

A red-tinted portrait of Anil Agarwal, a man with glasses, looking slightly to the side. The image is the background for the top section of the slide.

# ANIL AGARWAL DIALOGUE 2015

**The poor in climate change**

**MARCH 11 & 12**

## Short-lived climate pollutants: making co-benefit work for the poor

Sunita Narain



Centre for Science and Environment





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## 3-failures; one future?

1. **Climate change:** world started cutting CO2 emissions in 1990s; still struggling. Too little to late. **At risk**
2. **Air pollution in Delhi:** started cutting emissions in 1990s; still struggling. 1st generation reforms brought relief, but scourge is back. **At risk**
3. **Clean energy access for all:** started in 1980s. 'Other energy crisis' discussed; clean cookstove launched. But women still cooking on inefficient, dirty stoves. **At risk**







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# Unequal world: unequal emissions

Our position: **1991**

Poor not responsible for climate change  
They are the victims

Differentiate between **luxury** emissions of rich and **survival** emissions of poor

Methane emissions from **rice fields** or animals of poor cannot be equated with **diesel SUVs** of rich

Important focus on **CO2 mitigation** and sharing growth between nations; people







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# Global Warming in an Unequal World

*A case of environmental colonialism*

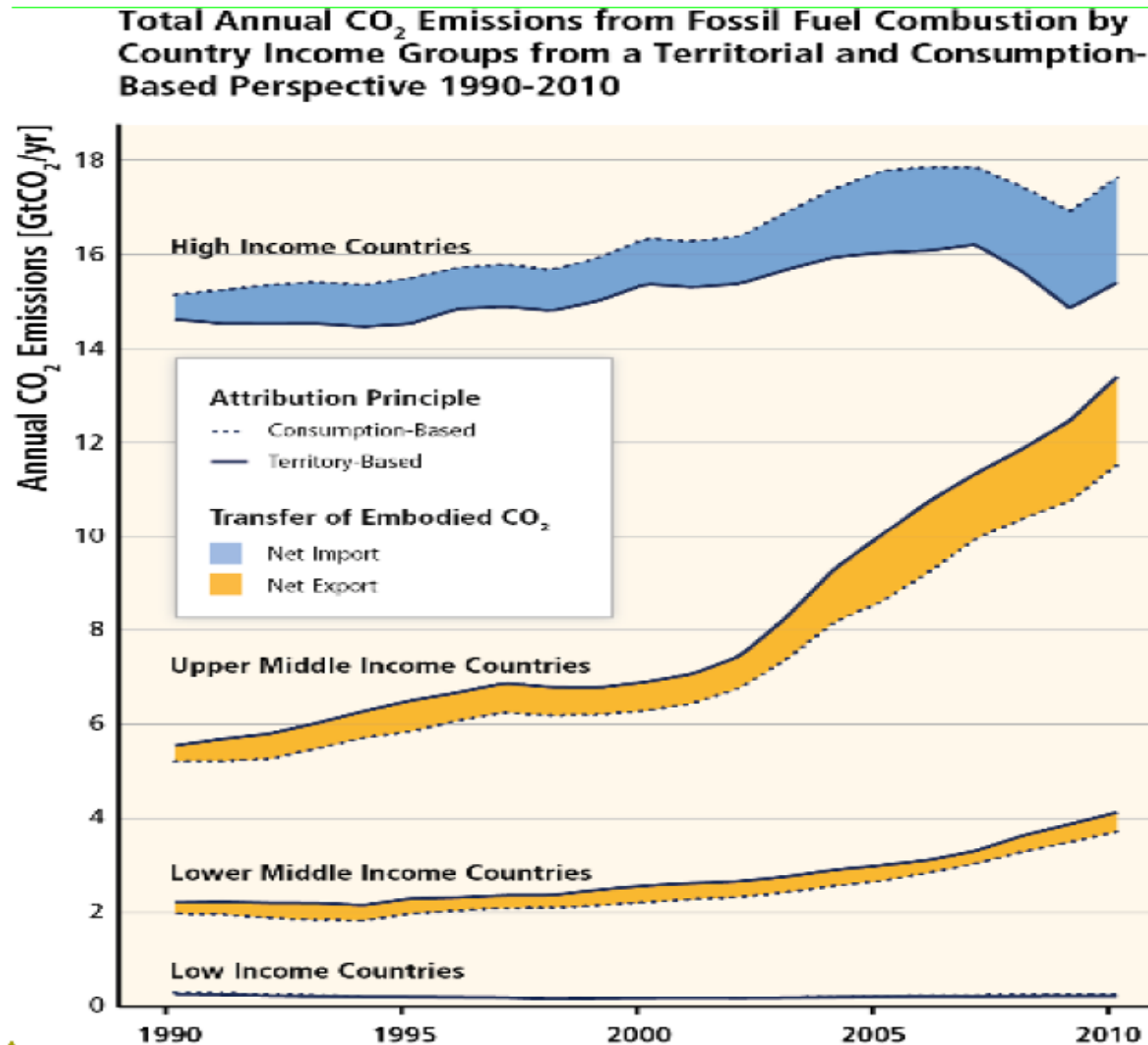
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# Emissions uncontrolled







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# Tiny particles: Delhi

Also in 1990s: Delhi enveloped by dirty air

CSE work on **right to clean air** began

We raised issue of PM 10, PM 2.5 – tiny particles that we were inhaling

Said air is deadly. Cannot breathe. Health costs are enormous





# Roll down the window of your bullet-proof car, Mr Prime Minister

## The security threat is not the gun. It's the air of Delhi



Hon'ble Prime Minister,

Here is something that just may convince you: while India's Gross Domestic Product has increased two-and-half times in two decades (1975-1995), the pollution load from industries has gone up four times and from vehicles a shocking eight times.

A study by the Centre for Science and Environment shows that the number of people dying due to air pollution went up by almost 30 per cent in four years between 1991 and 1995. An estimated 52,000 people are dying due to air pollution every year - about 10,000 of them in Delhi itself.

One person dies every hour due to air pollution in the city.

In Delhi vehicles are responsible for 70 per cent of the pollution load. Because of the high toxicity of fumes from transport fuel, one out of every 10-15 people living in Delhi is likely to get cancer.

Your government has failed to arrest this deterioration of air quality in Indian cities. Worse still, it contributes to the pollution in a big way by producing low quality fuel in state-owned refineries. Improving fuel quality is a short-term measure which will go a long way. Vehicles using clean fuel will pollute less.

Seeing your government's inability to tackle air pollution, we present you with a peoples' charter for clean air. This will help to immediately improve the quality of the air we breathe.

Mr Prime Minister, 50 years into Independence, please give us our right to clean air. We hope you will take our concern seriously.

Yours sincerely

Centre for Science and Environment  
November 2, 1998

## PEOPLES' CHARTER ON CLEAN AIR FOR AN IMMEDIATE IMPACT

### ✓ PRODUCE CLEAN DIESEL ON IMPORT

Diesel emissions contain deadly particulate matter with traces of the strongest carcinogen known till date. Indian diesel is 250 times dirtier than the world's best.

### ✓ REMOVE BENZENE FROM PETROL

India is moving towards unleaded petrol. But this fuel contains too much benzene. Though we use one hundred times less petrol than USA, the total amount of benzene emissions from Indian vehicles is the same as in the US.

Benzene causes blood cancer and air should have no benzene at all, says WHO. Yet the level of benzene in and around Connaught Place in Delhi is 10 times higher than the European safety limit. If you live in Delhi, your chances of getting blood cancer are twice as high as people living in Bangalore, Chennai and Mumbai.

### ✓ STOP PRIVATE DIESEL CARS

Registration of all private diesel models should be banned in cities like Delhi. Cheap government diesel means more diesel cars, including luxury models.

### ✓ TAX TO IMPROVE VEHICLE TECHNOLOGY

Penalise vehicle manufacturers for producing polluting technology. Tax vehicles according to their emission level. Manufacturers will then invest in cleaner technology.

### ✓ INTRODUCE EMISSION WARRANTY

Make the industry accountable for the life-long emission efficiency of all vehicles they produce.

### ✓ MAKE EMISSION LEVELS PUBLIC

Manufacturers must inform buyers of the exact emission levels of their vehicles.

### ✓ MONITOR ALL HARMFUL GASES

Improve air quality assessment. A wide range of poisons are not monitored till date. Alert people about pollution levels in the city. It is done all over the world.



### Register your protest to the Prime Minister today

PMO, South Block, New Delhi 110 001  
Tel: 301 8939 Fax: 301 6857, 301 9817

### Join CSE's Right To Clean Air campaign



Centre for Science and Environment  
41, Tughlakabad Institutional Area, New Delhi 110 062  
Tel: 698 3394, 698 1124, 698 6399 Fax: 698 5879  
Email: [cse@cseindia.org](mailto:cse@cseindia.org) Website: [www.cseindia.org](http://www.cseindia.org)





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## **“We deny”**

““I deny that particulate matter is rising to high levels or that it has special adverse health effects.”

“I deny that particulate matter is resulting in total excess deaths per year...”

“I deny that even if particulate levels are well below the standards, they remain dangerous to human health.”

“I deny that respirable suspended particulate matter are more deadly for the fact that they are breathed deep into the lungs and lodge there.”

“I deny that the smaller the particle the more harmful it is.”

*A major automobile manufacturer, Supreme Court affidavit, October 1999*







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# But we prevailed

CNG was introduced  
Diesel was cleaned up

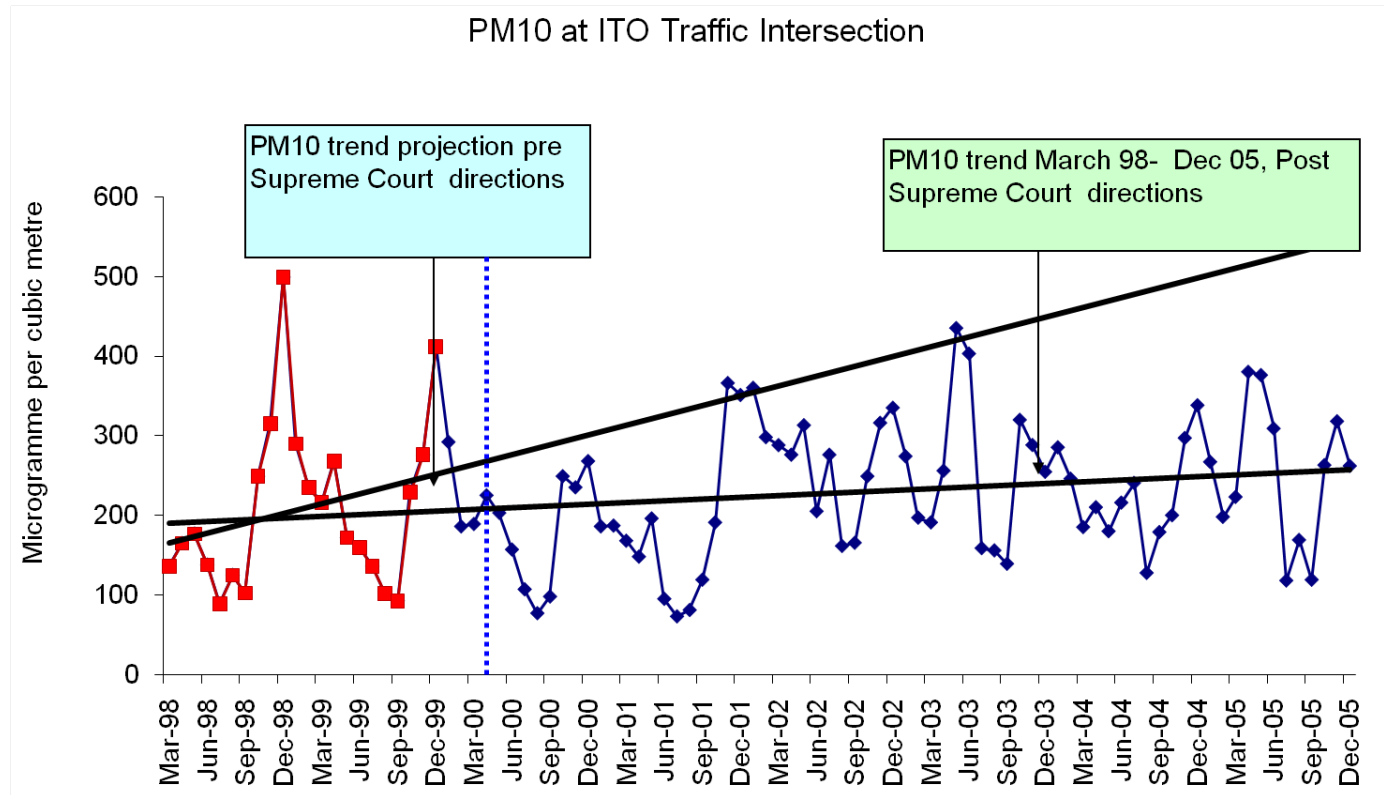
From Euro Zero (10,000 ppm sulphur): 1996  
To Euro II (500 ppm sulphur): 1999

Delhi leapfrogged  
Got clean air benefits





# Delhi got cleaner air: it avoided pollution. We saw the stars



**CPCB:** 24% drop in PM10 levels in 2002 compared to 1996 levels

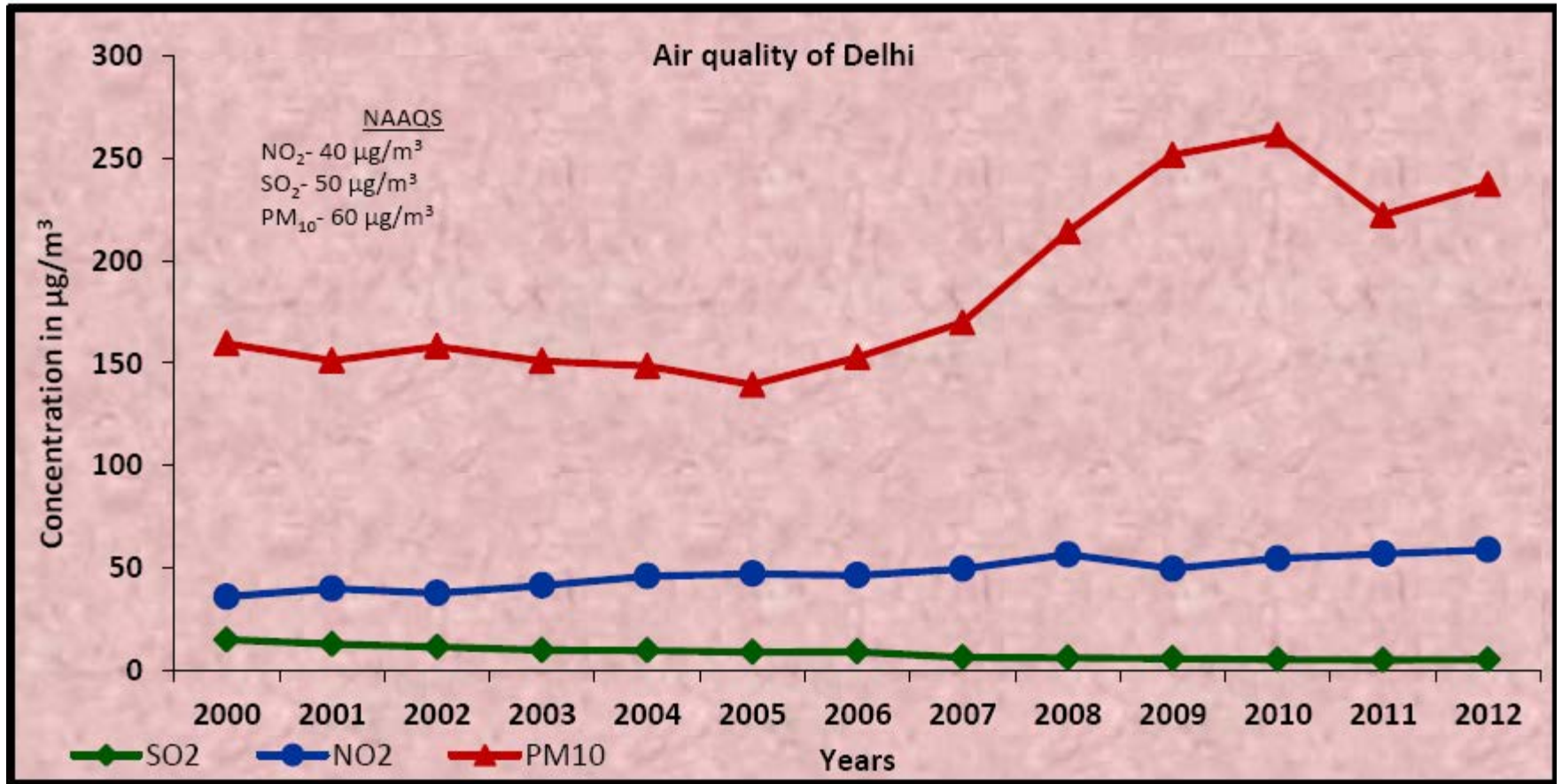
**Resources for Future, US:** CNG bus programme reduced RSPM, CO, SO<sub>2</sub>

**Jawaharlal Nehru University study:** Drop in polycyclic aromatic hydrocarbons levels in Delhi's air immediately after the introduction of the CNG programme

**World Bank:** Delhi has avoided more than 3500 premature deaths a year



## 2015: Vehicle numbers imploded; dirty diesel use up, toxic emissions in air up



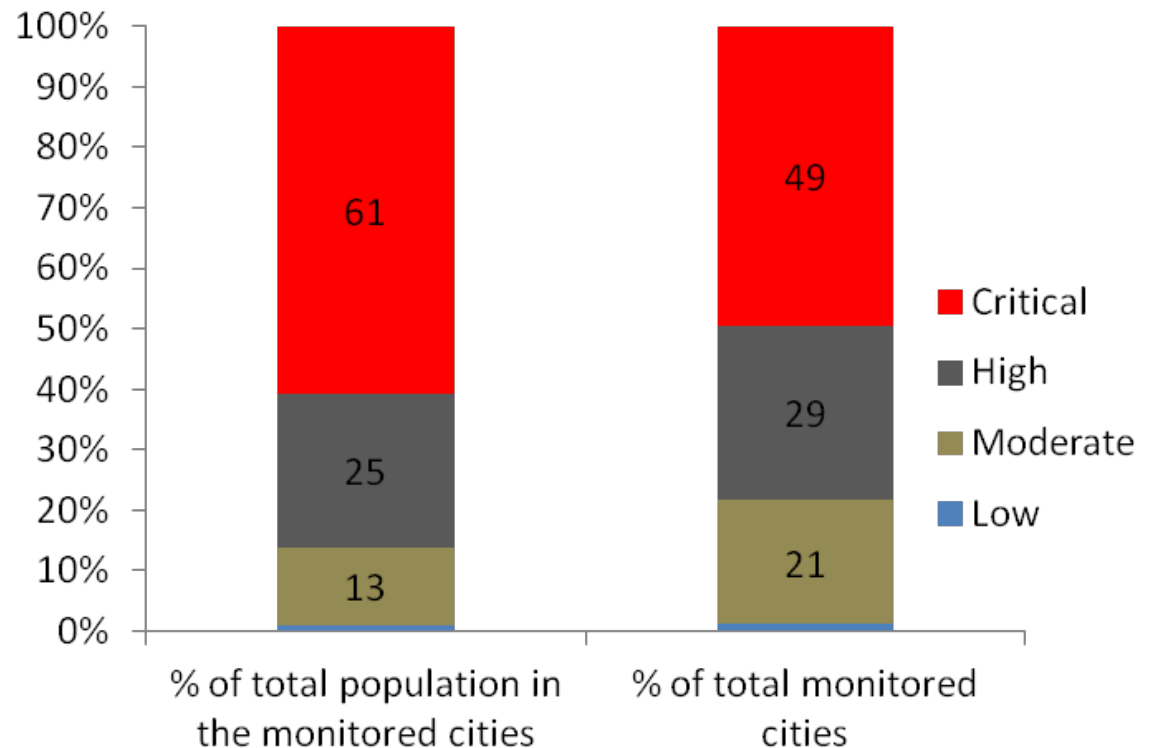
Source: CPCB 2014, National Ambient Air Quality Status & Trends – 2012, page 133



# In Indian cities air is toxic: bad for health

**50% of cities monitored are critically polluted for PM10**

**This is growing Public health burden**







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# Clean energy: a right

1980s: Concern for cooking energy

Issue was 'firewood'

Issue was inefficient stoves

Soon it grew to see woods from trees

Women worst hit, not forests

Exposed to deadly pollution when cooking on  
inefficient biomass stoves

Way ahead was improved stoves

But



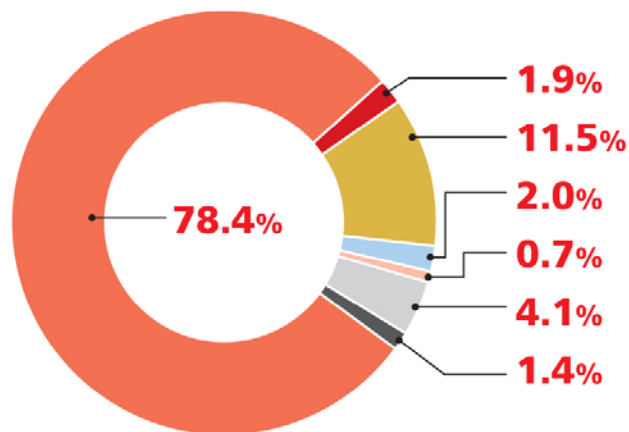




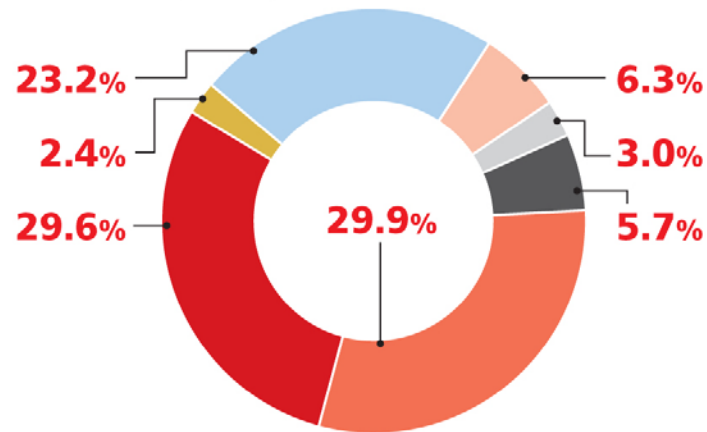
# Wicked problem. Does not go away

**Graph:** Energy sources of Indian households (1993-94 and 2009-10, rural and urban)

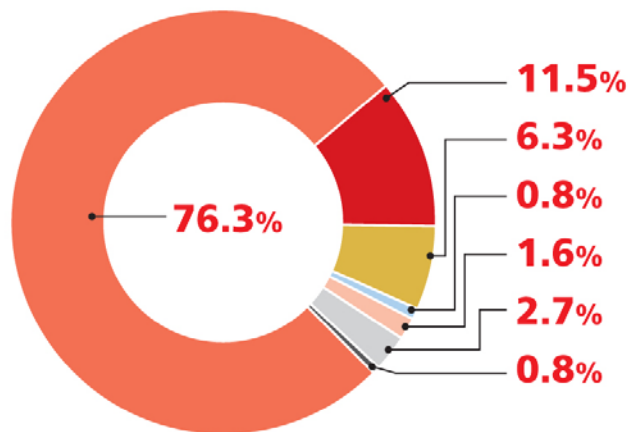
1993-94 (rural)



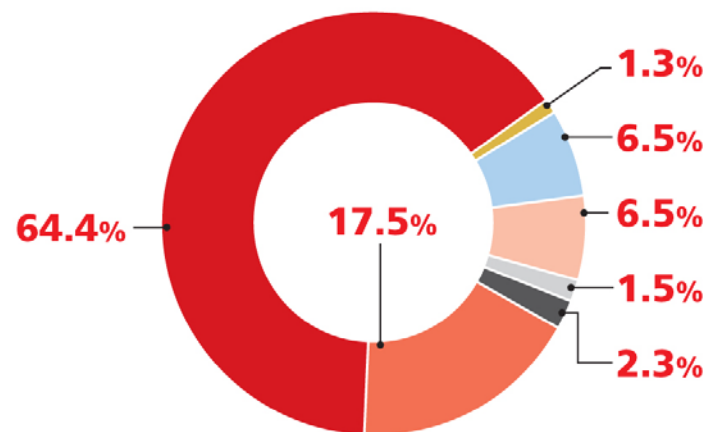
1993-94 (urban)



2009-10 (rural)



2009-10 (urban)



■ Coke/coal  
■ Firechips & woods  
■ LPG  
■ Dung cake  
■ Kerosene  
■ No-cooking arrangement  
■ Others





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## 3-failures: 1 opportunity?

CO<sub>2</sub> life more than 100 years

Once emitted it stays

Huge historical burden of countries

World need to reduce emissions fast – cannot keep adding as this will determine our future

Short lived climate pollutants (SLCP) shorter life span – from few hours to 20 years

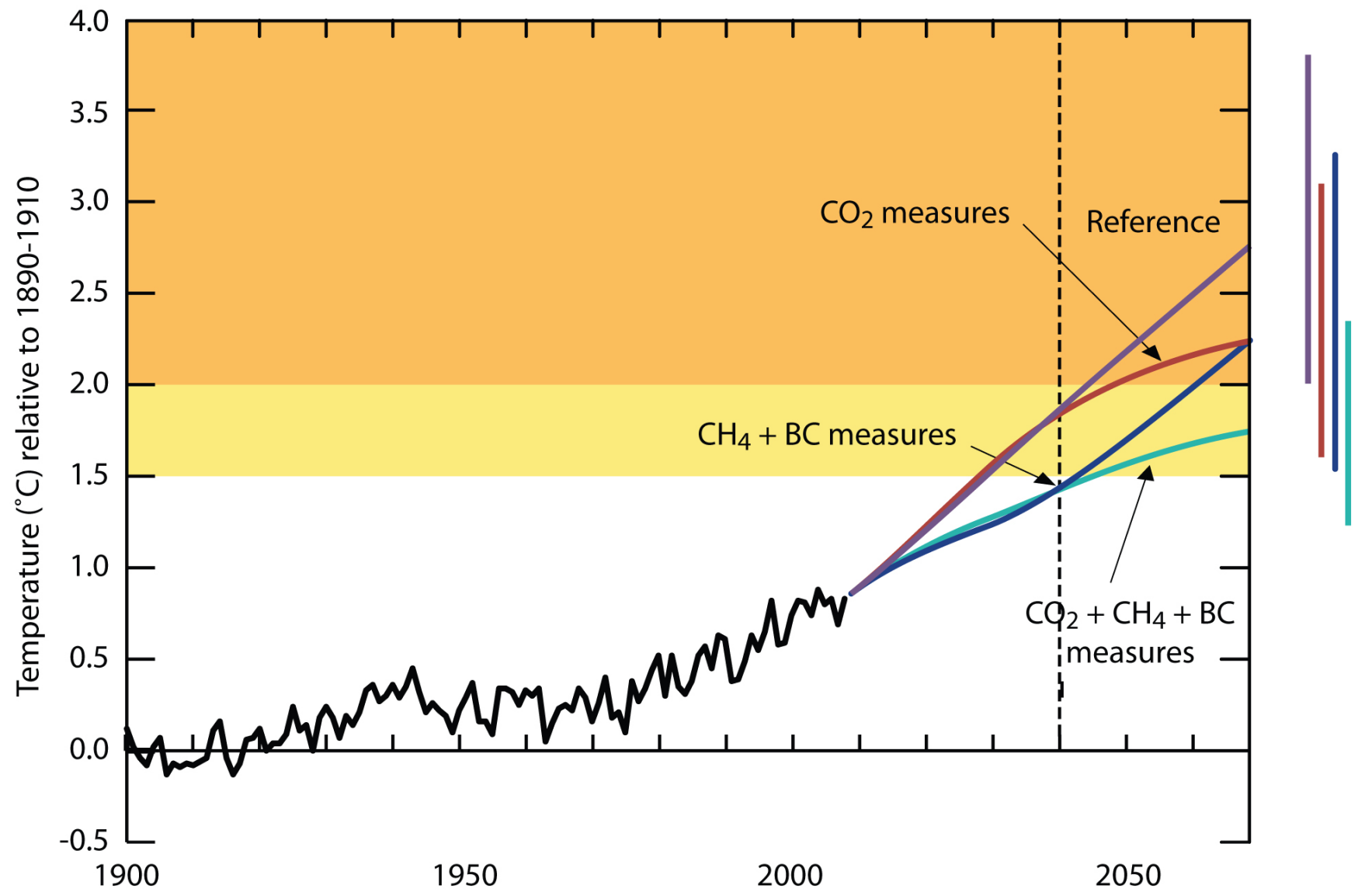
Add to warming when they are in atmosphere

Reducing SLCP will bring short-term gain (**only CO<sub>2</sub> brings long-term gains**)





**Graph:** Contribution of CO<sub>2</sub> and short term forcers to global warming







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# Black carbon: What?

Black carbon – product of incomplete combustion –  
burning fuel in cookstoves; diesel cars; brick kilns

Fraction of the tiny PM 2.5 particle;

Bad for health; inhaled and deadly: **Local pollutant**

Very small life – few hours to few days

Has climate impact. Will absorb heat and warm  
surrounding atmosphere

AR5 has doubled estimate of warming (radiative  
forcing) of BC from fossil fuels and biofuels from  
previous report: **Global pollutant**





# PM vs BC?

## Particulate Matter

- All combustion processes
- All dust generating activities
- Secondary particulates – Nitrates and sulfate
- The condensation of gases into liquid droplets

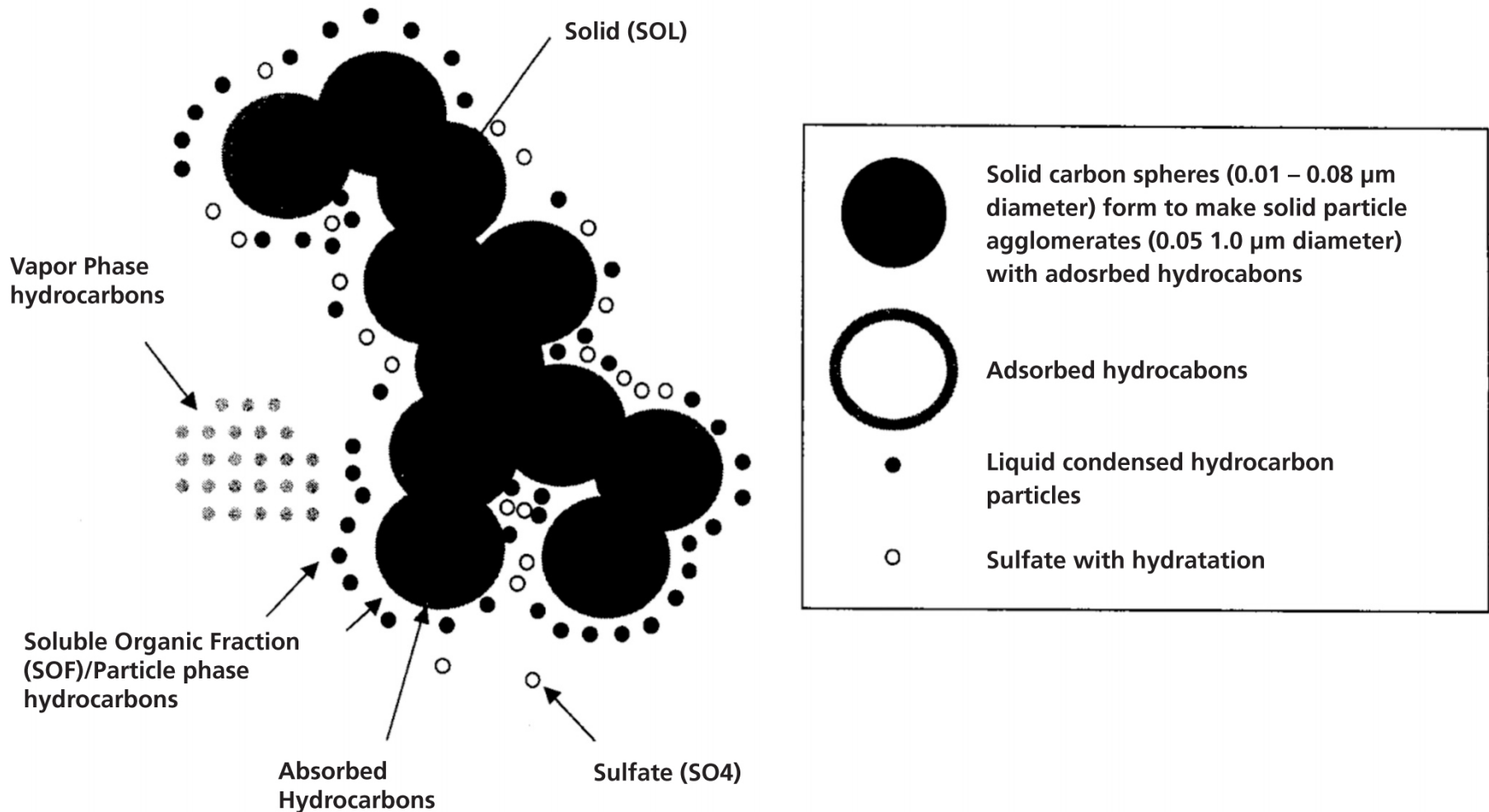
## Black Carbon

- Part of PM2.5.....
- Low temperature combustion of carbonaceous fuels
- Incomplete combustion....
- These last upto one week or little more in the atmosphere



# Black carbon: brings local and global pollution together

**Figure:** Black carbon is the core of diesel particulate matter







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# What does the world do?

Two options:

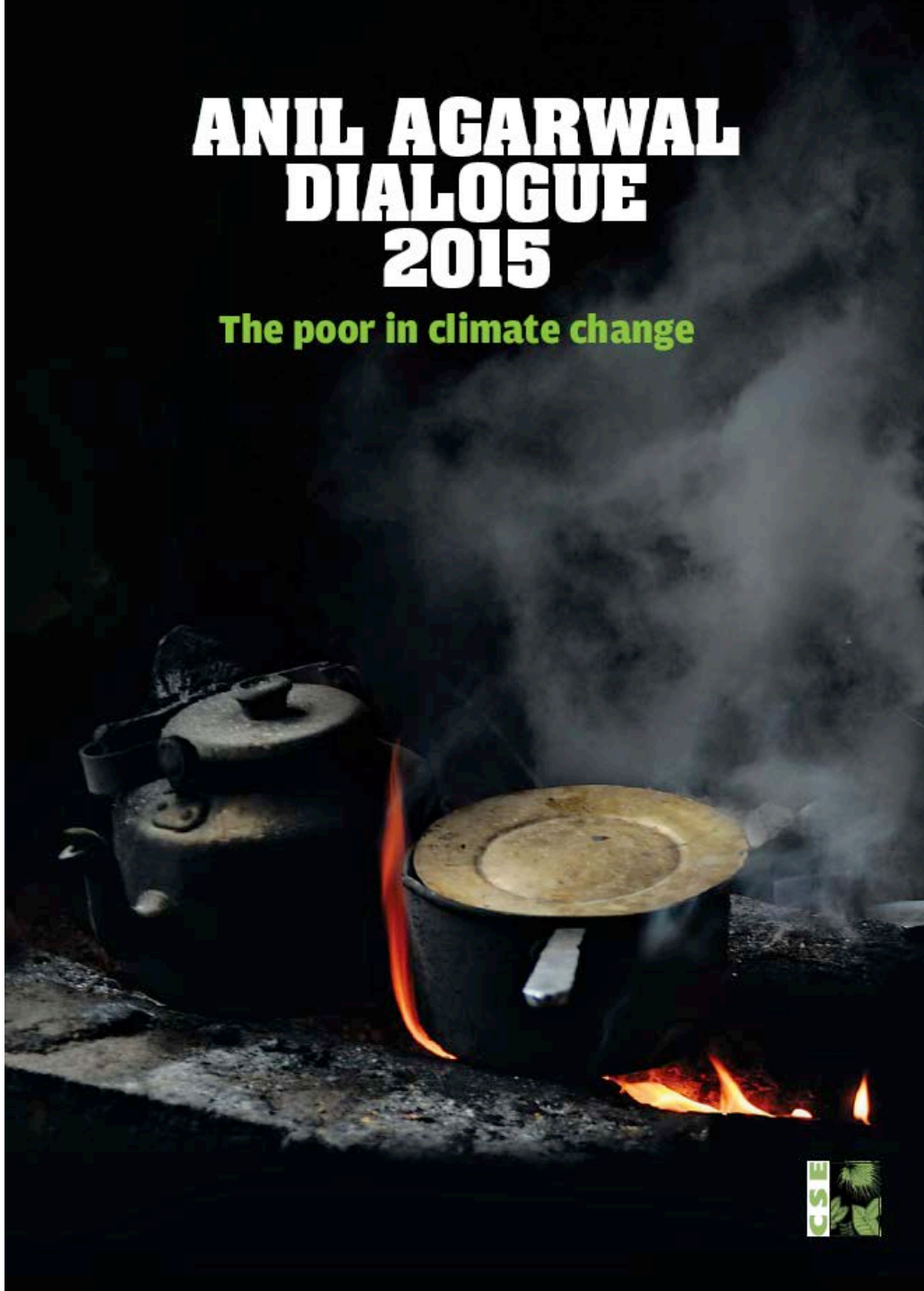
1. **Turn against the poor** – push responsibility for action on them; buy time for SUVs and continue to emit CO<sub>2</sub> by asking for action on short-lived climate pollutants
1. **Work with the poor** – see opportunity to leapfrog – to clean energy, clean housing and clean air for all





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The poor in climate change







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# The politics

1. **Action must not distract from cutting CO<sub>2</sub>:**  
cannot be proxy for action on climate change; shift blame and burden
2. **Action must differentiate between luxury and survival emissions in short-lived climate pollutants** – emitted by rich (diesel) must be aggressively targetted and those emitted by poor (cookstoves) need supportive policies
3. **Country action on black carbon** – not part of Kyoto 6 package of greenhouse gases – must be accounted for differently







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# The opportunity

Options to move from **non-fossil** to **non-fossil**

Women cooking on inefficient, polluting, biomass cookstoves part of **old** renewable energy

Can move to LPG and be part of fossil-present (like you and me). Will add to climate burden but will use cleaner energy

Or

Can move to solar mini-grid provided electricity for cooking

Remember CO2 once emitted stays..







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# **The challenge: Reinvent reinvent**

Can we improve the efficiency and pollution impact of each appliance – car, stove or brick kiln

Is this going to work?

**Or do we need transformational solutions?**

Mobility

Clean energy access

Affordable and sustainable building materials







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# Global-needs local..

The co-benefit agenda is possible

Needs to be better informed

Needs to be better positioned

Needs us to deliberate and to push the way ahead

