THE COST OF AIR POLLUTION

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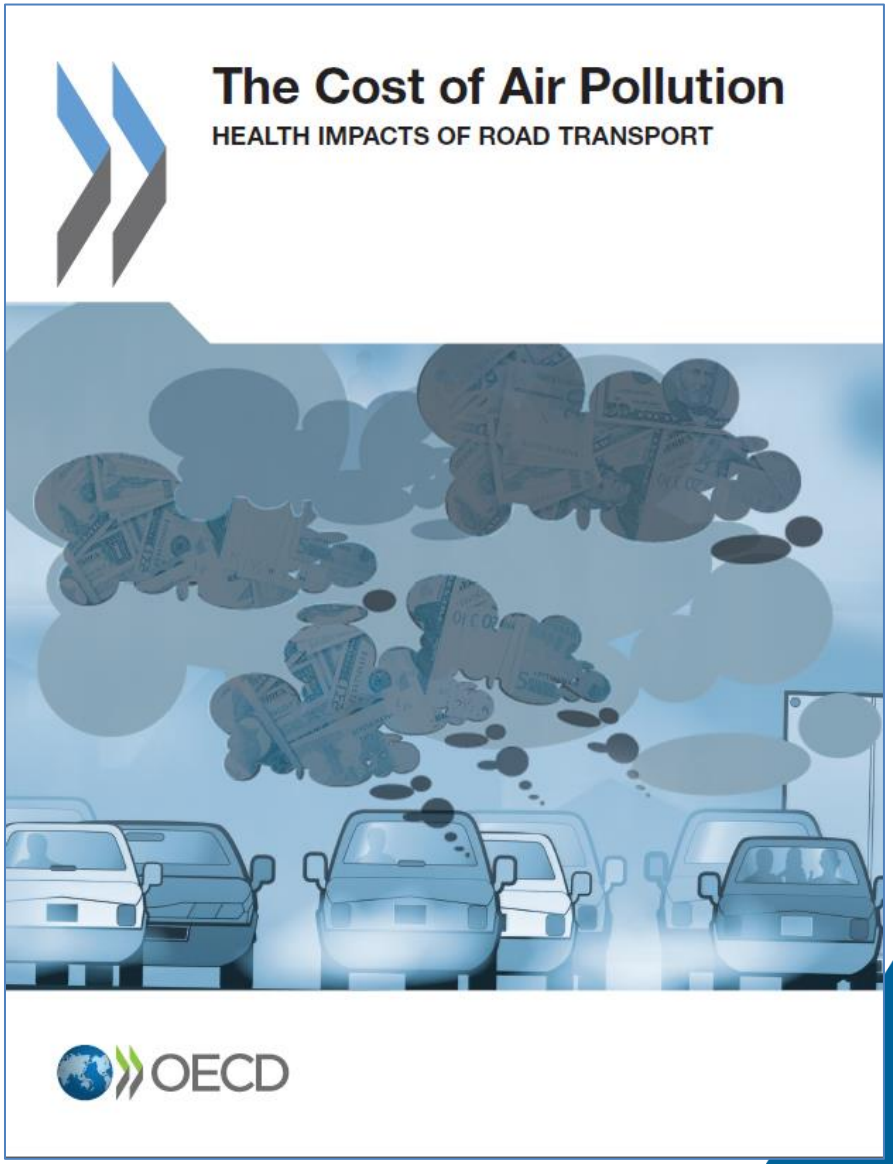
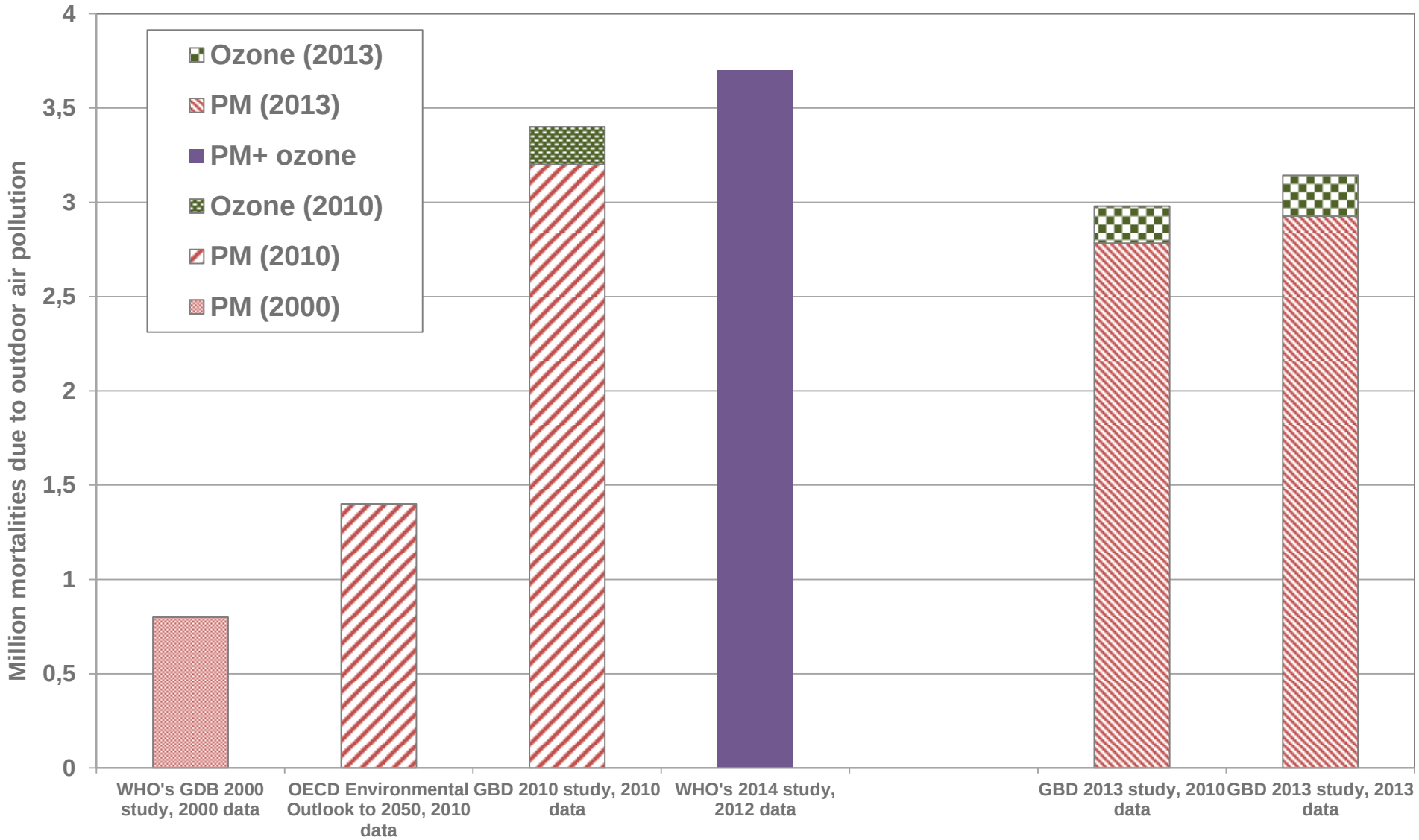
BETTER POLICIES FOR BETTER LIVES

Introduction

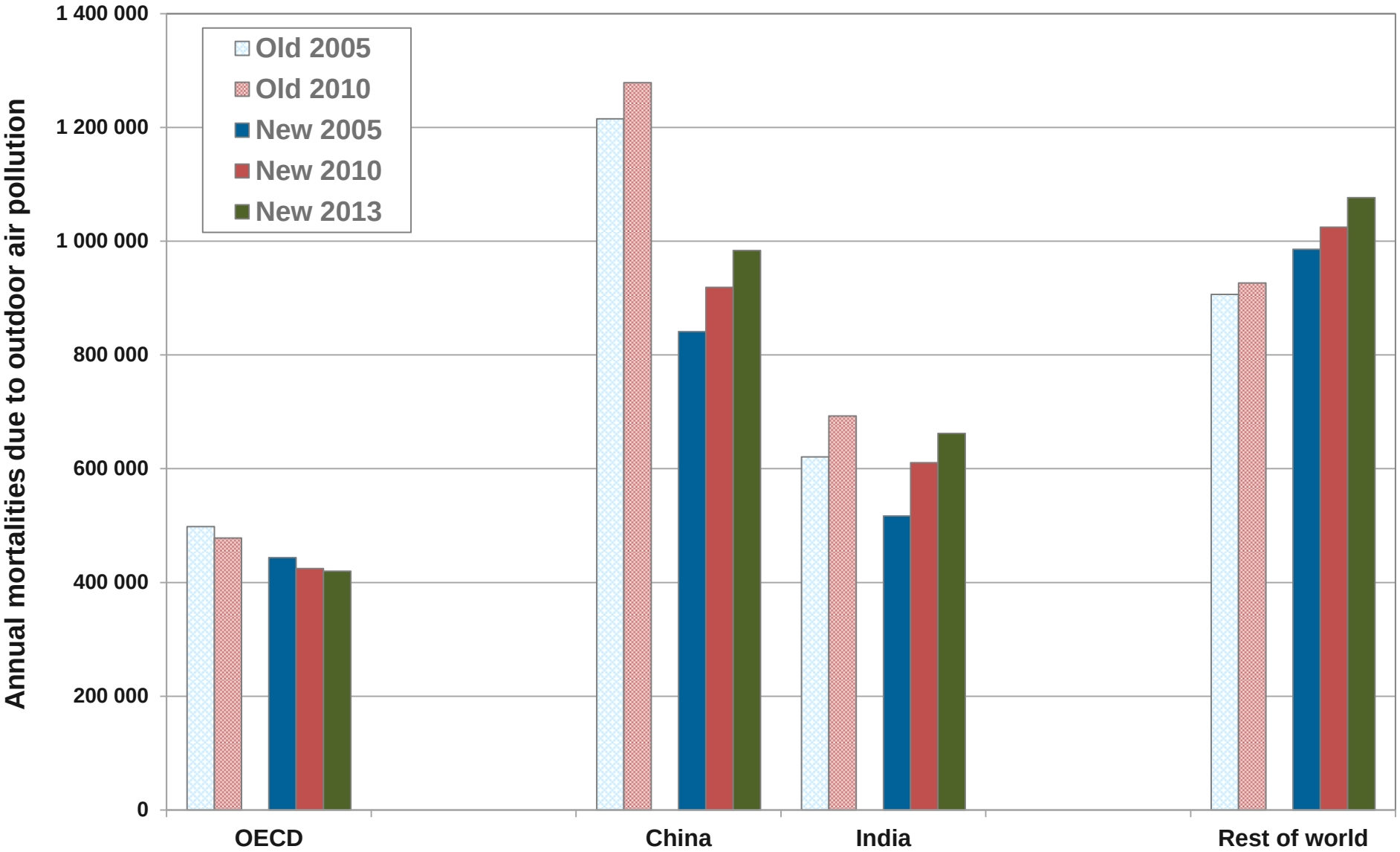
- In 2014, OECD published the new book : *The Cost of Air Pollution: Health Impacts of Road Transport*.
- The report was prepared by Dr. Rana Roy.



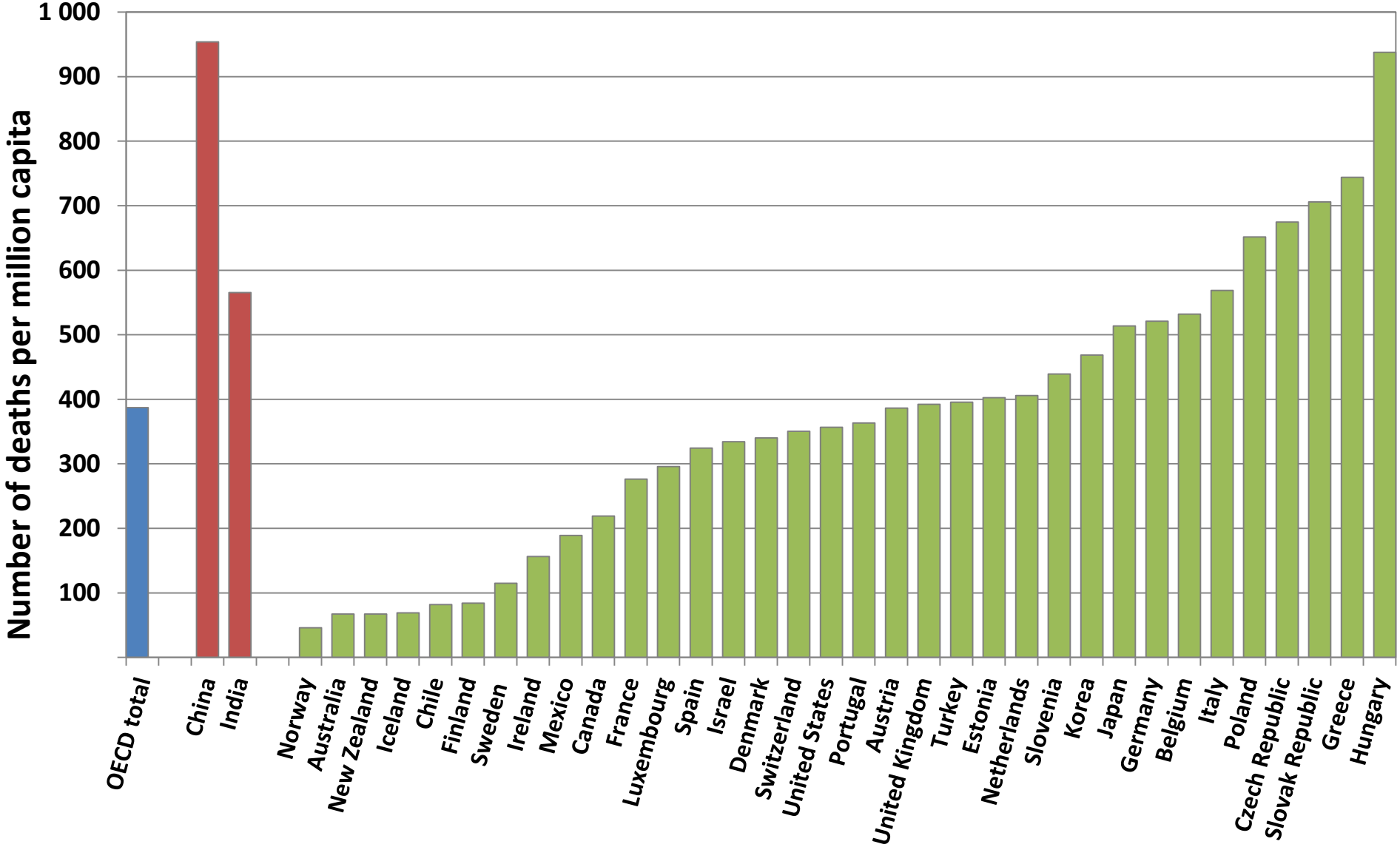
Global mortalities from outdoor air pollution



Mortalities from outdoor air pollution by region



Mortality from air pollution 2010 data, per million capita



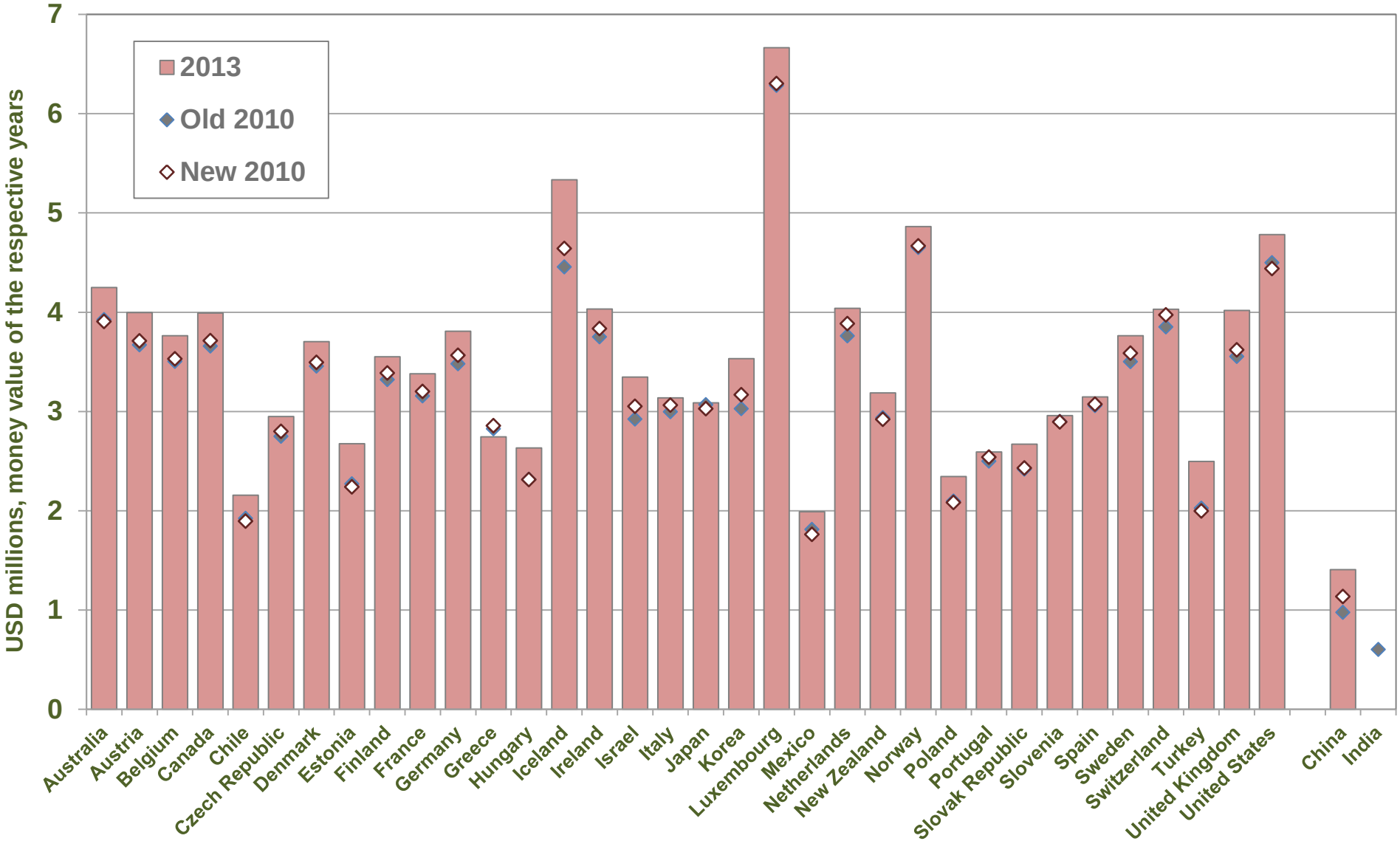
The economic costs of mortalities

- The 2012 OECD publication *Mortality Risk Valuation in Environment, Health and Transport Policies* established a new method for calculating country-specific “value of a statistical life”.
- The study did not find any evidence that VSL varies with the age of the respondents.

Mortality and morbidity costs: Theory

- "**Value**" is a measure of what individuals value – incl. consumption, leisure, health and life – and "cost" is a measure of their loss.
- The **cost of mortality** is the "value of statistical life" (VSL) – the trade-off between consumption and a reduction in the risk of dying. VSL is based on individuals' "willingness-to-pay".
- **Morbidity** (sickness) imposes multiple costs (not only health, but also consumption and leisure) – and on several agents.
- No agreed method or values for calculating the cost of morbidity.
- Current best estimate available: 10% of the cost of mortality

The value of a statistical life I



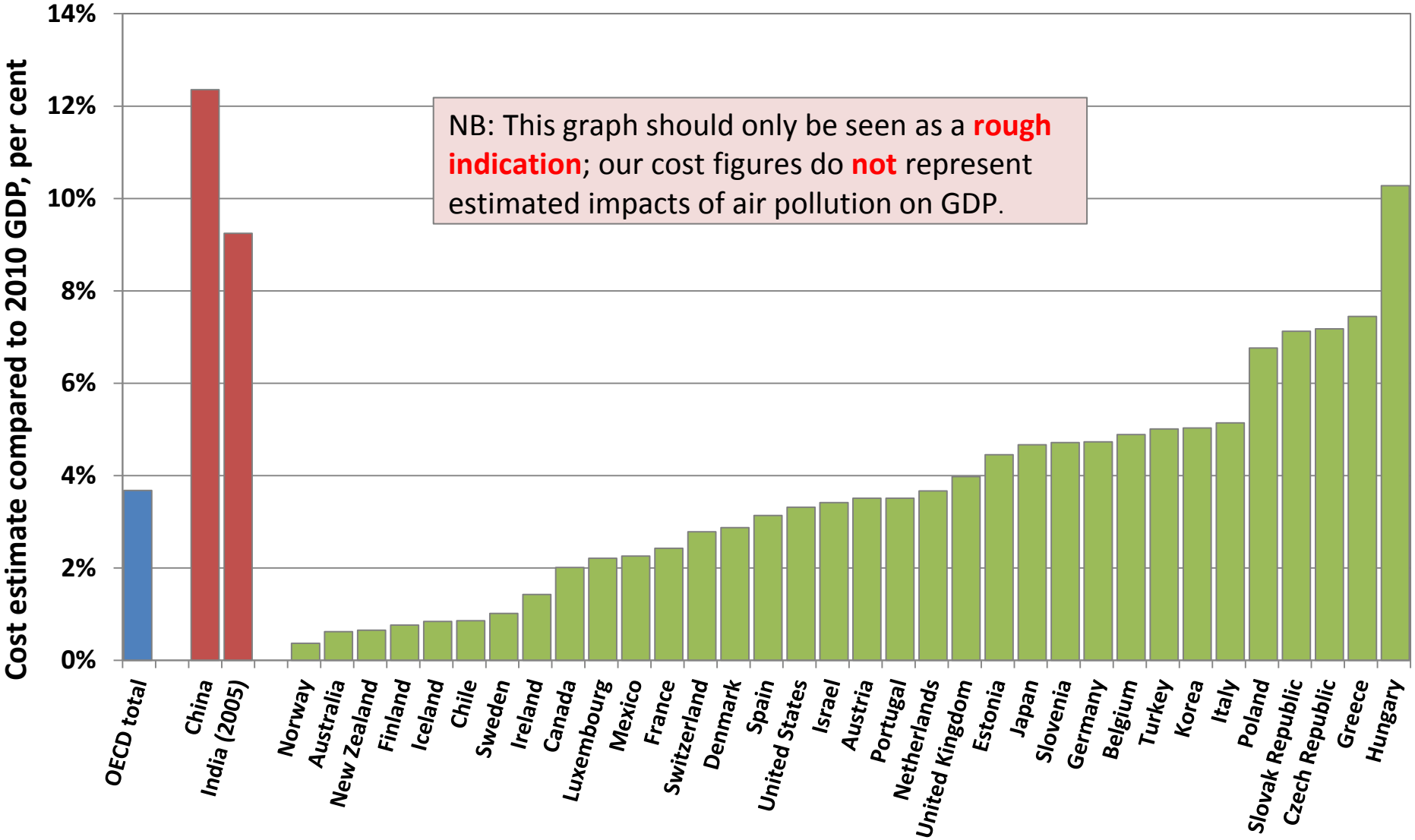
The value of a statistical life III

- VSL values for OECD countries are much higher than countries like China or India.
- Lower incomes mean there is less consumption that can be traded off to reduce the risk of death.
- But the gap is narrowing.
- Higher incomes means higher VSL values.

The cost of air pollution

- Using VSL values and the estimated mortalities, the economic cost of deaths from outdoor air pollution for OECD countries in 2013 was almost USD 1.5 trillion.
- Adding 10% to account for morbidity costs gives ~USD 1.65 trillion.
- The economic cost of deaths from ambient air pollution in China was also high: USD 1.4 trillion in China only for the mortalities; USD 1.5 trillion with a 10% addition to cover morbidity costs.

2010 cost estimate compared to 2010 GDP



VSL vs. VOLY

- VOLYs are rarely derived from WTP surveys, but instead reflect the valuations of external parties.
- VOLYs will necessarily produce results that are inconsistent with the results given by VSLs:
  - The cost of the death of a group of people of a given age will be counted as less than the death of a comparable group of younger people with otherwise identical characteristics.
- The VOLY-QALY approach explicitly places a lower value on reductions in mortality risk accruing to older populations.
- There is no reason to assume that people would place the same value on an additional life year across their lifespan;
  - For a 30 year old, and additional life year (at the end of expected lifespan) could matter less than for an 80 year old person.

Follow-up and further work

- OECD's Development Centre has made similar cost estimates for countries in Southeast Asia and is preparing such estimates for Africa (with indoor air pollution also included).
- WHO Europe and OECD has prepared similar estimates for the 53 countries in the WHO Europe region.
- New work has been done on the economic costs of morbidity (illness), comparable to the "value of statistical life" used in relation to mortality.
- See OECD Environment Working Paper No. 99 – shortly.
- The 10% estimate from *The Cost of Air Pollution* still seems to be in the right ballpark.