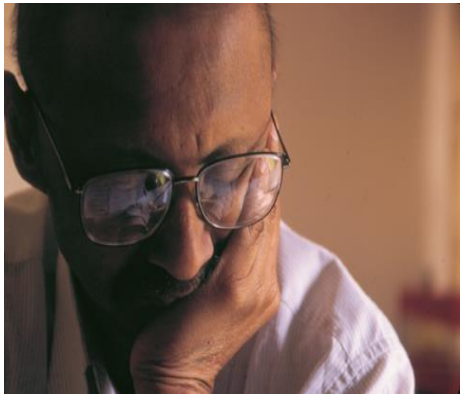
India’s environment challenges

What role does CSE play in helping India meet these challenges

- How did CSE begin?
- Who was Anil Agarwal?




1972: The Chipko movement in the Himalayas

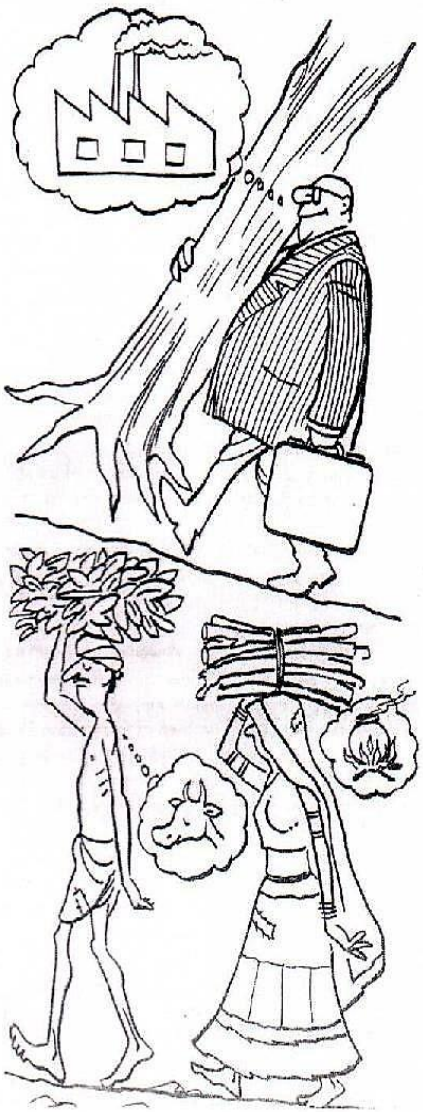
# Lessons from Chipko

- **Trees in forests mean the very survival for poor communities**
- **It was a movement to assert rights to cut trees and to use them for community needs.**
- **People need first right to protect, manage, control, cut and plant trees.**
- **Chipko was not a conservationist movement to protect trees.**
- **Utilitarian human-centric environmental agenda.**

- Environment is not just pretty
- trees and tigers. It is the substrate of all developmental activities.
- How we use natural resources – sustainable or exploitative,

  favouring a few or equitous –

  leads to conflicts
- All the people's movements – agair giving forests to industry, against river pollution, against mining etc



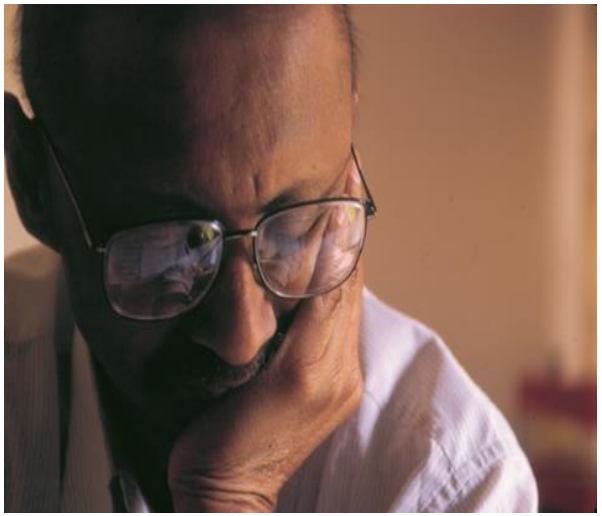
# The Challenge of the balance

- One hand - **enormous poverty, huge population - economic growth a necessity**
- Other hand – the **natural resource base is severely stressed**
- Balance between **economic growth** and **environmental integrity**
- Balance between **increase in wealth** and **social justice**
- Balance between **the long term** and the **short term**
- **Development is the goal of environmental management**

## India searching for solutions

50 years of living in a free environment !!

# What is CSE?



CSE: set up in 1980. By Anil Agarwal.
Engineer-journalist - environmentalist

Wanted to create an institution
To undertake serious, in-depth journalism
On issues of development –environment
Underpinned by science
To influence public policies

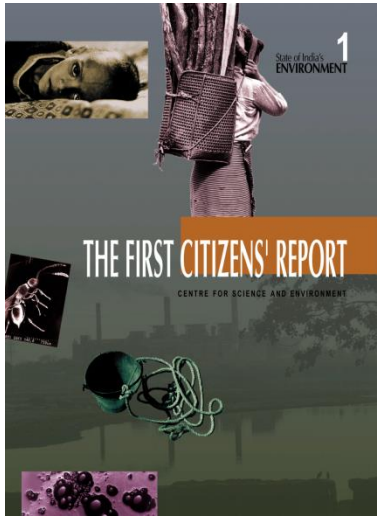
## What does CSE do?

- CSE promotes ‘sustainable development with equity, participation and democracy’ through ‘knowledge-based activism’.

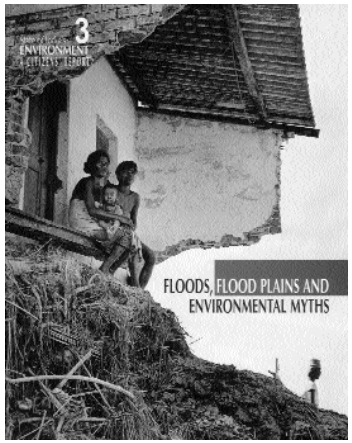
- Its roots lie in the democratic traditions of India and the fundamental rights  of its citizens.

- All of CSE’s activities are conducted in the public interest.  CSE rarely takes up work that is of interest to a specific agency unless the product of that work is open and of public interest.

# In the 1980s – What were CSE's key findings

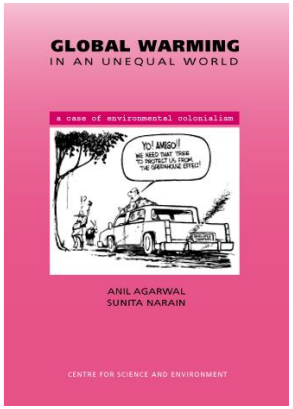


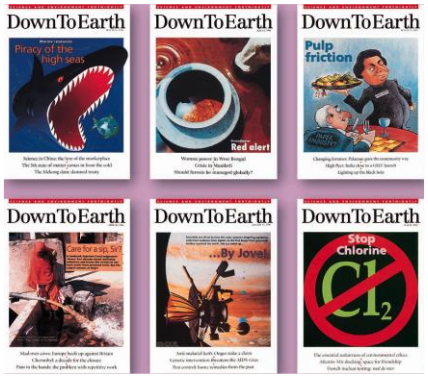


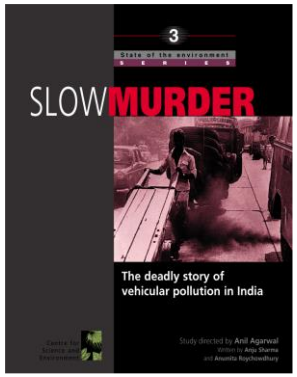



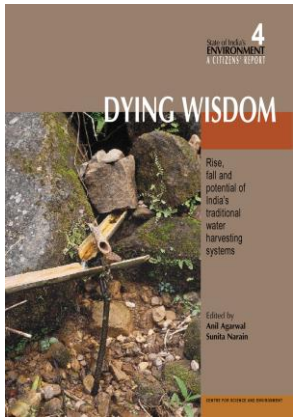

- **1982: Environment and development must be reconciled**
- **1985: Environmental destruction affects rural women the most**
- **1987 Environmental destruction has a serious impact on floods and droughts**
- **1989 Villagers can regenerate and manage their environment**
- **1991 Managing floods in the Sub-Himalayan Plains demands better management of the flood plains**

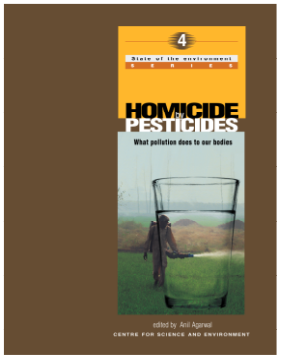
# In the 1990s – What were CSE's key findings

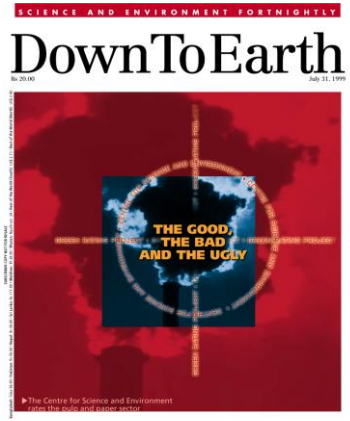



Top to bottom: how green is the Indian paper industry?
Open sesame: CEOs open the door to green inspectors
Prescription: time to make production cleaner

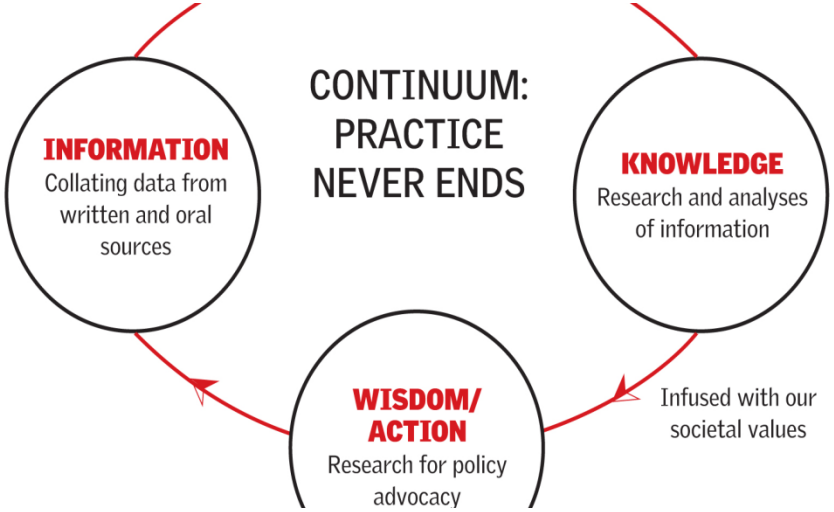
- 1991 Equity must be a key principle in managing the global atmosphere
- 1992 Keep yourself informed
- 1996 Fight for your Right to Clean Air
- 1997 River pollution control demands more than sewage treatment
- 1999 Green Rating Project: rating the environmental programme of India companies

**In the mid-1990s we realised that we need to connect the circle- information-knowledge-action-information.** CSE's way – **knowledge-based activism**

1. Generate knowledge (in-depth research and analysis)

2. Build social capital (friends and well wishers)

3. Marry the two to create CHANGE




To get wisdom, we apply the following values

**Respect for science**

**Respect for nature**

**Respect for poor people, their capacities and their knowledge**

**Respect for equity**

# Our work: 180 staff/Based in Delhi but with networks across the world

## CSE PROGRAMMES

### RESEARCH AND ADVOCACY

- Clean Air and Sustainable Mobility
- Green Building
- Water-Waste (capacity building, technical support, demonstration projects)
- Water-Waste (research and advocacy)
- Sustainable Industrialisation
- Climate Change
- Renewable Energy
- Food Safety

### KNOWLEDGE DISSEMINATION

- Down To Earth
- Portal/ Specialised websites
- Publications

### BUILDING CAPACITY/ EDUCATION/ MONITORING

- Anil Agarwal Environment Training Institute
- Environment Education
- Media Resource Centre
- Pollution Monitoring Lab

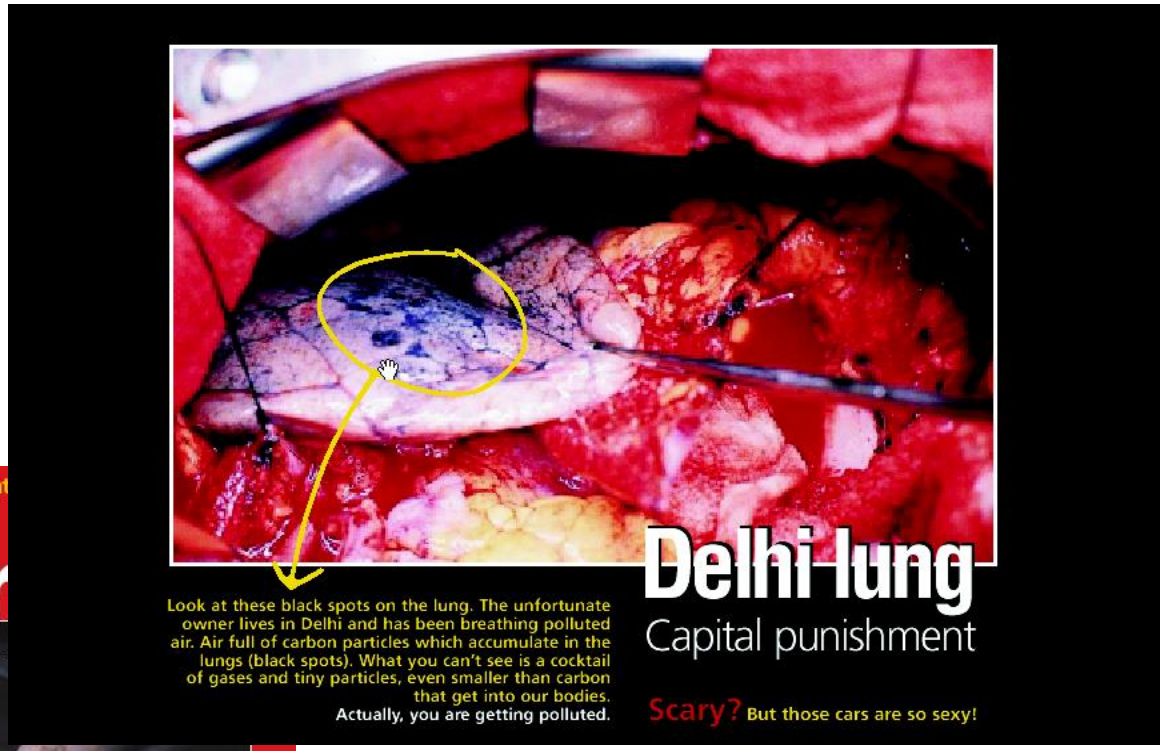
## Growing pollution and toxification

- Western industrial model extremely toxic. Intensive use of energy and materials leads to huge amounts of waste – toxic pollution, global warming, deforestation and habitat destruction.
- Big difference - In the developing world, this is combined with a huge population. Therefore the scale of the problems has no precedence

Solution – Leapfrog ; not incremental improvements

- Good science for improved technology
- Strong civil society to push for public health agenda
- Pollution **prevention** policies to minimise cost
- Participatory urban institutions

# Unprecedented speed of spread of pollution

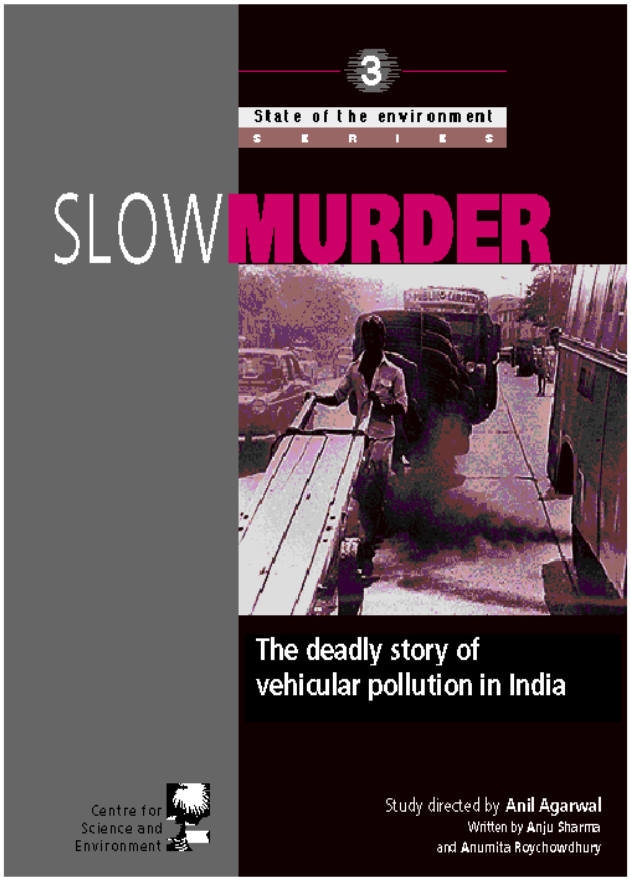
# Deadly pollution is the result of a combination of

- Outdated vehicle technology

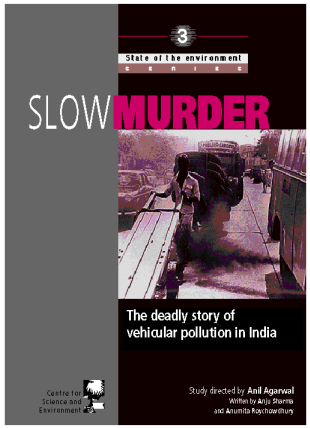
- Poor fuel quality

- Lack of transportation planning

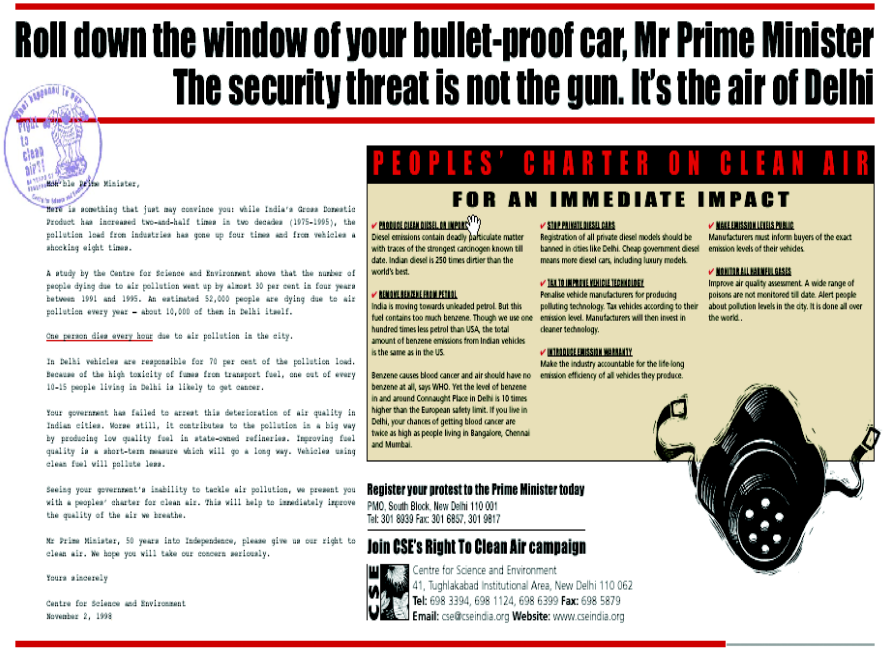
- Poor maintenance of vehicles

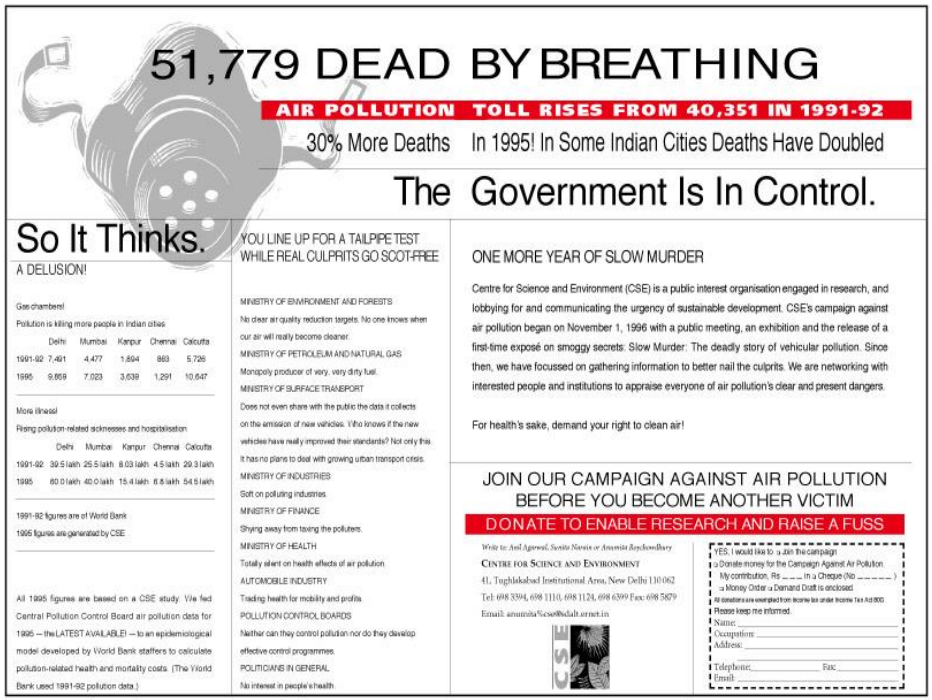


# Right To Clean Air Campaign




**Suo moto case**




# Supreme Court listens

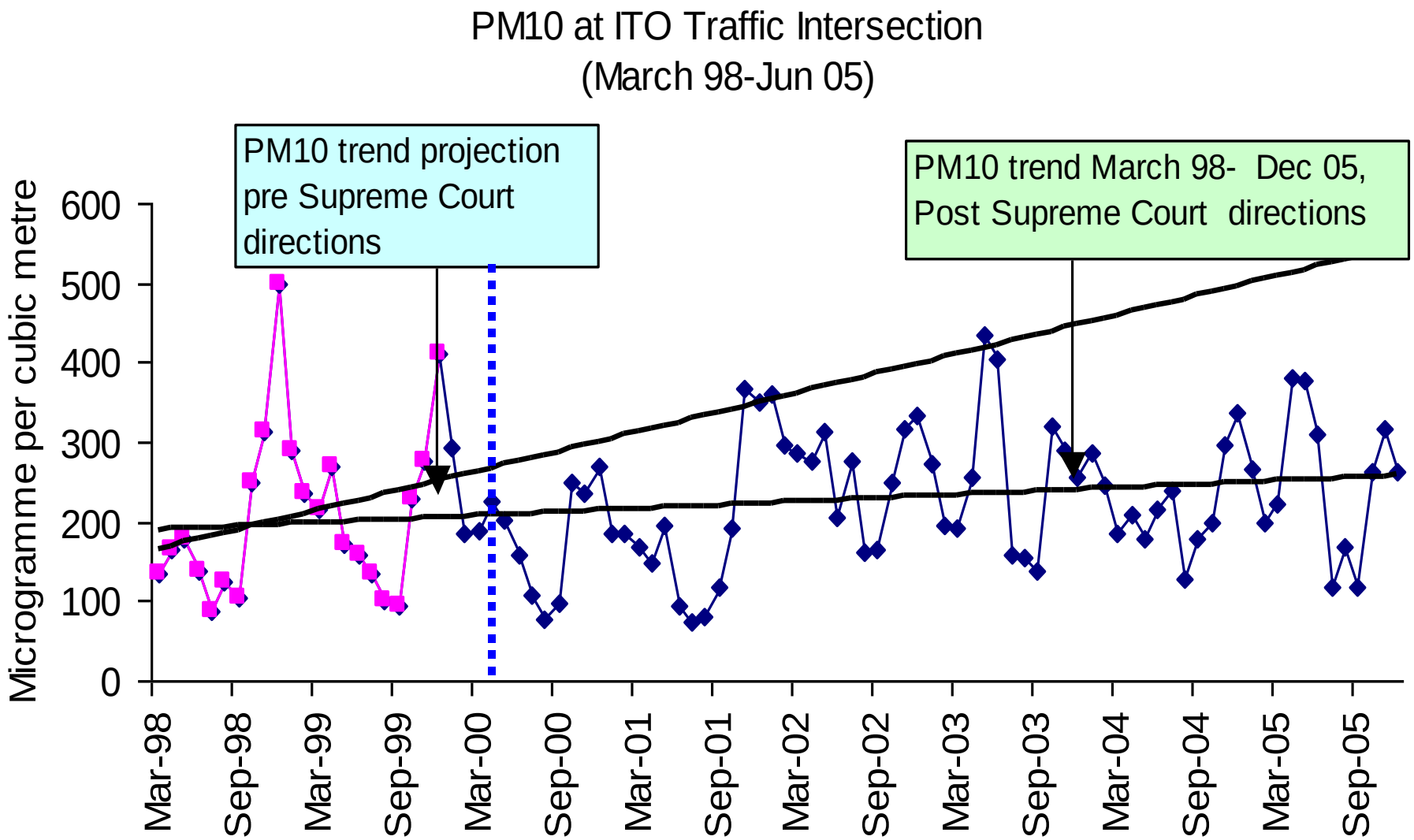
In 1998, the Court orders

- Government to phase out all diesel buses in Delhi; Convert to CNG;
- All autos in Delhi to move to CNG;
- Advance emission norms by 5 years;
- Low sulphur fuels and petrol with 1 per cent benzene
- Advanced enforcement of emissions standards for both petrol and diesel vehicles

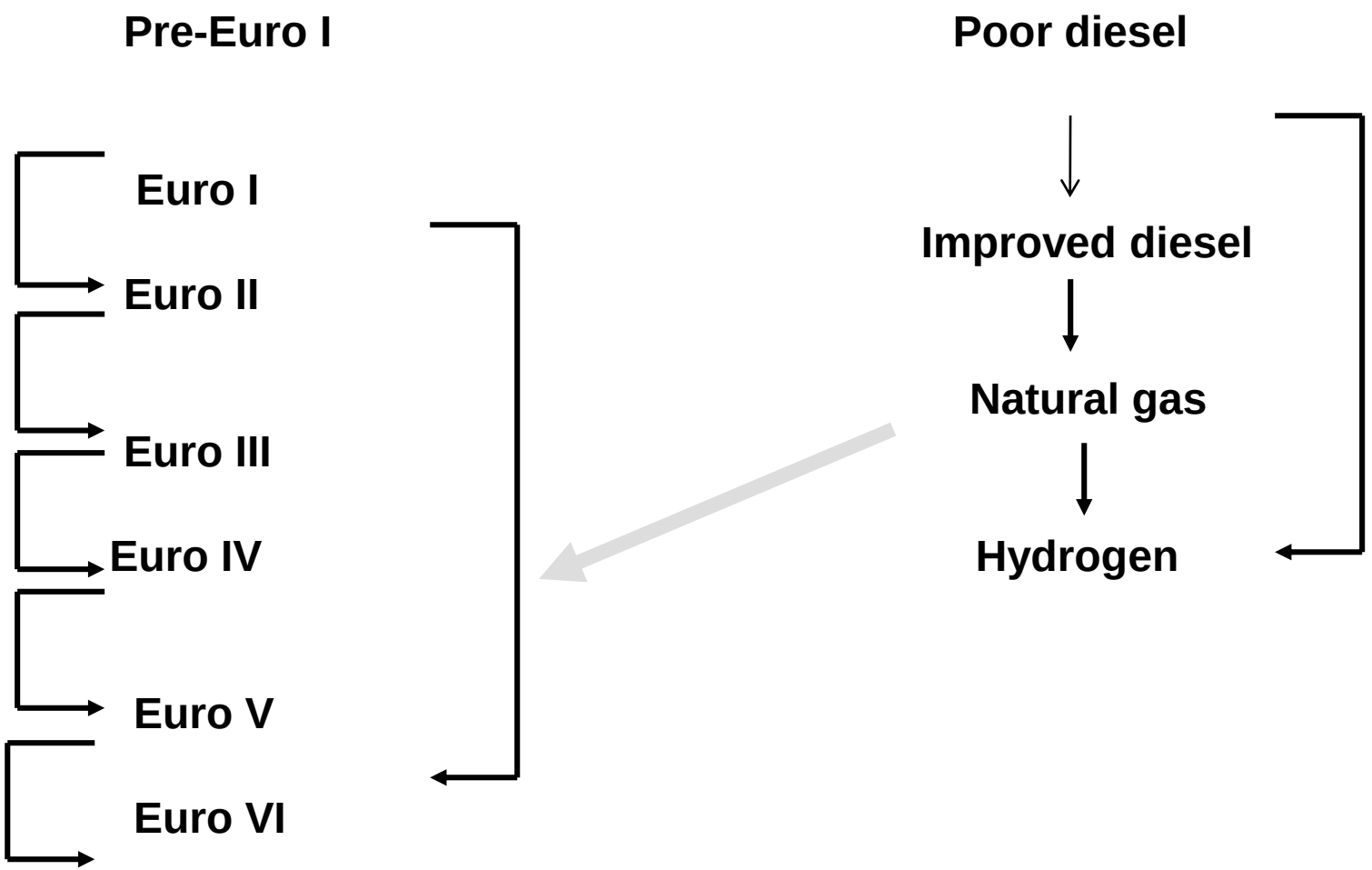

NO SMOKING


ON GOVT. DUTY


uture .
Think of CNG
CNG
6 3 2002


PM10 at ITO Traffic Intersection
(March 98-Jun 05)
PM10 trend projection pre Supreme Court directions
PM10 trend March 98- Dec 05, Post Supreme Court directions
Microgramme per cubic metre
600
500
400
300
200
100
0
Mar-98
Sep-98
Mar-99
Sep-99
Mar-00
Sep-00
Mar-01
Sep-01
Mar-02
Sep-02
Mar-03
Sep-03
Mar-04
Sep-04
Mar-05
Sep-05

**Do we have to go through the same stages of environmental management that the West went through or can we leapfrog?**



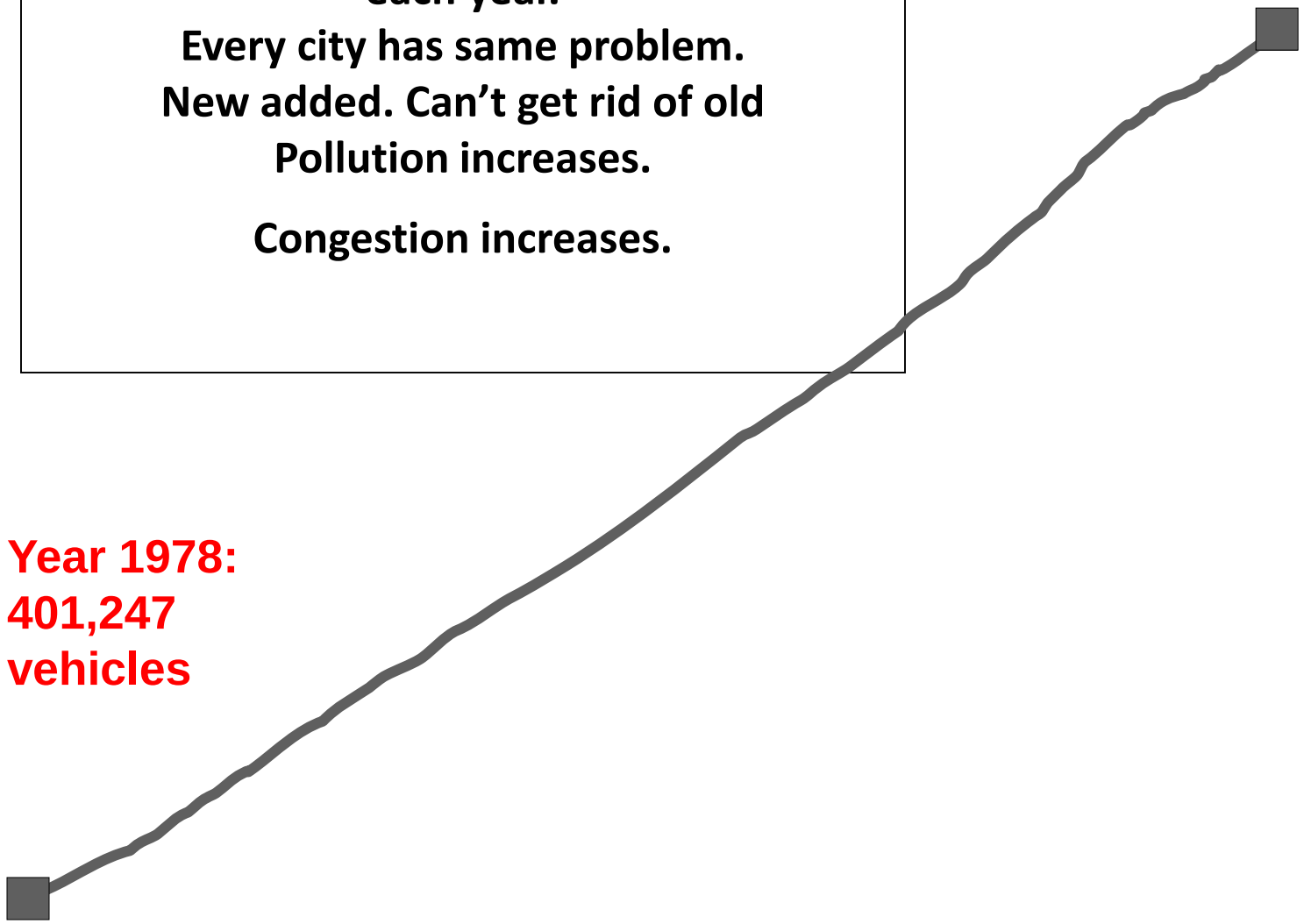
# However

200,000 new vehicles added in Delhi only each year.
Every city has same problem.
New added. Can't get rid of old
Pollution increases.

Congestion increases.

Year 2015:
3,869,694
vehicles

Year 1978:
401,247
vehicles



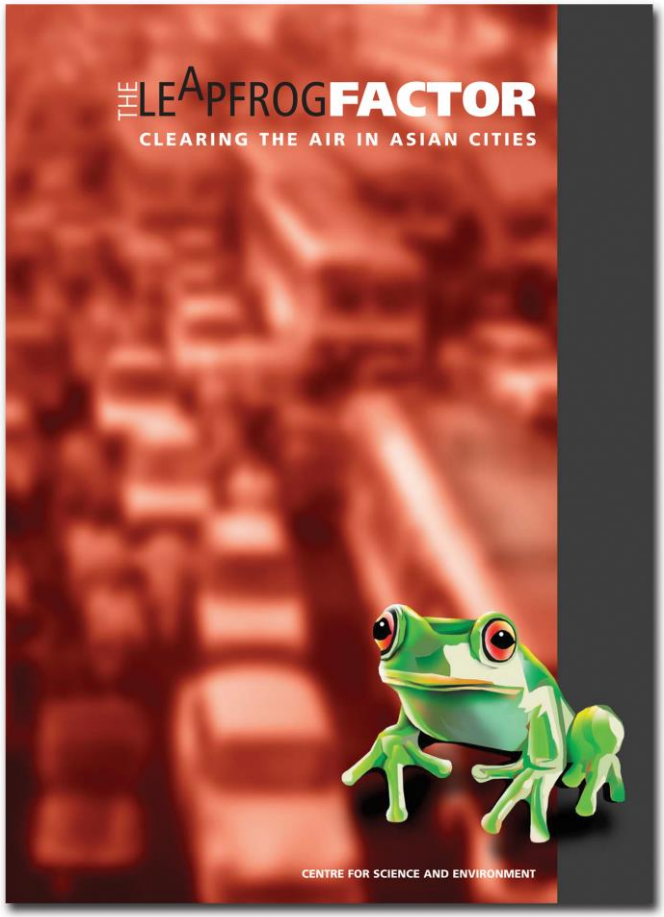
# Growing mobility needs of cities

- For every extra one million people in a developing city, **an extra 3.5 to 4 million public transport trips per day are generated** (The WB)

- Can cities meet this demand?
- Wrong policies provide greater incentives to cars.
- Buses pay more road tax than cars.
- Mobility need of the poor is ignored.
- **Cars take up more road space, pollute more and carry less people**

# Time for second generation reforms - Reinvent mobility

- Build public transport and restrain cars
- Leapfrog emissions and fuel standards
- Restrict dieselisation of private fleet
- Improve two wheelers emissions
- Expand alternative fuel fleet
- Build public awareness about health impacts of dirty air



# Green rating programme

A reputational incentive programme

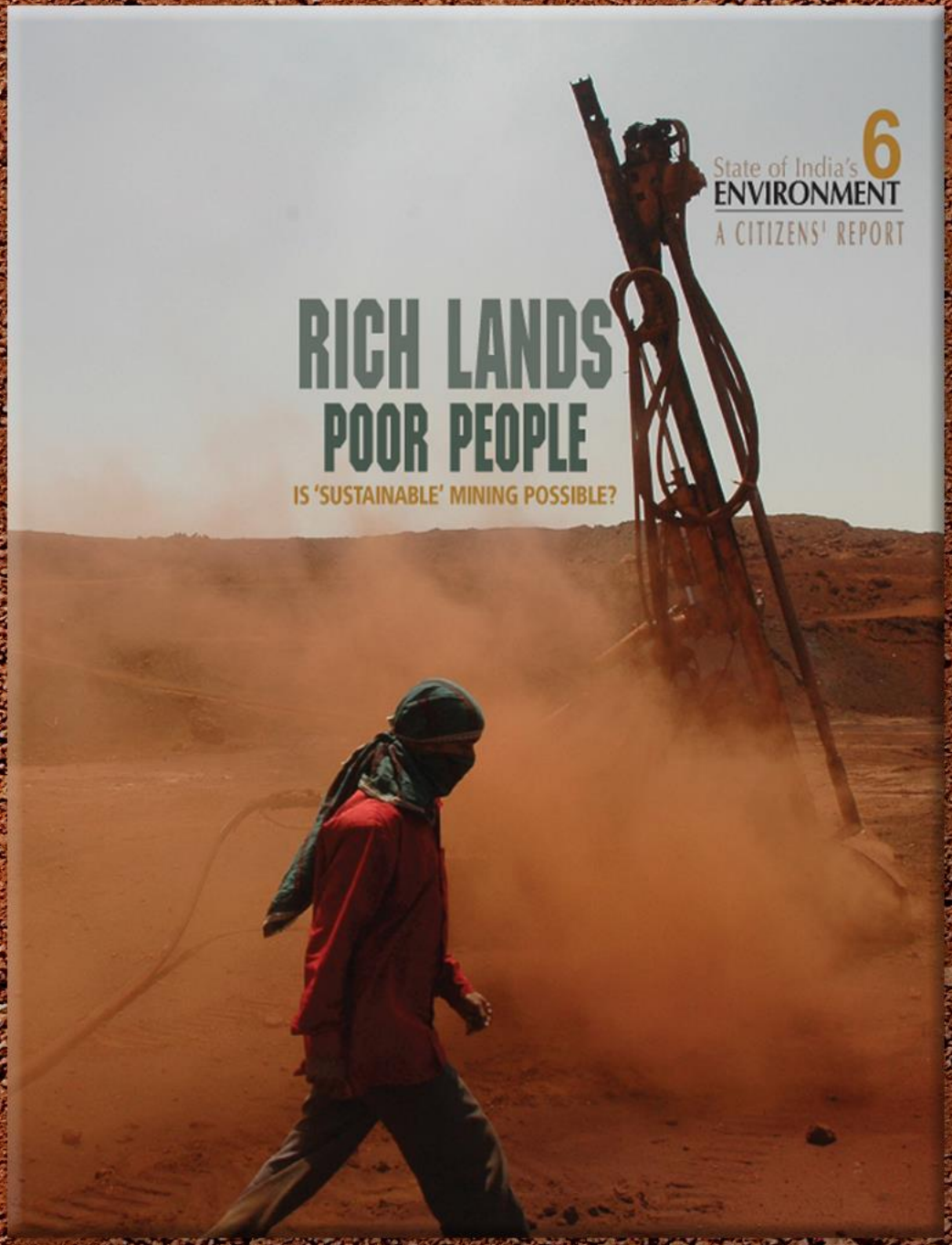
Comparative assessment framework for rating the environmental performance of companies

Sector specific rating.


Public dissemination of rating results.

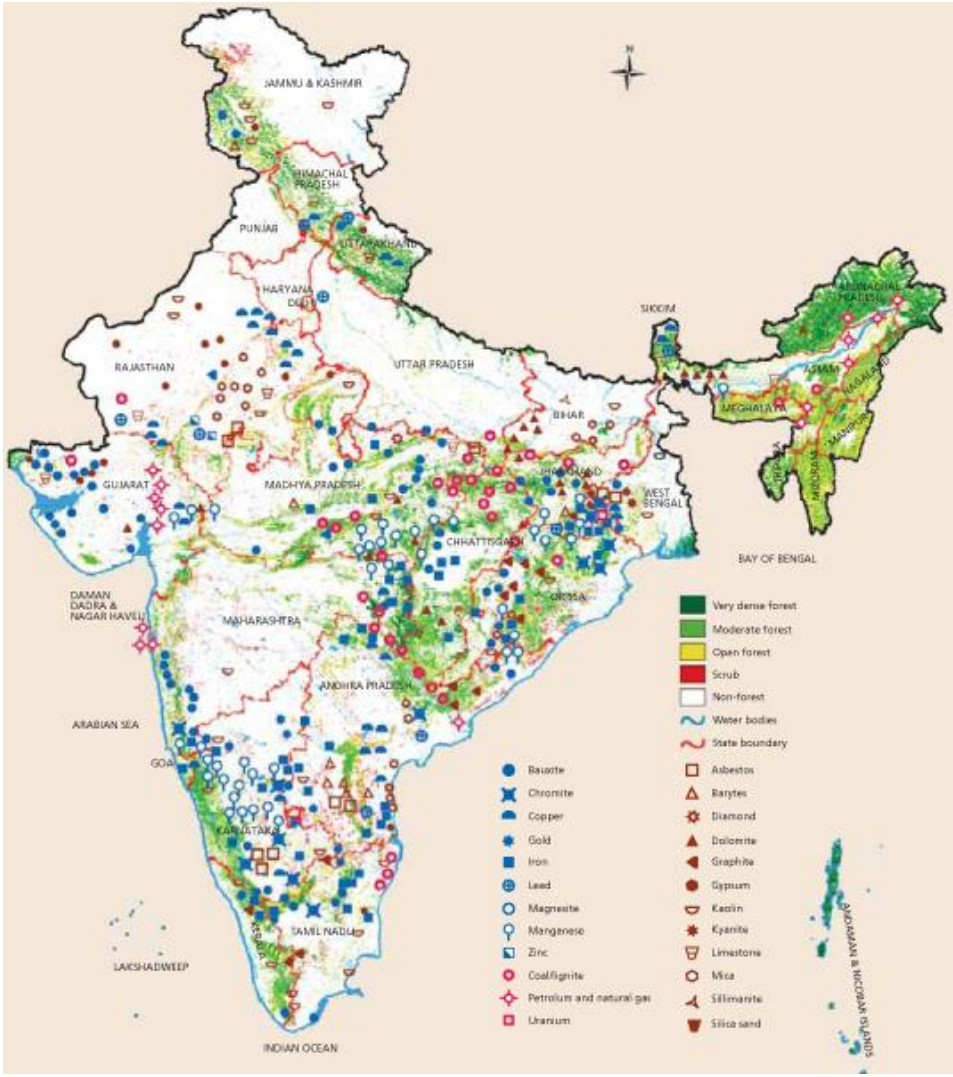
Voluntary participation

- Rated four industrial sectors so far:
  - Pulp & paper: 1999 & 2004
  - Automobile: 2001
  - Chlor-alkali: 2002
  - Cement: 2005
- 2008: Report on **mining and environment** -- push policy towards ‘sustainable’ mining -- benefits to people. Forcing re-think on practice of development
- 2010: ChallengeGreen Rating Project of the New Balance


State of India's 6
ENVIRONMENT
A CITIZENS' REPORT
RICH LANDS
POOR PEOPLE
IS 'SUSTAINABLE' MINING POSSIBLE?

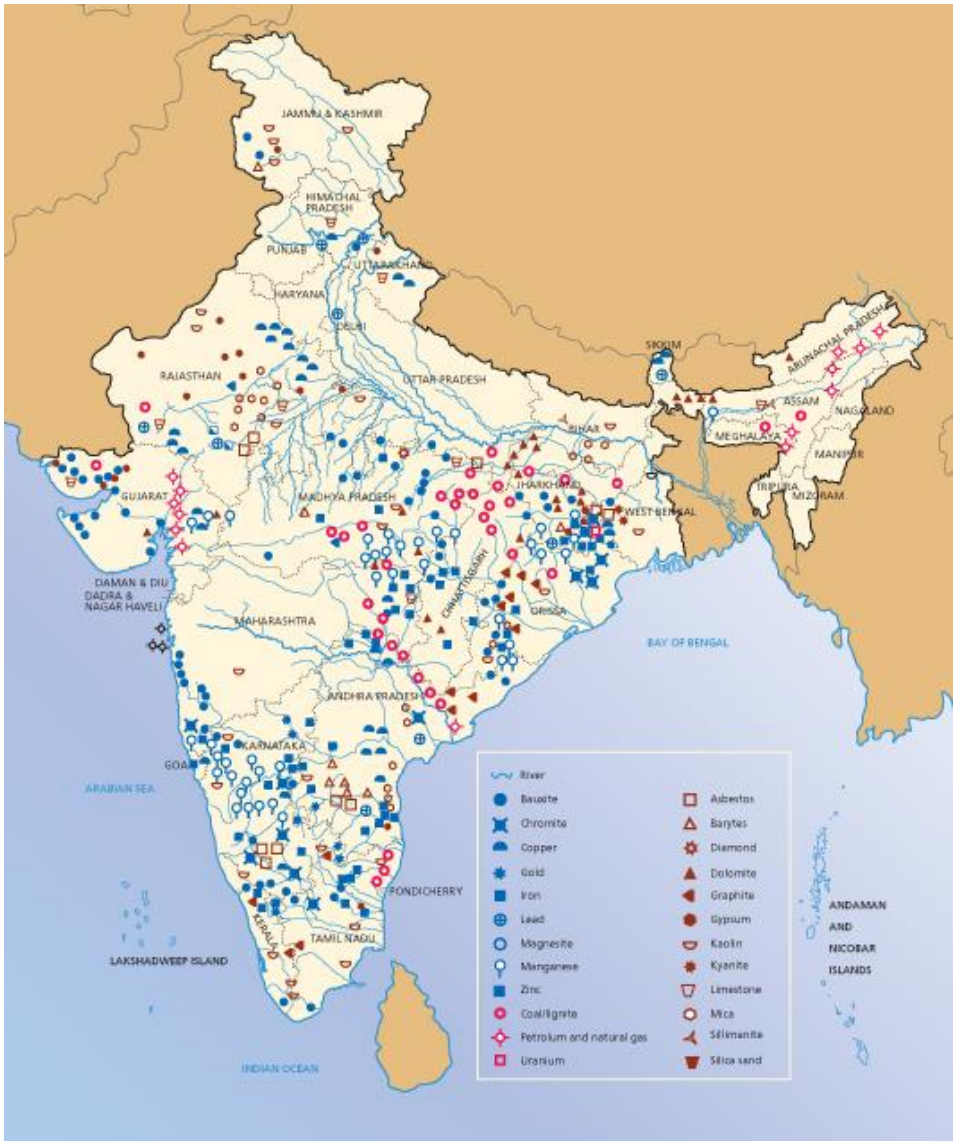
# Minerals are found where forests…

- Top 50 mineral bearing districts account for 18% of forests in the country
- Account for bulk of dense closed forests in the country



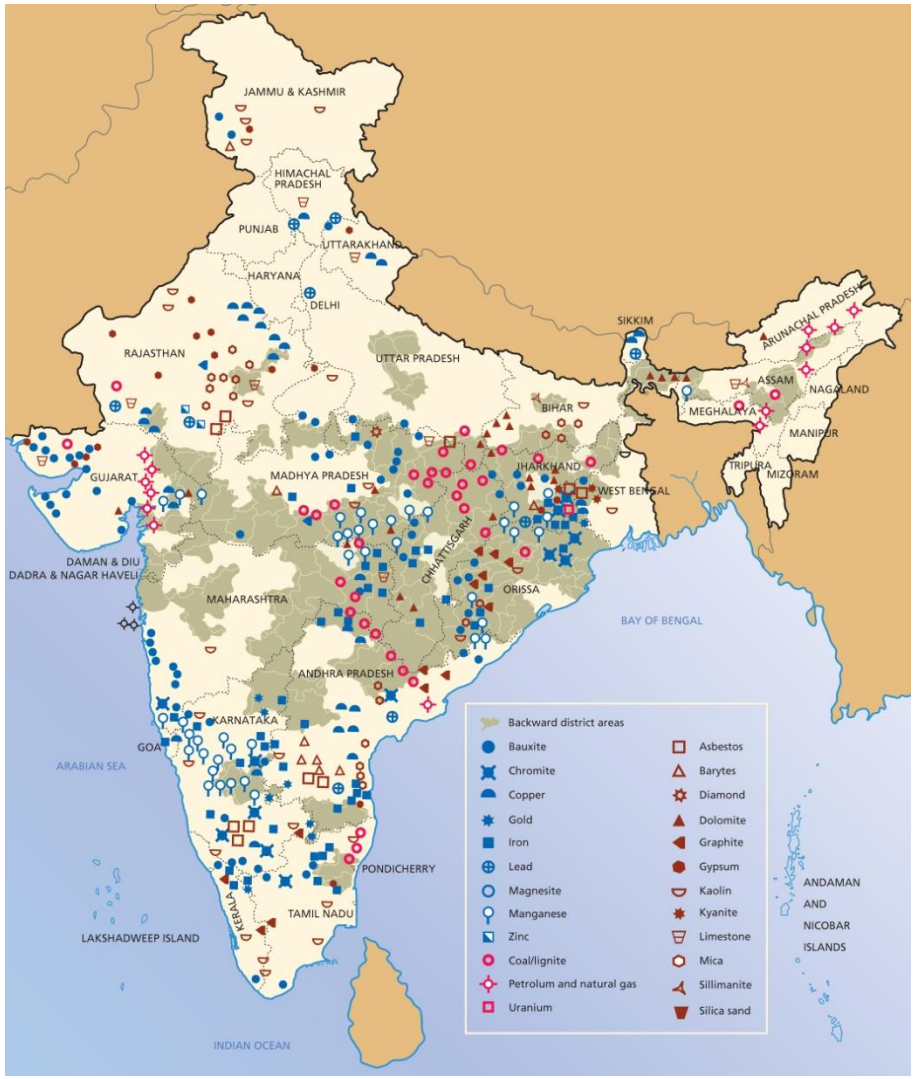
# Minerals are found where water..

- **Minerals also where major watersheds found -- watersheds, local streams, rivers -- feeding villages, cities, industries**



# Minerals, forests, water found where poverty is most intense

- **Of the 50 top mineral producing districts, 70% fall under the 150 most backwards districts.**



# Why poor?

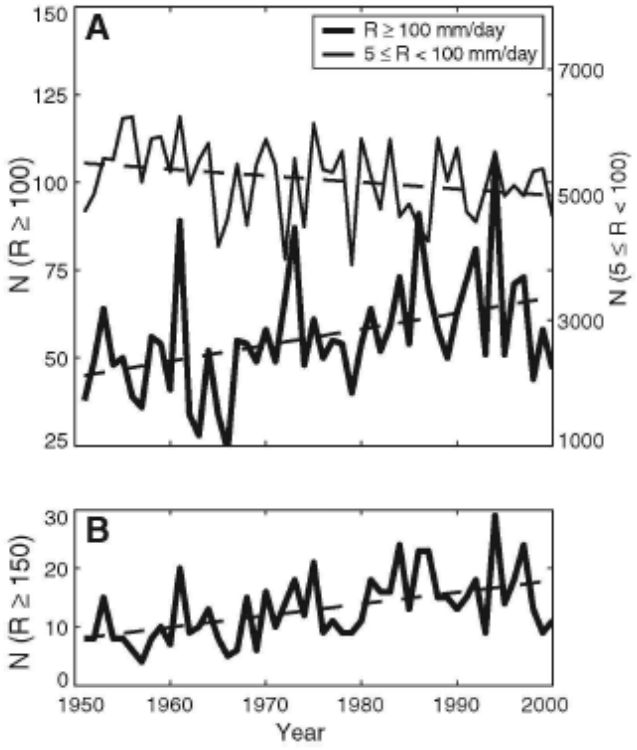
- The wealth of mining doesn't go back to the mining areas
- Mining takes minerals, degrades land, water and forests, does not provide local employment
- Mining displaces people from the existing livelihood but cannot replace it

# Our world today…

**..is in crisis**

Climate change is happening; **now** not in the future.

**The face of India's farmer**
**Grief, despair, desperation**



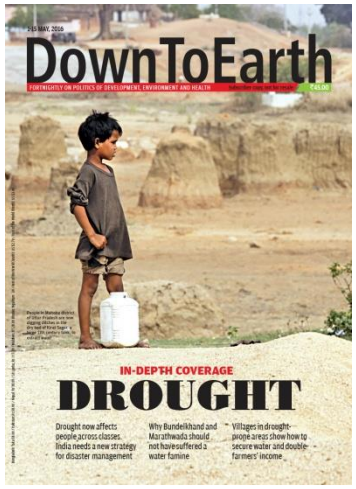
# Climate crisis: cannot step back

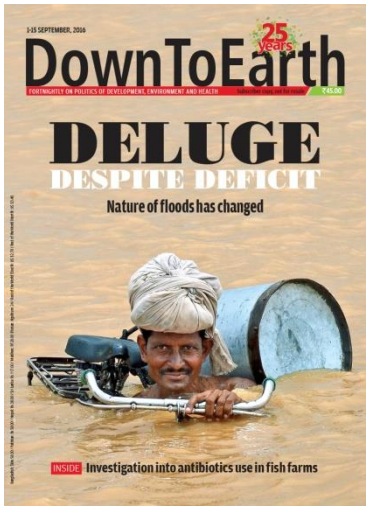
Have to push for strategies that will bring us co-benefits

a. Thermal power standards revised so that coal pays price of pollution
b. Renewable power pushed so that it has grid-parity
c. Need better weather-related insurance for farmers
d. Need modern technologies to forecast weather/sub-variable level/measure and compensate loss

# Our reports : weird, variable and devastating; from crippling drought to deluge

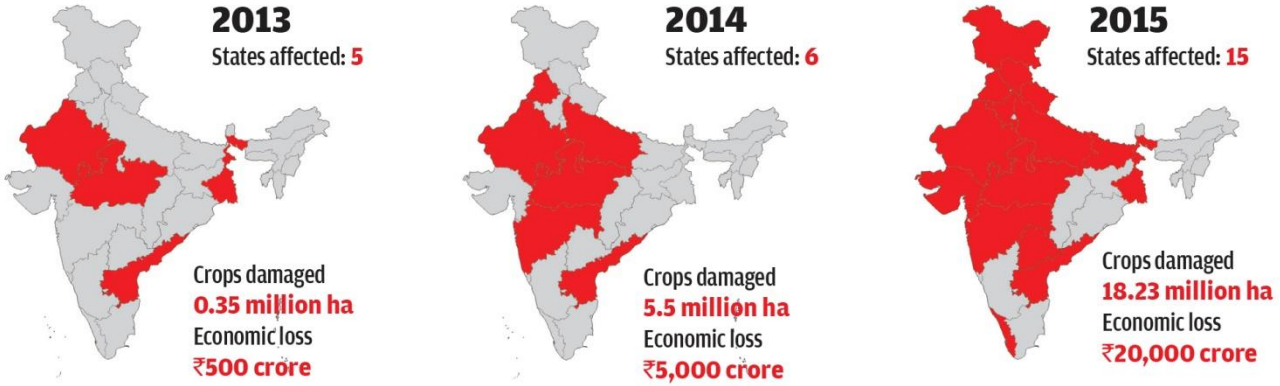





## When freak becomes norm

When hailstorms and unseasonal rains destroyed large swathes of rabi crops in 2013, they were thought to be freak weather events. But they hit again in 2014, and then this year, each time with more intensity, and causing more damage




Source: Based on state estimates

# The rural crisis

- Nearly 300 million rural poor live on fragile and degraded lands
- Drought an increasingly frequent phenomenon.
- What is rural poverty ? **Not shortage of cash**, but shortage of fodder, fuel, food, medicine, artisanal materials, the source of all which is the BIOMASS
- **Challenge - Management of its natural resource base at increasing levels of productivity**
- **Starting point for biomass regeneration is water Water brings land to life**
- Good water, land and forest management - creation of sustainable livelihoods and regeneration of the rural economy.

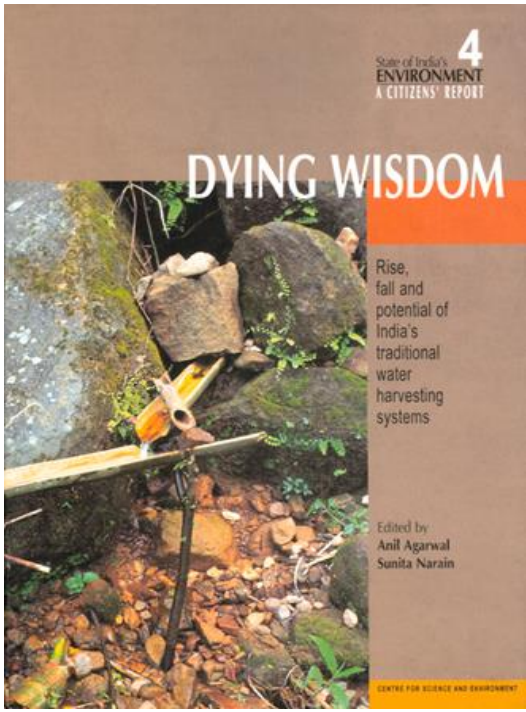
# Begin with harvesting water


- Out of 8760 hours in a year, most of the rain in India falls in just 100 hours.
- The solution lies in capturing, storing, recharging and then using the rainwater over the long dry periods
- 100 mm rain falling on 1 ha of land means 1 million litres of water.
- An average Indian village: 340 hectares of land;
  a rainfall endowment of 3.75 million m3 of water
- **Rainwater harvesting has enormous potential**

# Learning from traditions…

In 1997 we published ***Dying Wisdom***

- Rich learning of traditions in India
- **Enormous diversity, technological sophistication**. Each region had its own system to hold, capture rain. Our ancestors harvested water in a variety of ways; for instance,
- they **harvested the rain** drop directly, from **rooftops and stored it in *tankas*** in the courtyards;
- they **harvested monsoon run off** and water in swollen streams during the monsoons and stored it in structures like ***zings, ahars, johads* and *eris***;
- they harvested **water from flooded rivers** in places like Bihar and West Bengal.



WESTERN HIMALAYAS

BRAHMAPUTRA AND BARAK VALLEY

THAR DESERT

INDO-GANGETIC PLAINS

EASTERN HIMALAYAS


CENT GHLA

NORTH-EASTERN HILL RANGES

ESTERN OASTAL PLAINS

DECCAN PLATEAU

WESTER GHAT


EASTERN GHATS

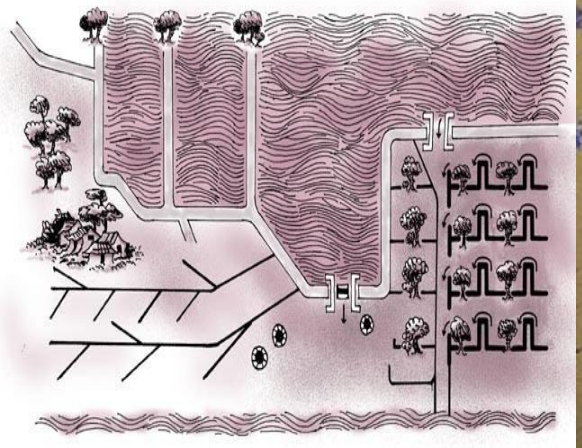
EASTERN COASTAL PLAINS

THE ISLAND

# Labour of love in Laporiya

- Till 1970s the pastures of Laporiya, near Jaipur, were degraded and barren, drought-prone, saline, with starving livestock
- In 1990, Lakshman Singh founded the Gram Vikas Navyuvak Mandal. He had been working on water conservation for over ten years on his own
- At an investment of roughly Rs 250,000, the squares technique (chauka system) was implemented on 90 hectares of pastureland
- After two years' work, the irrigated land in Laxman's home village of Laporiya reaped agricultural profits worth Rupees 3,500,000 (approximately US$ 83,000).
- Water table levels in the village had risen to just 15 feet below the surface, from a depth of 60 feet in 1991

# Painstakingly harvesting every drop of water



# After 5 years of drought

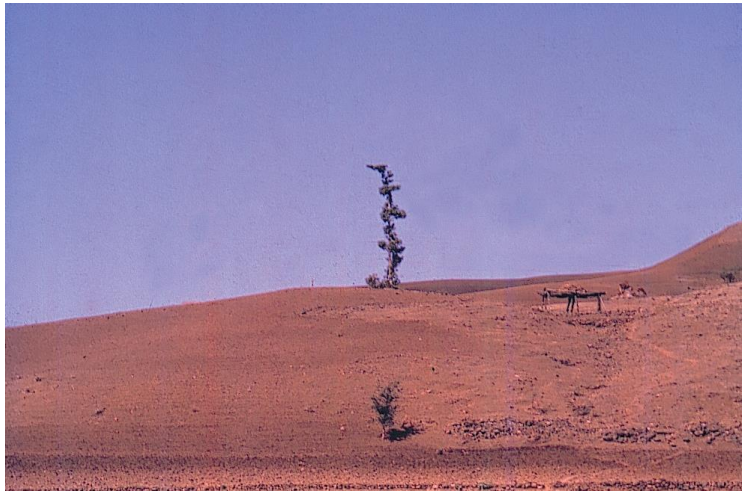
# 1990s:Temple of modern India - Jhabua

Once a heavily forested area, Jhabua's forest lands stood without any tree cover; dotted with rock-exposed hillocks.

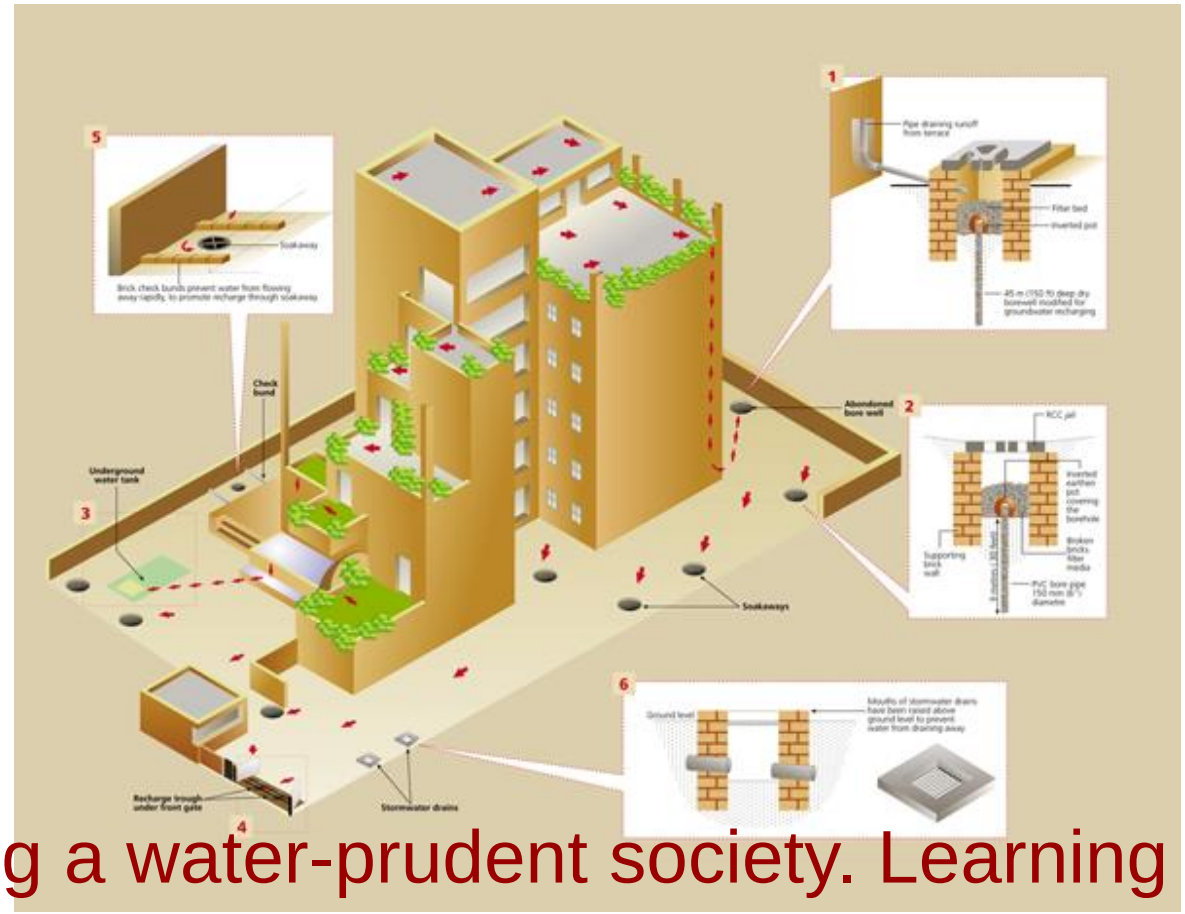
Rajiv Gandhi Watershed Development Mission initiated in 1994 in Jhabua to cover 22% of its land

Small tanks were built on the slopes to hold the water In the watershed land was protected; Seed banks were set up to help community afforestation; Pastures were improved through planting pasture

Multi-layered institutional structure for monitoring the programme from state to village levels



# Supporting a water literacy movement.




Building a water-prudent society. Learning to live with our rain, recycle our waste..recharge our aquifers. Doing and practicing change.

# Urban water crisis: real and frightening

- Cities and industries growing. Need water.
- Use clean water and discharge polluted water.

- Cities are sourcing their water from further and further away. Increasing stress on rural water.
- Chennai - from 200-500 km; Bangalore from 95 km (Cauvery); Hyderabad from 100 km
- Delhi will get water from Tehri dam.
- Or from groundwater – groundwater levels going down in all cities
- Lakes in cities meant for recharging have been allowed to decay so that they can be built upon
-

# How do cities use their water?

- **20 per cent** of the **water used for drinking, cooking**; **80%** for **bathing, washing and flushing down the toilet**.
- Cost recovery difficult because of huge distribution losses. between 20-50 %.
- Increased pollution in source water adds to cost of treatment.
- Cannot invest in efficiencies and clean water for all.

**Yet, Indian cities want more**.

Delhi gets **209 litres/capita/day.** While, Copenhagen has a target of reducing water supply to **111 litres/capita/day in 2002**


**Need to reinvent the water paradigm for urban India**.

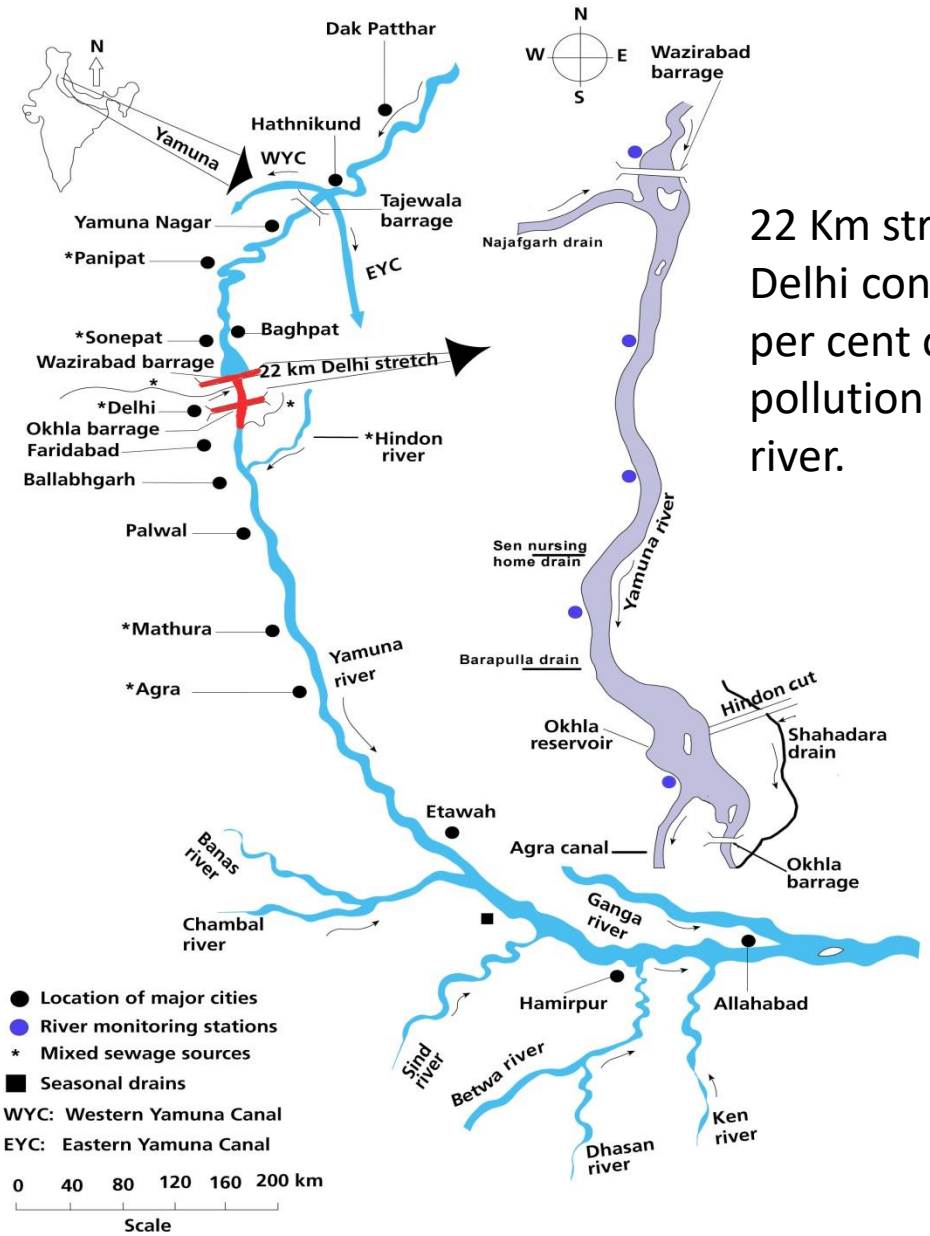
# Sewage paradigm: Mindless murder of rivers

**Little human excreta. Lots of clean water.**

First used to flush. Then used to carry. Then used to dispose.

- We do not pay the cost of cleaning and distributing water.
- Sewage and treatment costs are estimated to be 5 times higher than cost of providing water.

**Who will pay?**




22 Km stretch in Delhi contributes 70 per cent of the total pollution load of the river.

# The sewage-sanitation challenge

- Sewage system does not exist in our cities – waste pollutes the ground or pollutes the river and stream
- OR
- Sewage systems exist but sewage treatment plant does not and sewage still pollutes rivers, streams
- OR
- Sewage systems exist and sewage treatment plant exists but there is no money to run it or sewage is not connected to plant, sewage still pollutes rivers and streams.
- OR
- Sewage system, sewage treatment plant exists and it runs. But it only provides for part of city. Sewage of rest – poor is illegal. Treated and Untreated mixed. The river is still polluted.

Sewage-excreta biggest challenge for modern India

# Politicial economy of defecation

- Cannot pay for full costs for water; Costs of treatment increase as pollution increases

- Can't pay full costs for waste; Costs of treatment increase as sewage load increases; 5 times higher costs than supply of water

- So, free/subsidised water supply and sewerage
- Can only be provided for few and not for all

**Can only subsidise the rich living in cities**

The political economy of defecation

# Our study

- file://localhost/Users/sunitanarain/Desktop/Excreta matter vol.1 PDF/Final chapters for book/Master Excel Checked.xls

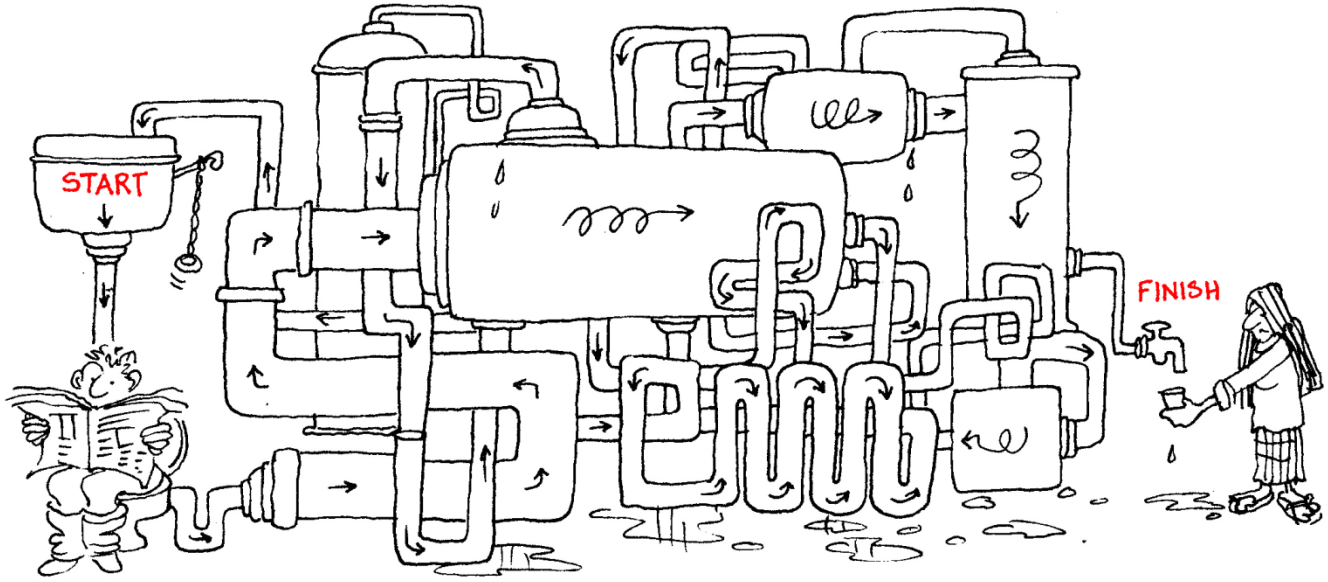


71 city data analyzed
City water-waste profiles
Where does water come?
Where does waste go?
Simple questions
But not asked
Never answered

# Sewage excreta: biggest challenge for modern India

## Make sewage everybody's business

- Decentralised sewage management systems
- Small, alternative systems that can be operated in each building
- CSE has its own sewage treatment system



# Pollution Monitoring Laboratory

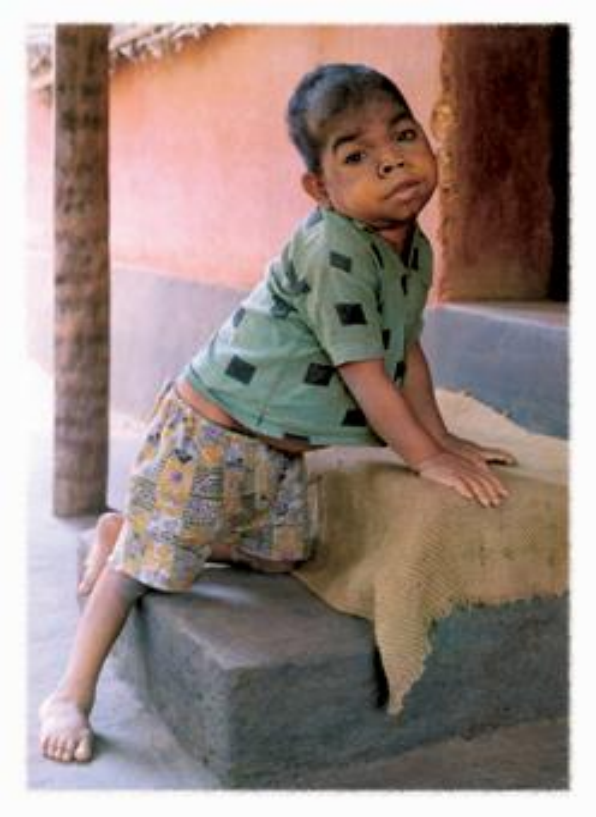
Set up in 2000, with state of the art equipment for pesticide residue, heavy metal and air pollution monitoring.

We set it up to:

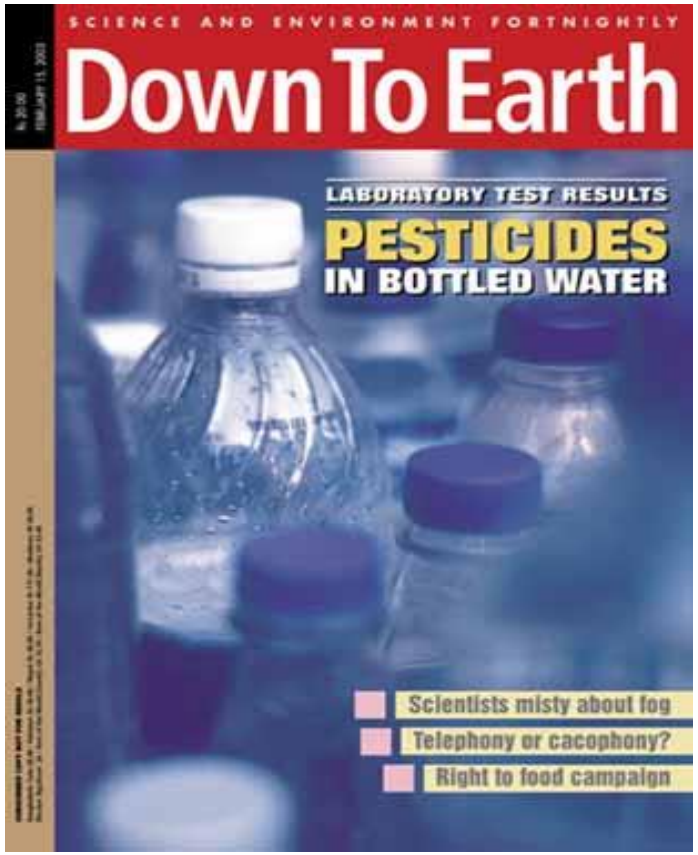
empower the public by putting the results of pollution monitoring in the public domain thereby creating a consciousness in the society of the health hazards from toxic environmental pollutants.

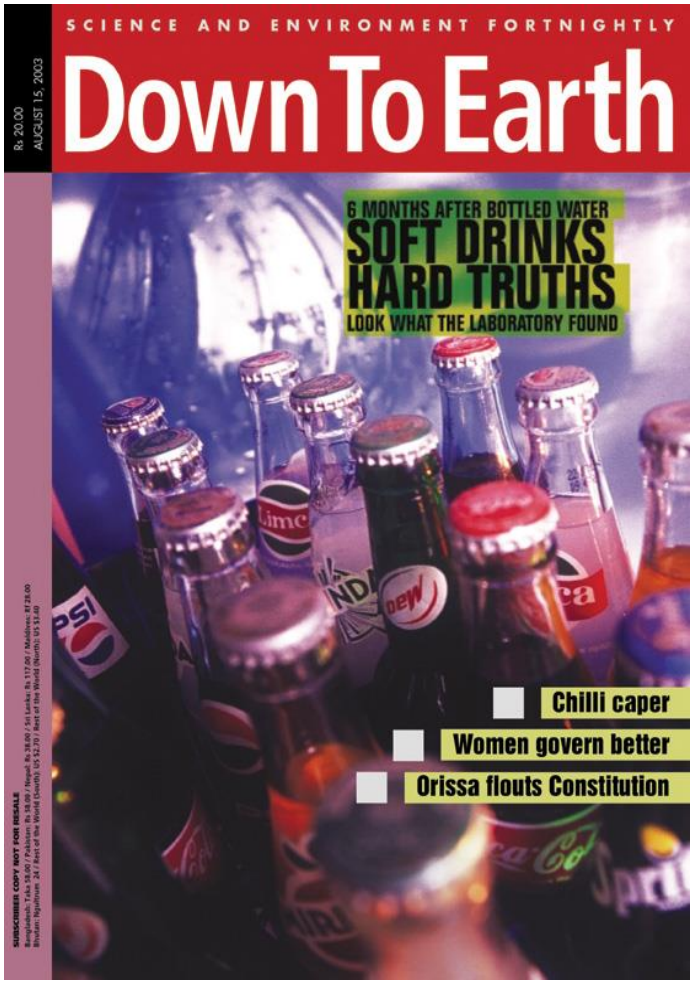
# Endosulfan: confirmed by ICMR

- 2001: villagers from Padre, Kerala write to CSE. Mysterious diseases.

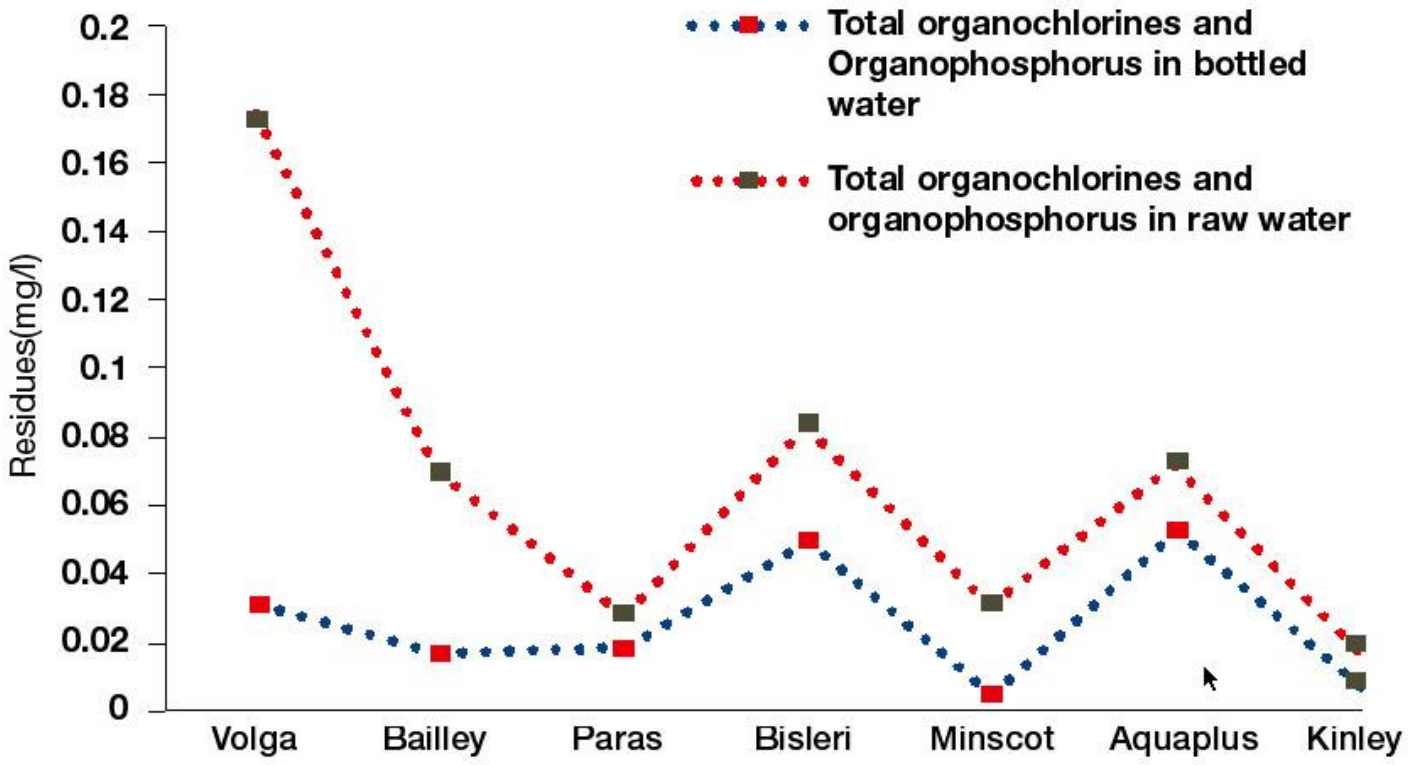


# Two studies. Many questions.



# Found pesticides…



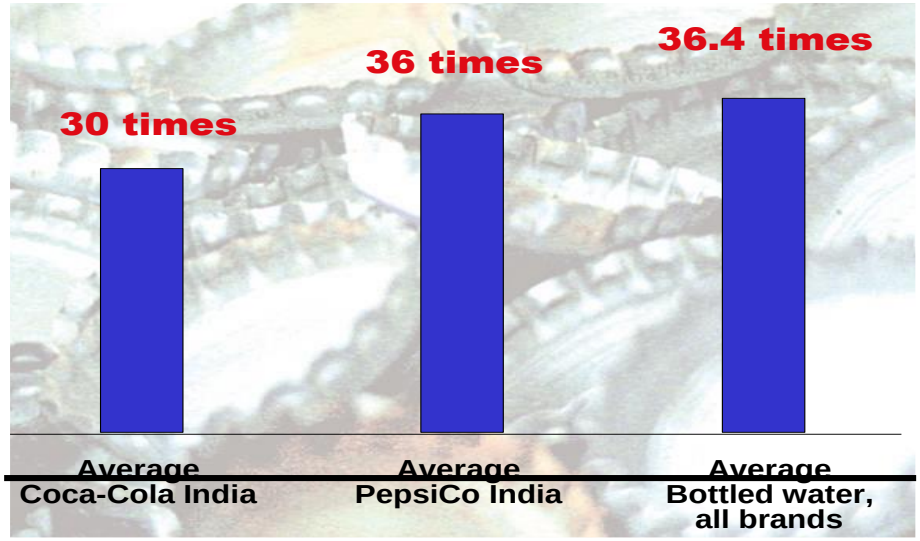

Letters, emails, messages asking: WHAT ABOUT SOFT DRINKS? **They use the same water.**

# Soft drinks: what did we find?

Same pesticides as bottled water:
DDT, lindane, chlorpyrifos, malathion.

Same level as bottled water.

But poorer (in fact non-existent) regulations compared to bottled water



# Key issues

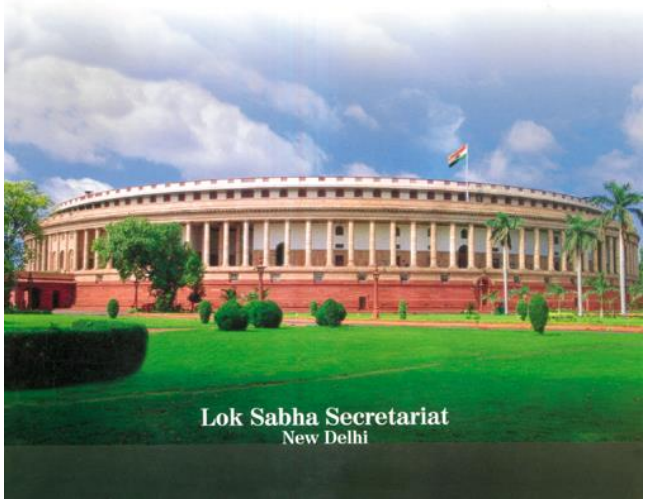
1. Pesticide contamination is growing. Even soft drinks contain pesticides. **Need a stringent policy for safe and wise use of pesticides.**
2. Pesticides found in food, beverages and water above the acceptable daily intake pose a long-term health hazard. **Need standards for safety**.

August 5 (12 noon): CSE releases study
August 5 (4 pm): Pepsi-Coke joint press conference rejecting our study; say we are not capable of doing this research; they have tested; they know that they are safe…
August 8: Pepsi file defamation suit (gag-SLAPP) case against CSE. Coke case not unaccepted by SC (withdraws case after we file counter in November)
August 21: Government releases its test report. Confirms 3 pesticides, in smaller quantities. But uses phrase: drinks "safe":
August 22: sets up Joint Parliamentary Committee (4th in India) to investigate matter. Sharad Pawar chairman.

# "**Working**" our democracy

Endorses our findings, asks government to set stringent standards for soft drinks; wants entire system of pesticide use and food and water standards revamped.

A vindication of public health concerns. **Sets the agenda for reform for water security and food safety.**

# The poison-nutrition tradeoff

Remember that pesticides standards are about total exposure. That means we have to know what we eat and how much we eat. And how much pesticide is allowed in the food we eat.

The food basket is also the pesticide basket. **It's a trade-off: between nutrition and poison.**

Safety is about managing the poison-nutrition trade-off (we ingest poison to get some nutrition..)

But this poison must be within safe exposures. Therefore, safety requires setting standards for the food basket.

# Trans-fat study

- Conducted study on presence of transfats in leading brands of edible oils. First of a kind study in India. Showed high levels of transfats in hydrogenated fats
- No existing regulations
- Outcome
- Within a month, the Oils and Fats sub-committee of the Union Ministry of Health and Family Welfare agreed to set standards on transfats in hydrogenated oils. Recommended a ceiling of 10% transfats in hydrogenated oils immediately and bring this level down to 5% in next three years

- CSE undertook a study of lead in paints and found very high levels of lead, an extremely dangerous chemical particularly to children.
- Pthalates in toys study
- Government set up committees to define standards
- Antibiotics in honey: FSSAI issued an advisory - no antibiotics and pesticide residues are allowed in honey. The advisory has also specified maximum limits for heavy metals in honey.

# Fecal Sludge and Septage testing laboratory

First of its kind state of art referral lab on Faecal Sludge in India

- It undertakes Fecal Sludge Characterization (describes the character of sludge (Chemically & Biologically)
- Analyses the efficiency and efficacy of DEWATS systems
- Develops protocols and SOPs for testing fecal sludge and septage

# Building alliances
# Creating capacity

1. Media – to multiply understanding
2. Regulators – to change the practice of delivery and enforcement (setting up regulator training institute)
3. Civil society and young people – to build change-makers (Green School programme)