GREEN RATING PROJECT

A Tool for Sectoral Audit

Centre for Science and Environment

Audit- A systematic and independent examination to ascertain a true value or concern

- ✓ Assess performance- Strength, Weakness
- ✓ Guide for improvement
- ✓ Check compliance
- ✓ Way to SUSTAINABLE BUSINESS

If you can't measure, you can't improve. If you don't improve, you can't sustain.

Business As Usual (BAU) can't work

Audit ?

2010-11 2020-21 2030-31

✓Sp. land use

54-1,781 ha/MT (- township)

65-3,700 ha/MT (+ township)

✓Sp. energy 5.4-6.2 Gcal/tcs (4.5GCal)

✓Sp. CO2 emission- upto 4.2 t/tcs (2.4GCal)

✓Sp. water consumption

2.1- 5.0 m3/tcs (- power, township) (1.0GCal)

6.2-32.3 m3/tcs (+ power+ township) (5.0GCal)

2010 11 2020 21 2030 31

eel sector

- ✓ Water: 70 % of total withdrawal by industries ~22 BCM
- ✓ Coal: > 70% of total consumption; 2x by 2022 (~600mt- 2012)
- ✓ GHG Emission: >50% of India's total CO_2 from fuel combustion
- ✓ Ash generation: ~ 160mt (2015); will go to ~300mt by 2022
- ✓ Land: (EC till Feb, 2015): 2.85 lakh ha (plant + mines)
- ✓ Pollution (of the total industrial sector)
  - 60 % of PM emissions (includes mining)
  - 45-50% of SO_2 emissions
  - 30% of NOx emissions
  - > 80% of mercury emissions

A Snapshot of Coal-based Power sector

KEY MESSAGES

- ✓Business sustainability demands improvement.
- ✓Consumer wants responsible company and sustainable product
- ✓There is a tremendous scope for improvement in all areas.
- ✓A warning: If business-as-usual continues, soon the sheer size will create insurmountable ecological and social problems.
- ✓Marginal improvement will not help; leapfrog solutions are required.

This is where GRP (GREEN RATING PROJECT) helps.

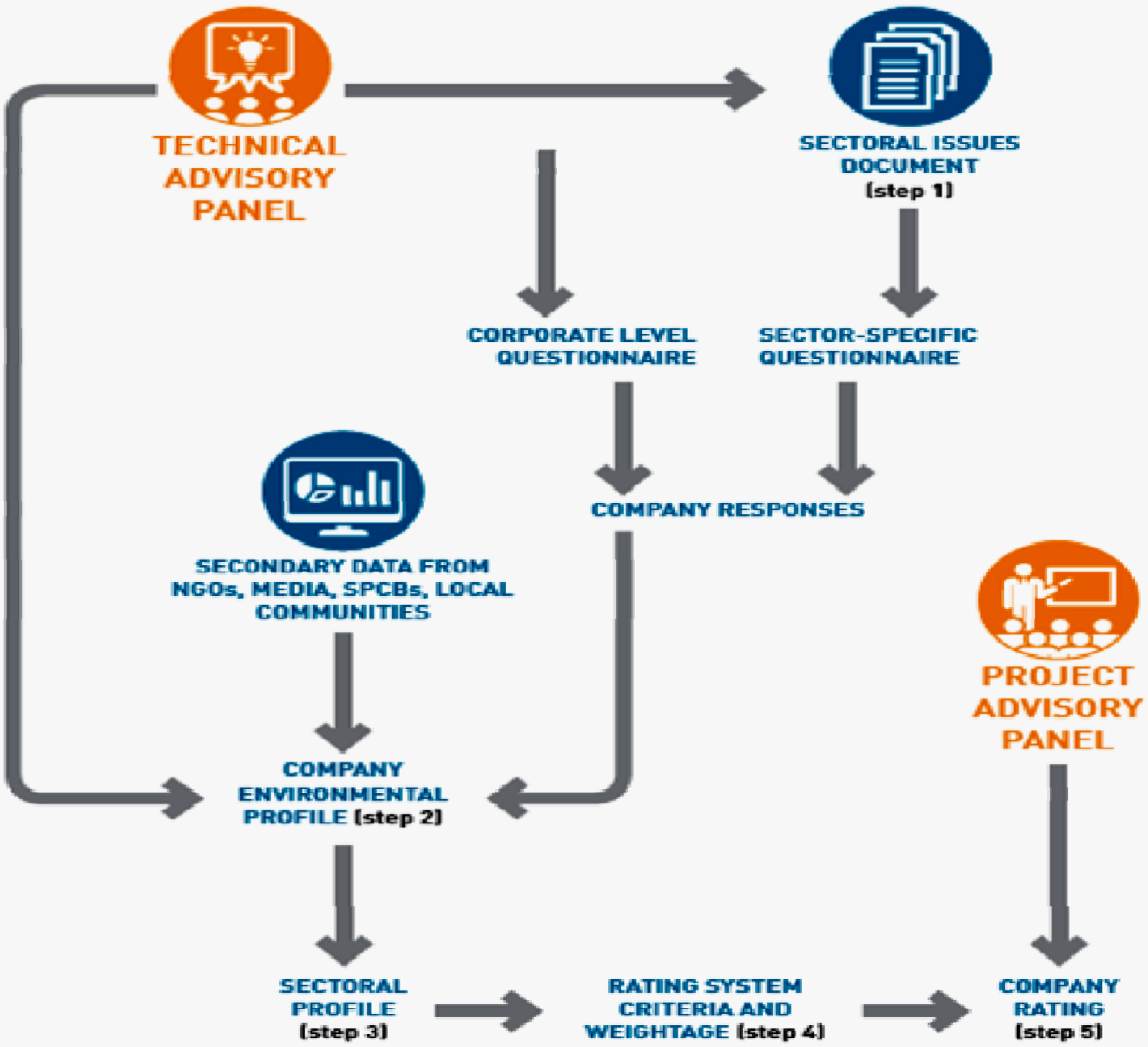
BAU- Future imperfect

- ✓GRP is a public disclosure tool to leverage change
- ✓Environment is public good, so we rate all.
- ✓It benchmarks the present and points to the way ahead
- ✓It sets difficult goal-posts: Pushes towards desirable, not what is easily achievable

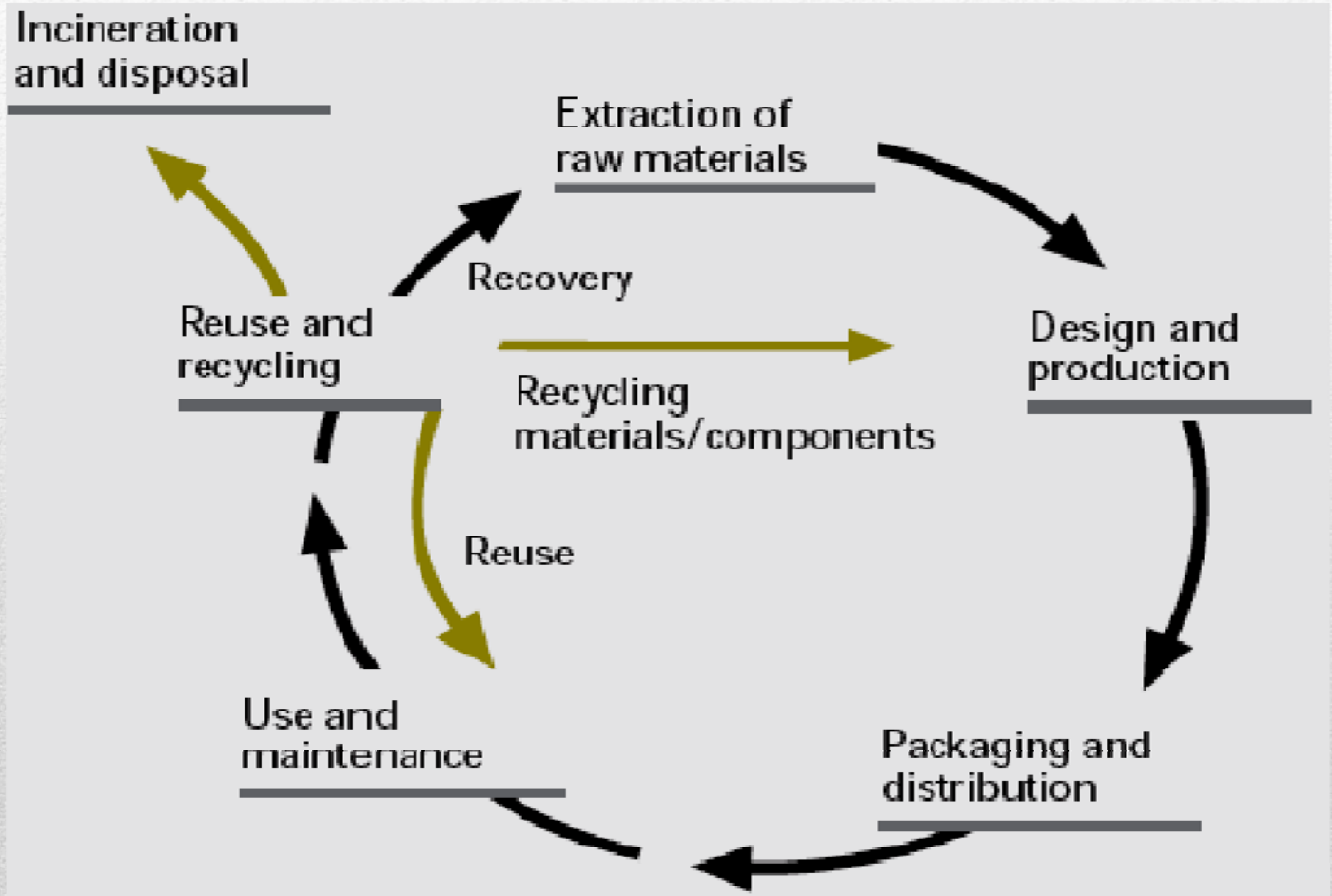
- ✓Industry will grow, but growth has to be efficient/ business-unusual

Green Rating Project- what and why?

FIVE STEPS TO ASSESMENT



Cradle-to-Grave approach is adopted by CSE to study environmental impact of an industry



Life Cycle Analysis

Audit methodology

- ✓ **Data sourcing**
  - Types of information- Corporate level, plant level
  - Sources- company, pollution control board, survey, Internet
- ✓ **Survey**
  - Plant survey- plant officials, workers
  - Community survey- community, NGOs, local administration, media, PCB officials
- ✓ **Data compilation & Analysis**
  - Data collection, check/verification
  - Data processing
  - Data assessment and comparison
- ✓ **Environment profile-** Assessment report preparation and discussion with company
- ✓ **Rating-** praising the performer, guiding the laggers
- ✓ **Advocacy-** Plant level improvement, sectoral policy

Data Sourcing

Questionnaire

- ✓ General – area, turnover, expense, manpower
- ✓ Design & technology- clean tech, BAT, innovation
- ✓ Raw material handling- sourcing, transport, storage, processing
- ✓ Operation
- ✓ Resource consumption- energy, water
- ✓ Pollution control- air emission, wastewater, SW & HW
- ✓ OHS, Policy, Compliance, CSR

SPCBs- CTE, CTO, inspection reports, env. statements, notices etc.

Plant audit	Stakeholders audit
✓Raw material handling ✓Operation- material flow direction ✓Pollution control measures ✓Waste storage, recycle, reuse ✓Safety practices ✓EMD structure, skill development ✓Compliance ✓Innovations ✓CSR ✓Disclosure &Transparency	✓ Local community- perception, pollution, grievances, benefits, ✓ SPCB- plant, performance, compliance, complaints, ✓ Civil society- social issues, social support, grievances, benefits, ✓ Media- reportage, public image, incidents, new developments ✓ Hospitals/ Doctors- pollution impacts, health issues etc.

Survey/Audit- quantitative, qualitative

General	Land use (acre/MW), Green belt %, Ash pond area (acre/MW)
	Manpower (nos./MW)
	Average unit size (MW)
	Average Age
	Operating availability, PLF
Coal storage	Systematic coal storage- paved/unpaved, runoff water collection and treatment
	Coal conveyer system- close/open/tube
	Coal transport to unloading site- truck/ train/conveyor
	Fugitive dust emission control system-technology
	Coal pulverizer technology- VRM/Ball
Overall Energy	Gross heat rate/ efficiency, trend, deviation from design
	Auxiliary power
	Sp. secondary fuel consumption/ MWh
Boiler	Combustion type- super/sub/FBC
	Boiler efficiency, deviation from design
	Efficiency of BFP-(Steam/Turbine driven-variable/constant)
	Specific boiler makeup (total makeup(m3)/total generation(GWh))
	Efficiency improvement technology in boiler

Analysis Indicators

Turbine	Turbine technology, type of flow in IP and LP turbine Steam regulation system, vibration detection system, ATRS, blading Turbine efficiency, deviation from design Reheat system availability, type of excitation system
Condenser & Cooling system	Type of cooling system: Fresh water OTC/ Closed Cooling tower technology type (Seawater OTC/CL-ID/CL-ND) Condenser technologies COC, Deviation from design vacuum Online condenser cleaning system Cooling tower design, clean technology
Water	Water sourcing pattern, water stress in the area/ or connected area Sp. water consumption Availability of water flow meters/ metering Quality of water reporting- regulator
Stakeholders' perception	On water pollution On air pollution from stack On fugitive emission from plant On ash pollution (handling, silo,pond) On CSR

Analysis Indicators

Pollution-Air	Stack PM, SO2, NOx emission Continuous online monitoring No. of parameters monitored in stack- Hg, others Quality of stack monitoring-Calibration/disp. Board & others Sp. CO2 generation Quality of AAQ monitoring/location/reporting etc. Clean technology-including Sox and others from data entry sheet
Pollution- Water	ETP, STP availability Specific discharge, % wastewater recycled Non-compliance in water pollution & public complaints
Ash & Hazardous waste	Non-compliance recorded in Lab result Ash slurry discharge from plant/pond Dry/Wet/mixed/HCSD ash handling % ash utilization, gainful utilization, compliance to target Ash pond maintenance, non-compliance Hazardous waste handling & storage protocol in plant
Policy Certification, EMS, OHS,	No. of policies, certification, Consent to operate- availability Independent EMD, OHS, pollution monitoring lab Fatality during last 5 years Pollution monitoring disclosure on website/annual report/BRR

Analysis Indicators

Higher weightage to the phase having higher impacts on environment

	Weightages				
	Paper sector 1st rating (1999)	Automobile sector (2001)	Chlor-alkali sector (2002)	Paper sector 2nd rating (2004)	Cement sector (2005)
1. Corporate environmental policy and management systems	35.0	20.0	15.0	10.0	10.0
2. Life cycle analysis	50.0	77.0	75.0	77.5	77.5
Sourcing phase	8.0	7.5	6.0	11.5	30.75
Production phase	42.0	8.5	52.5	66.0	43.75
Product use and disposal phase	0.0	61.0	16.5	0.0	3.0
3. Stakeholders' perception	15.0	3.0	10.0	12.5	12.5
Total	100	100	100	100	100

Indicators comparison for Rating

- ✓ **Pulp & Paper (1999, 2004)-** Farm forestry, chlorine free bleaching, water accounting and reduction
- ✓ **Automobile (2001)-** Emission certificates, technologies for vehicular pollution control
- ✓ **Chlor- alkali (2002)-** Phased out Mercury use, reduce import duty for membrane cell technology
- ✓ **Cement (2005)-** Fugitive emission norms
- ✓ **Iron & Steel (2012)** – proposed new norms
- ✓ **Power sector (2015)-** New and better norms, focus on energy efficiency

Green Rating- Improvement

- ✓ Your plant. Your data. You are the best judge, benchmark yourself
  - Among your plants, sector/multi-sector
  - Among peers
  - Among global best plants
- ✓ Assess your own performance- strength, shortcoming , make your own plan of improvement-
- ✓ Guide your company/management to lead the sector
- ✓ Evaluate your own benefit of improvement- Economical, environmental, social…
- ✓ Get leverage over your peers, be the best
- ✓ Market wants you to be sustainable and responsible

Self Regulation & Audit- why ?