 119/38 2018: 228/112

20. Bihar

2015: 4/1 2017: 46/11
2016: 26/7 2018: 75/35

19. Andhra Pradesh

2015: 6/1 2017: 547/169
2016: 37/15 2018: 1888/339

18. Puducherry

2015: 0/0 2017: 2/0
2016: 1/0 2018: 7/5

22. Sikkim

2015: 149/64 2017: 164/63
2016: 156/77 2018: 183/19

23. Assam

2015: 19/8 2017: 40/17
2016: 34/15 2018: 56/26

24. West Bengal

2015: 7/5 2017: 46/16
2016: 25/8 2018: 89/59

25. Odisha

2015: 310/65 2017: 144/18
2016: 366/35 2018: 169/35

26. Jharkhand

2015: 13/4 2017: 23/8
2016: 24/6 2018: 60/29

27. Chhattisgarh

2015: 6/4 2017: 27/15
2016: 28/13 2018: 36/23

28. Andaman and Nicobar

2017: 2/0 2018: 4/2

29. Tamil Nadu

2015: 10/5 2017: 94/48
2016: 102/14 2018: 254/107

36. Arunachal Pradesh

2015: 2/0 2017: 8/1
2016: 4/2 2018: 14/5

35. Meghalaya

2015: 1/0 2017: 5/3
2016: 4/3 2018: 9/6

34. Nagaland

2015: 1/0 2017: 2/0
2016: 1/0 2018: 6/4

33. Mizoram

2015: 2/0 2017: 6/5
2016: 5/3 2018: 8/7

32. Manipur

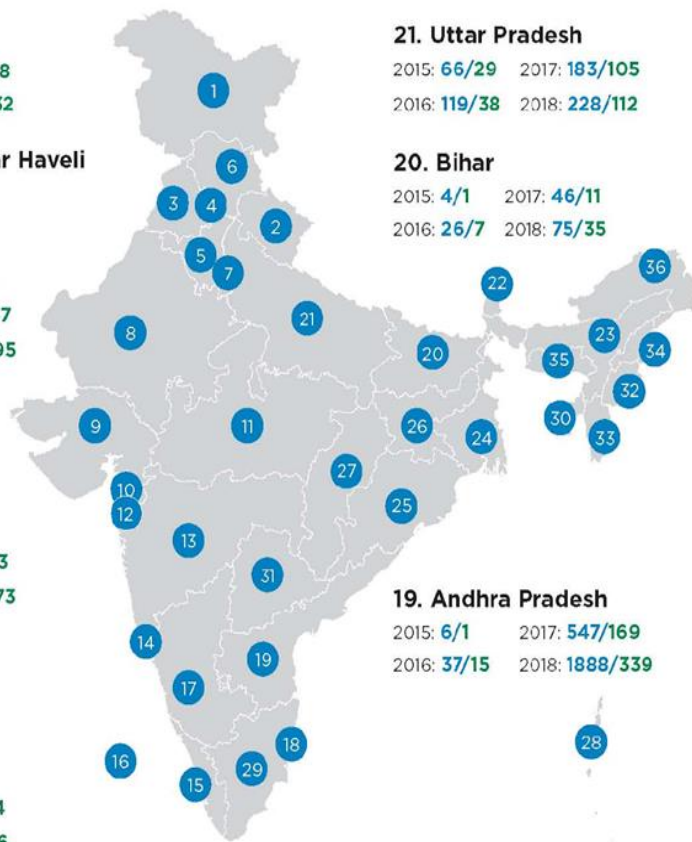
2015: 4/3 2017: 8/3
2016: 7/3 2018: 10/6

31. Telangana

2015: 12/6 2017: 56/33
2016: 38/18 2018: 129/40

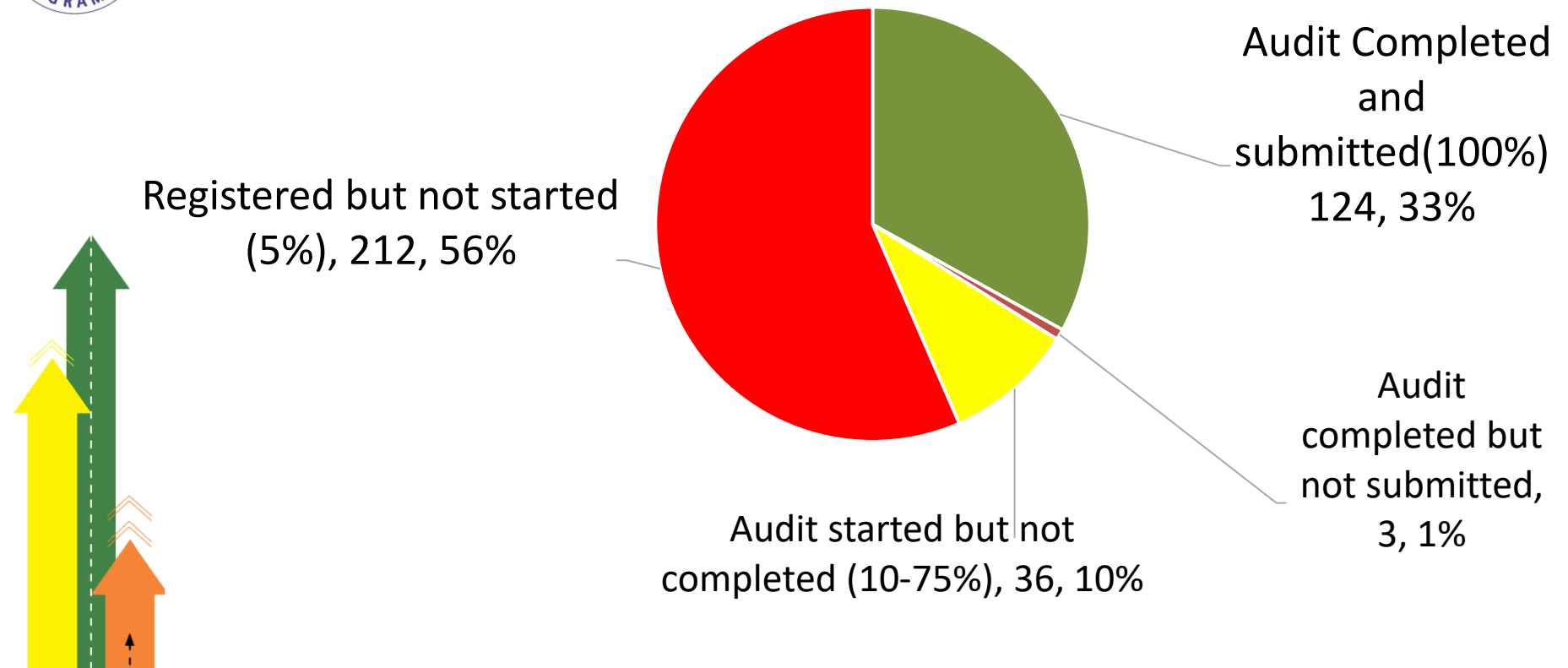
30. Tripura

2015: 4/3 2017: 10/5
2016: 8/5 2018: 12/9





GSP AUDIT - HP

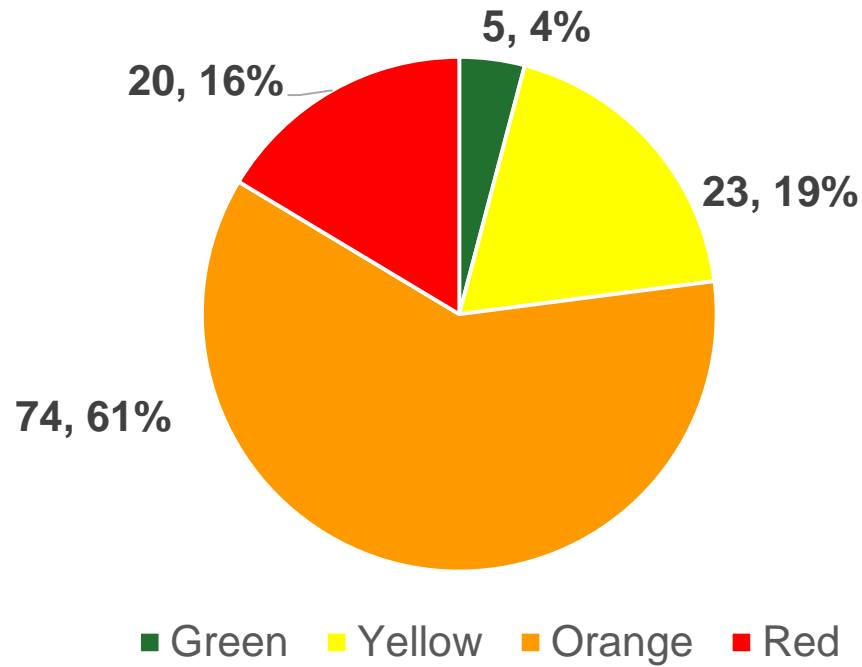


	Audit 2015	Audit 2016	Audit 2017	Audit 2018	Audit 2019 (Aug)
Total Registrations	88	75	269	372	394
Audit Completed (100%)	42	18	134	124	1
Audit started but not completed (10-75%)	25	51	53	36	15
Audit not started (5%)	21	6	83	212	378



Himachal Pradesh Completeness in 2018

2018 GSP Rating of Schools in Himachal Pradesh

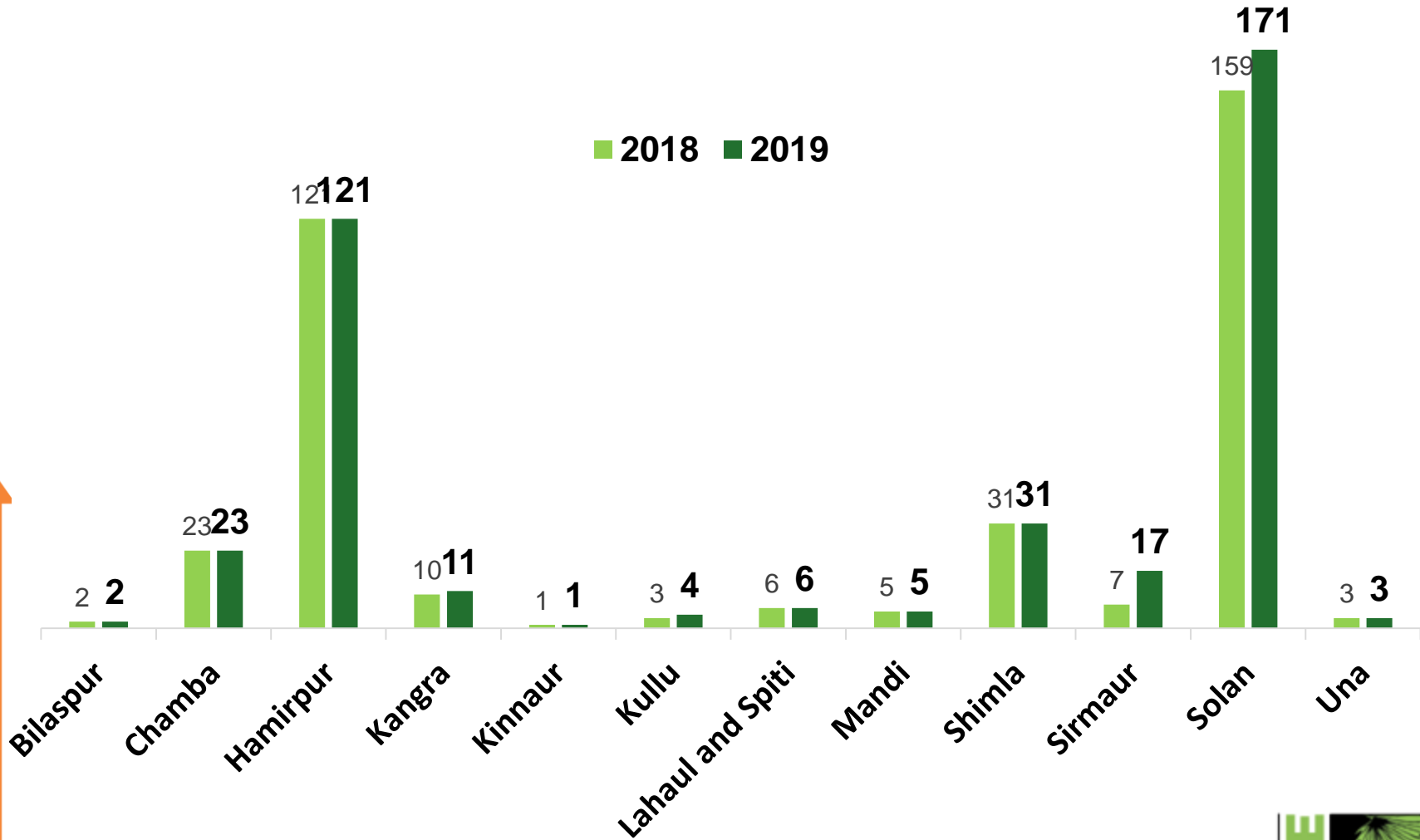


Category	Participation (2018)	Participation (2017)	Participation (2016)	Participation (2015)
Green	5	0	0	3
Yellow	23	32	5	4
Orange	74	84	10	21
Red	20	18	3	14





District-wise registrations Comparison of 2018 and 2019





Schools from Shimla

GSSS Tutikandi	G.S.S. School Mashobra
GSSS Boileauganj	GSSS KUFRI-SHIMLA
K V JAKHOO HILLS	GOVERNMENT SENIOR SECONDARY SCHOOL, BEOLIA
Govt. High School Kaithu	Government middle school Chakkar
GSSS Tutikandi	Government High School, Bharari
GOVT. MIDDLE SCHOOL MAYFIELD	Govt. High School Jakhu
GSSS Totu	GOVERNMENT SENIOR SECONDARY SCHOOL CHHOTA SHIMLA
GSSS Dhalli	Government Senior Secondary School Phagli
GHS CHAURAMAIDAN	KENDRIYA VIDYALAYA, JUTOGH CANTT SHIMLA
Government Senior secondary School Ghanahatti	KENDRIYA VIDYALAYA, ITBP SARAHAAN
Govt. Sen. Sec. School Cheog Shimla	Dayanand public school
GSSS KHANETI SADHOCH	GOVT SR. SEC.SCHOOL THAILI CHAKTI
GOVT. HIGH SCHOOL ANNADALE	Govt. Sr. Sec. School Jeori
JAWAHAR NAVODAYA VIDYALAYA, SHIMLA	RMSDM gss School Taklech
Govt Senior Secondary School, Boileauganj	Govt. sr.secondary school kotgarh
GHS KRISHNA NAGAR	GSSS DEOTHI
	GSSS VIRGARH





GSP Audit

To Register:

<http://www.greenschoolsprogramme.org/audit/19/register>

To Login:

<http://greenschoolsprogramme.org/audit/19/login>

Sections:

- School Profile
- General Questions
- **Air**
- **Energy**
- **Food**
- **Land**
- **Water**
- **Waste**
- Feedback





Website <http://www.greenschoolsprogramme.org/>

REGISTRATION LOGIN

**DOWNLOAD
REPORTS AND
CERTIFICATES**

The screenshot shows the Green Schools Programme website. At the top, there is a navigation bar with links: ABOUT CSE, FAQs, SITEMAP, CONTACT US, GSP AUDIT 2018 REGISTRATION, and GSP AUDIT 2018 LOGIN. Below this is a banner with the text "Is your school green?" and a "GSP Award Ceremony Feb 6, 2019" announcement. The main content area features a large image of a group of people, including a woman in a yellow shawl presenting a certificate to a student. Below the image, there is a section titled "GSP Audit 2018-19 Reports & Certificate" with three buttons: "Response Report", "Performance Report", and "Digital Certificate".

Green Schools Programme

ABOUT CSE FAQs SITEMAP CONTACT US GSP AUDIT 2018 REGISTRATION GSP AUDIT 2018 LOGIN

Is your school green? GSP Award Ceremony Feb 6, 2019 DOWNLOAD REPORTS & CERTIFICATES

SCHOOLS STUDENTS TEACHERS KNOWLEDGE BANK COMMUNITY PORTAL

www.greenschoolsprogramme.org/audit/18/download/downloadReportsSection

GREEN SCHOOLS PROGRAMME

HOME YEAR OF YEAR DOWNLOADS LOGOUT

GSP Audit 2018-19 Reports & Certificate

Response Report Performance Report Digital Certificate





The Audit Team





Energy: Report Card

- In India, of the total 1600+ schools
 - Solar: 223; 84 solar heaters; 57 both solar energy and water heaters; 14 use biogas
- In HP, of the total 114 schools

Nine schools have solar panels:

- Army Public School, Dagshai
- GHS BATAL
- Govt. Sr. Sec. School Kothi Deora Solan
- GOVT.SEN.SEC.SCHOOL JOGHON
- Govt. Sr. Sec. School Chail
- JAWAHAR NAVODAYA VIDYALAYA, SHIMLA
- Nav Jyoti school
- Ramanujam Royal Convent School
- ST. LUKE'S SENIOR SECONDARY SCHOOL

Nine schools use solar water heaters

- Army Public School, Dagshai
- B.L CENTRAL PUBLIC SR. SEC. SCHOOL KUNIHAR
- Florence Convent School
- HIM ACADEMY PUBLIC SCHOOL, VIKAS NAGAR
- JAWAHAR NAVODAYA VIDYALAYA, KANGRA
- MRA DAV Public School
- PNNM GEETA ADARSH VIDYALAYA SOLAN
- Ramanujam Royal Convent School
- SDS DAV CPS KUMARHATTI



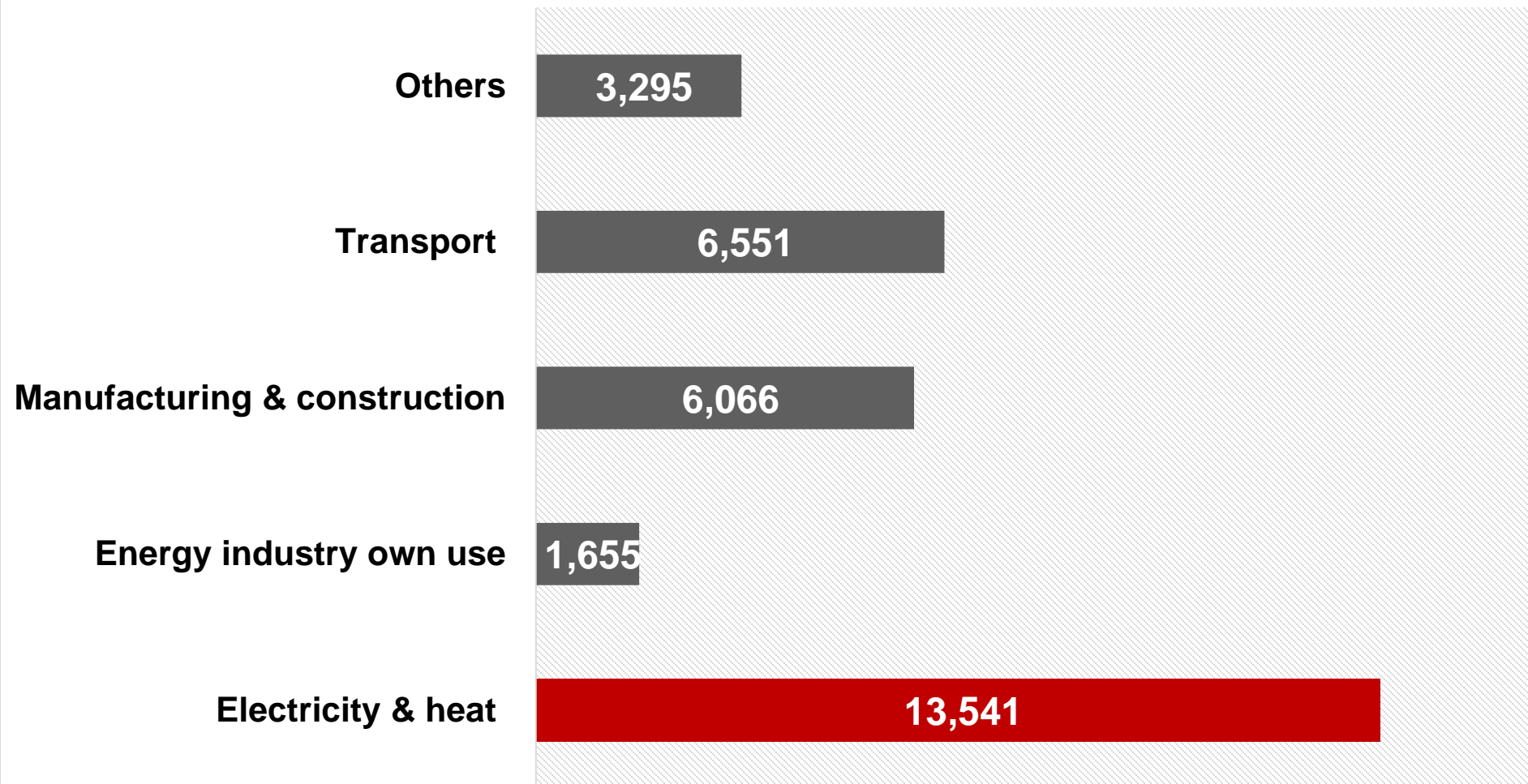
Why Renewable Energy?

REthink!



Climate Change?

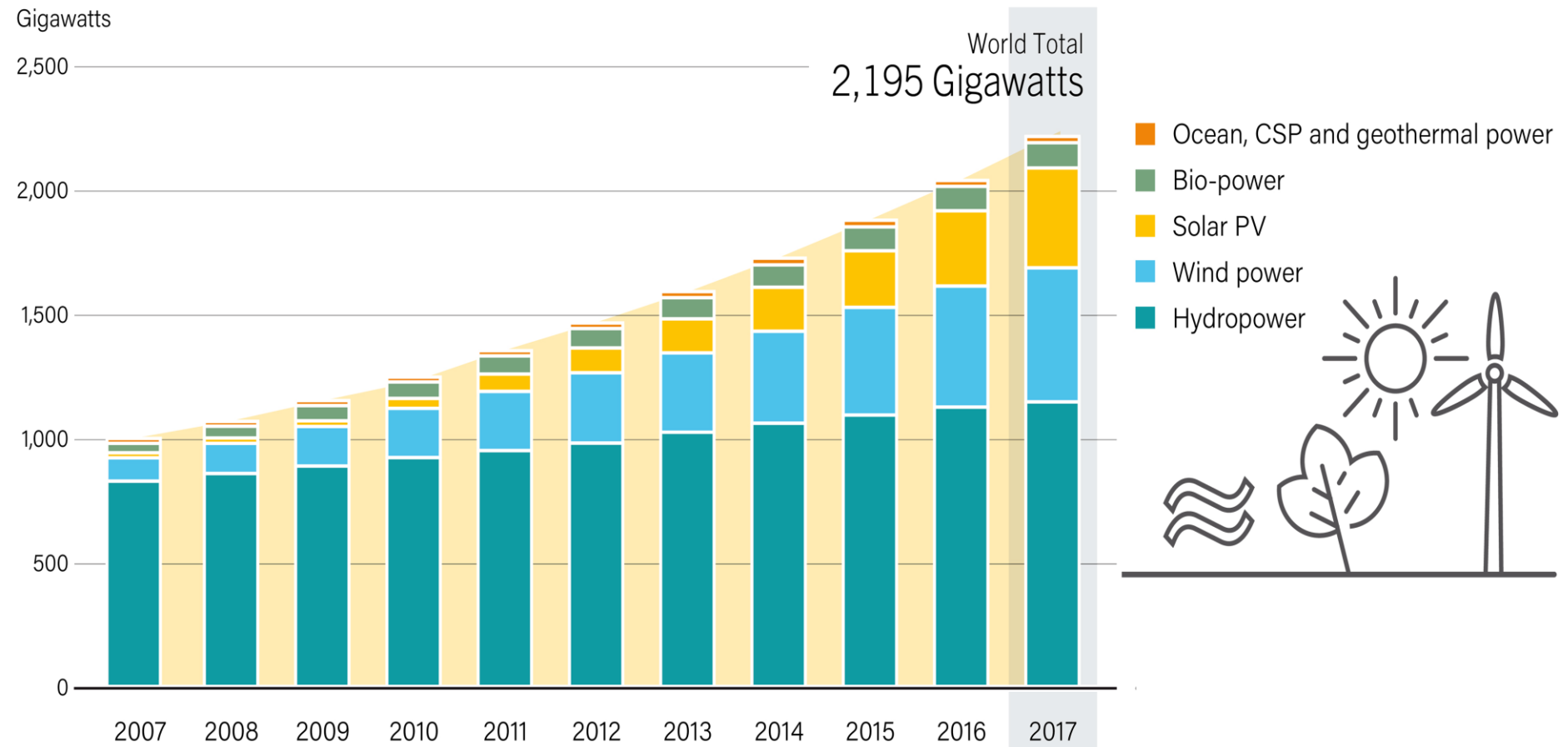
CO₂ emissions from fossil fuel combustion (Gt)





Overall, Rooftop Solar is more than 40 per cent of global solar power

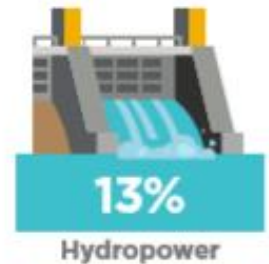
Global Renewable Power Capacity, 2007-2017





India Scenario

- Total electric power capacity – at present: 360 GW
- National Solar Mission- Target: 100 GW of solar capacity by 2022. Of this, 60 % - ground mounted projects, while 40 % - rooftop projects.
- Actual achievement 28 GW



HP Scenario

- A power surplus state – accounts for 25 per cent of country's Hydro power
- Solar - the best option!





Solar - Benefits

- Unlimited potential
- Perennial and equitably distributed across the State, unlike hydel
- Decentralised generation - more efficient, easy to access
- Firmer and efficient and complements hydro
- No environment impact during construction and operation
- Low gestation period of 18 to 24 months; reduced cost with technology upgrade -tariff parity with hydel over time
- **Rooftop potential in residential/institutional is much higher than industrial or commercial**





Solar Basics

- Solar Photovoltaic (PV) technology converts sunlight into usable Electrical energy. Electricity generated through solar PV can be fed into the grid
- Size of the installation varies depending on space availability and amount of electricity consumption
- For a typical 1 Kwp Solar PV power plant, 80-100 square foot (or 10 square meter) of shadow-free area is required
- A 1 Kwp Rooftop Solar PV Power Plant can produce about 4-5 units per day. The average Monthly Electricity Consumption of households is about 80 Units i.e. 27 Units per day





Solar Basics

- Two operational models:
 - Off-grid system;
 - On-grid
 - Net metering
 - Gross metering
- Two financial models:
 - Capital Expenditure (CAPEX) Model
 - Renewable Energy Service Company (RESCO) Model





Solar Basics – How to install?

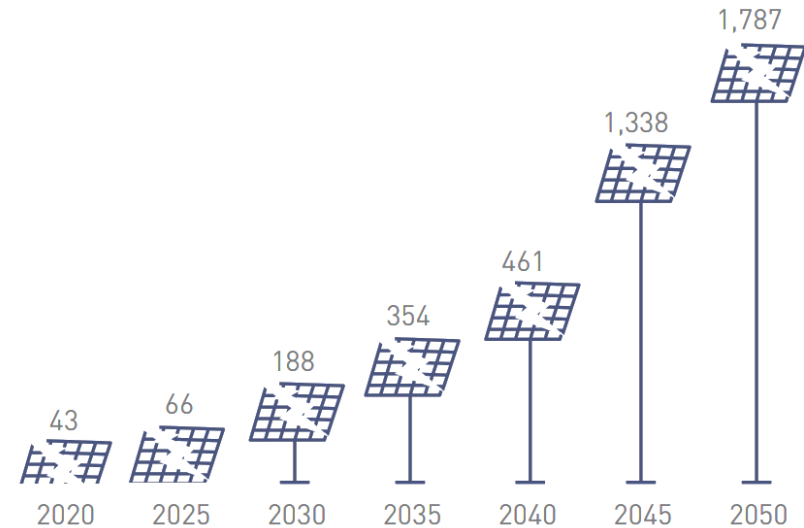
- Anyone can install Rooftop Solar Power Plant of 30% of the capacity of the total load sanctioned to him by H.P.S.E.B.L.
- First seek consent from H.P.S.E.B.L. on their format which is available on HIMURJA
- After obtaining the consent from H.P.S.E.B.L., the beneficiary will apply to HIMURJA for the installation of the rooftop Solar Power Plant on the proforma (HIMURJA website)
- The beneficiary can also apply directly with the approved channel partner for installing the Rooftop Solar Power Plant



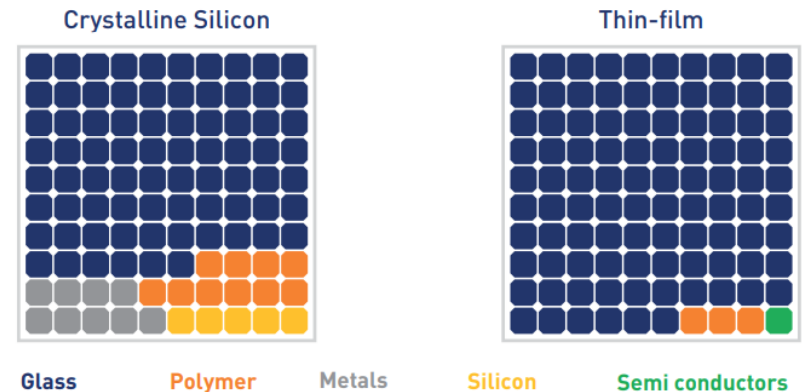


End of life cycle

- PV waste volume in India is estimated to grow to 2 lakh tonnes by 2030 and around 1.8 million tonnes by 2050
- Components- glass, metal, silicon and polymer fractions.
- Glass and aluminium - 80% of total weight - non-hazardous.
- But polymers, metals, metallic compounds and alloys - hazardous



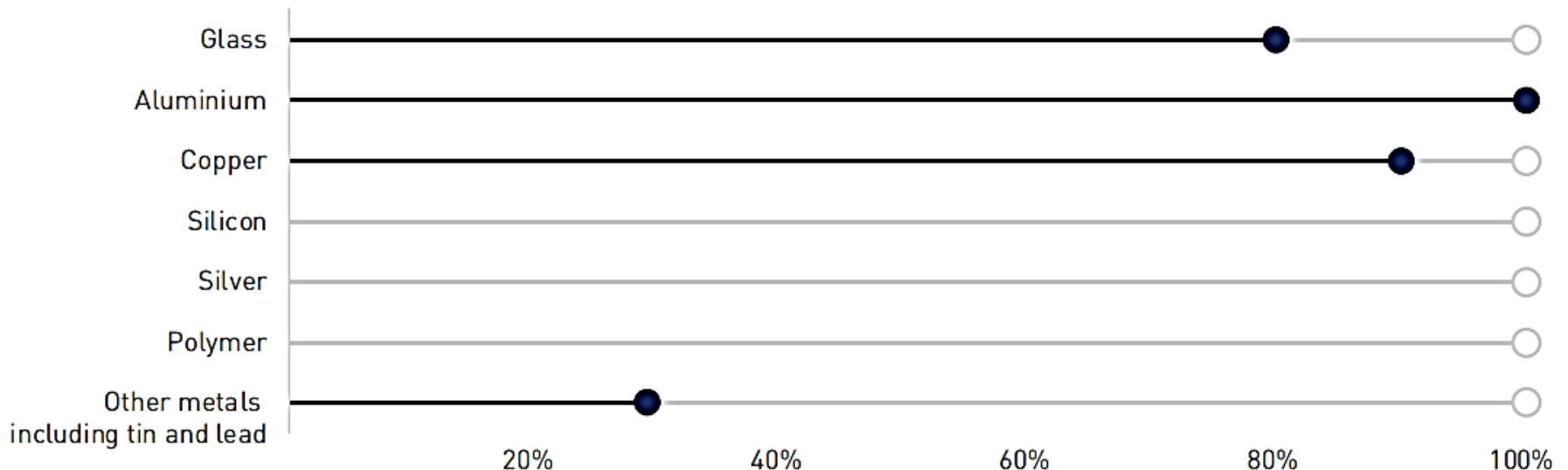
Estimated PV module waste volume, thousand tonnes





Waste to wealth!

Raw material recovery by conventional recycling



Source: BRIDGE TO INDIA research



Solid Waste Management - GSP

In India

- 1356 schools segregate waste at source
- **405 schools burn waste!**
- 825 schools practice composting, both natural and mechanical
- 648 schools send e-waste to auth dealer/ dismantler/ manufacturer

In HP

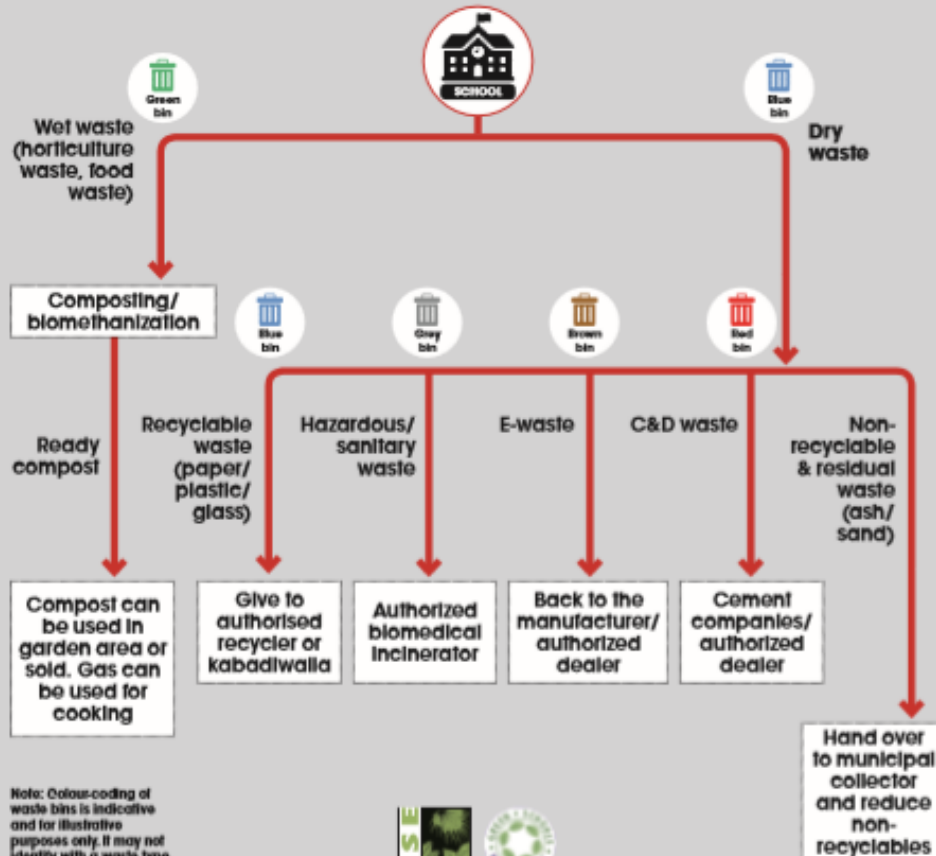
- 50 per cent schools said they segregate waste at source
- Only 14 of the 114 schools said they recycle the waste
- **43 school compost**
- **37 schools burn waste!**



MANAGING SOLID WASTE IN SCHOOLS

We are drowning in the waste we produce. Do you know how much solid waste (paper, plastics, food waste etc) Delhi produces? 10,000 tonnes a day. We dump it all into landfills, which are overflowing and which pollute the environment. Moreover, there is no land available to create more landfills. Schools, by following efficient waste management practices, can play a leading role in setting examples, creating a public opinion, and ridding India of this menace.

WHAT SCHOOLS CAN DO



Note: Colour-coding of waste bins is indicative and for illustrative purposes only. It may not identify with a waste type.

Source: CSE, 2017

Categories of waste

- Garden/horticulture waste
- Kitchen waste
- Biomedical waste
- Sanitary waste
- Hazardous waste
- Paper
- Plastic
- Wood, glass, metal, classroom furniture
- E-waste
- Construction and Demolition (C & D) waste





Guidelines for Science Fair

- Refer to the guidelines include in the kit





Thank You

