

UN-HABITAT

STATE OF THE WORLD'S CITIES 2006/7



The Urban Penalty: Pollution & Sustainability

The highly urbanised developed regions of the world generate by far the greatest proportion of carbon dioxide (CO₂), the principal greenhouse gas. This is caused by burning fossil fuels such as petrol and coal. While many of these countries are putting in place reforms to limit air pollution, it is on the rise in the industrialising cities of **Asia**.

Additionally, a primary source of indoor air pollution is the burning of biomass fuel - firewood, charcoal, crop residues and animal dung. When burned, they release carbon monoxide and methane which cause chronic respiratory diseases including lung cancer and pneumonia.

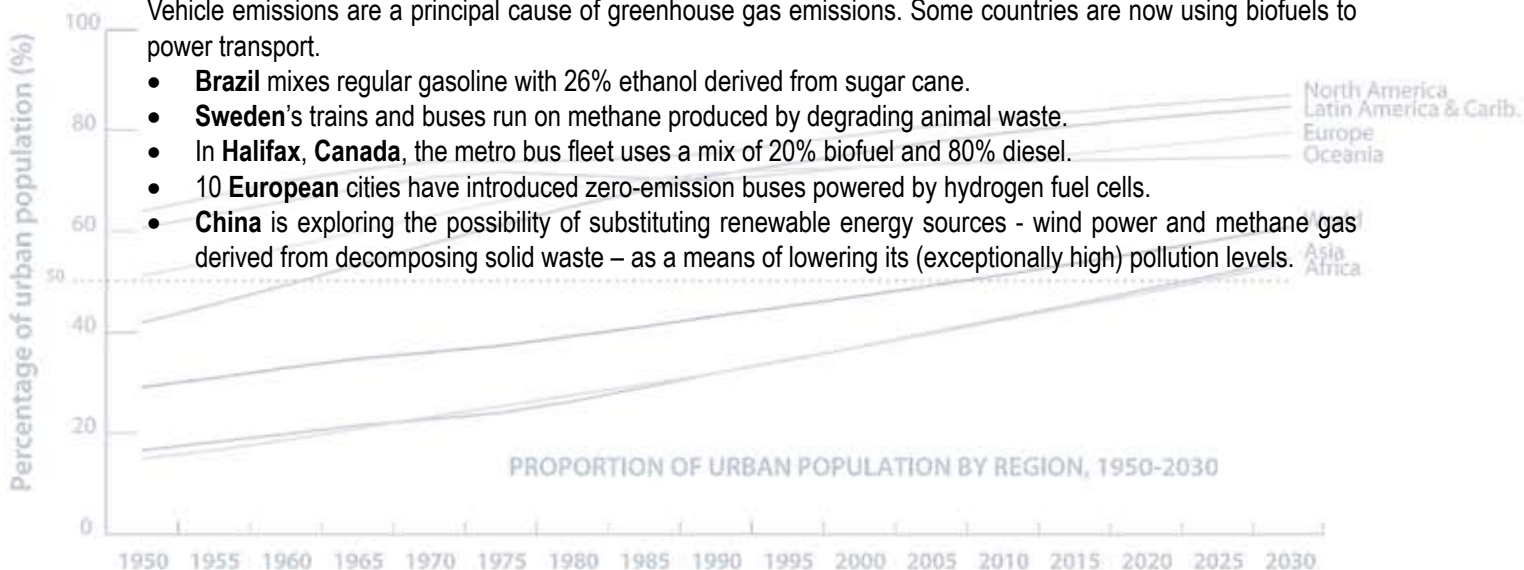
- The developed regions emitted 12.58 metric tons of CO₂ per capita in 2002.
- The developing world emitted 2.07 metric tons of CO₂ per capita in 2002.
- Global emissions of CO₂ will increase by more than 60% between 1997 and 2010.
- Developing countries will generate 65% of this increase, primarily from China.
- Urban outdoor air pollution kills 3 million people annually.
- 2.4 billion people, almost half the global population, use biomass fuels daily.
- 1 million children die as a result of indoor air pollution every year.
- **China** is one of the principal culprits when it comes to air pollution. 16 of the world's 20 most polluted cities are in **China**. It is the second largest producer of greenhouse gases, exceeded only by the **United States**. It is also the world's largest producer and consumer of bituminous coal, which is the main contributor to its air pollution. More than 60% of the Chinese population burns coal at home. In **Beijing**, more than 400,000 people die each year of pollution-related illnesses.

Renewable Energy Sources

Switching to renewable energy sources – wind, solar, modern biomass, geothermal, small hydro-electric systems – is crucial for the sustainability of cities. The Kyoto Protocol, signed by 84 countries in 1997, encourages investment in renewable energy. At least 48 countries now have a renewable energy promotion policy, including 14 developing nations. But as yet only 4% of the world's electricity is generated by renewable energy though global investment in renewable energy topped \$30 billion in 2004.

Vehicle emissions are a principal cause of greenhouse gas emissions. Some countries are now using biofuels to power transport.

- **Brazil** mixes regular gasoline with 26% ethanol derived from sugar cane.
- **Sweden's** trains and buses run on methane produced by degrading animal waste.
- In **Halifax, Canada**, the metro bus fleet uses a mix of 20% biofuel and 80% diesel.
- 10 **European** cities have introduced zero-emission buses powered by hydrogen fuel cells.
- **China** is exploring the possibility of substituting renewable energy sources - wind power and methane gas derived from decomposing solid waste – as a means of lowering its (exceptionally high) pollution levels.



Goal 7: Ensure Environmental sustainability

*Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
Halve, by 2015, the proportion of people without access to safe drinking water and basic sanitation
By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers (Goal 7, Target 11)*

Air Pollution ©ALUSTAIR.SCOTT: IMAGE FROM BIGSTOCKPHOTO.COM



Sustainable urban development

- Sustainable urbanization policies have been incorporated in many city and national plans and are contributing to reversing the impact of environmental degradation and pollution. Cities with sound and sustainable land, air and water management policies have also managed to reduce soil erosion, improve air and water quality and protect biodiversity within cities and in their hinterlands. Some cities in the developed world are unilaterally reducing greenhouse gas emissions and other pollutants as part of their respective governments' commitment to adhere to the Kyoto Protocol.
- Cities concentrate production and population, which gives them obvious advantages over rural settlements or dispersed populations. For example, the concentration of populations in urban areas greatly reduces the unit cost of piped water, sewers, drains and roads. The use of environmentally friendly energy sources and transport can reduce these costs even further.

Slums

- Slums provide an important entry point for the achievement of all the Millennium Development Goals in cities; the sheer concentration of people living in slums make them ideal targets for interventions aimed at reducing poverty, reducing child mortality and HIV/AIDS, improving literacy and promoting environmental sustainability in urban areas.

Sustainable urban development

- Urbanization can bring about irreversible changes in production and consumption of water, energy and land. Both developed and developing countries are witnessing rapid urban sprawl with direct consequences for the surrounding hinterland.
- Air pollution is concentrated in cities. The concentration of industrial emissions and increased motorized transport in cities is severely eroding their environmental sustainability and is affecting the health of urban populations. Acute respiratory illnesses associated with poor air quality and poor housing conditions are impacting the human and economic productivity of cities, particularly in Asia; it is estimated that the health costs from pollution reduce gross domestic product (GDP) by some 2 per cent in developing countries.

Slums

- The rate at which slums are growing exceeds the rate at which they are being improved. This severely impacts the achievement of Goal 7, target 11: by 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers. Some 200 million more slum dwellers have been added to the world's urban population since 2000; if current trends continue, by 2020, there will be 400 million more people drawn into the misery of slum life and the global slum population will reach 1.4 billion.
- Slum dwellers are more likely to live in hazardous or toxic locations, which are more prone to natural disasters, such as floods, and which pose severe health risks, not just to slum dwellers but to city dwellers in general.
- Although access to water and sanitation is generally better in urban areas than in rural areas globally, the consequences of poor access in cities are more severe. Many slum dwellers have no choice but to use water sources, such as rivers, to bathe and wash clothes. Poor sanitation in some cities has also led to large sections of the population defecating in the open. This contributes to contamination of water and land resources within cities, and is a cause of many of the water-borne diseases prevalent in slums.
- Indoor air pollution caused by the use of solid fuels is prevalent in slums and is a leading cause of respiratory illnesses in urban areas, particularly among women and children.

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