

Introduction to the urban environment

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Aristotle's "Politics": defining polis



In “Politicae (politics)”: Key Ethical & Political Terms:

- Virtue
- Happiness (final end, goal, destination)
- Nature
- **Polis (city)**
- Hierarchy
- Final Cause/End—*Telos* (fulfillment)

These are intertwined like the ball of yarn, which unravels when one tugs the string.

The “Polis”: giving birth to the city

- *The Polis (city-state) provides the highest life for man, by enabling him to fulfill his purpose.*
 - *“Man has reason, and his telos (final end, goal for life fulfillment) is to use that reason”*
towards....
 - *“Happiness (which) is an activity of the soul (the reasoning part of our being) in accordance with virtue (Nicomachean Ethics)”*

Thus: *“A city is not a mere alliance for defense or a trading association; it has a higher purpose or end”*; this is served by the actions of men, who are *“by **nature** a political animal”* (emph. added; *Pol. I.2*), acting on the basis of the *“best regime promotes the good of all, not just of one class, group or section of the population”*

So, what is a city?

- ❑ The first suggestion is that it was a large concentration of people – a social entity.
- ❑ Mumford wrote in *The Culture of Cities* (1937) “The point of maximum concentration for the power and culture of a community...the form and symbol of an integrated social relationship: it is the seat of the temple, the market, the hall of justice, the academy of learning.”
- ❑ Every serious definition of the city arrives at a point when it must be considered as both a social and a physical phenomenon.

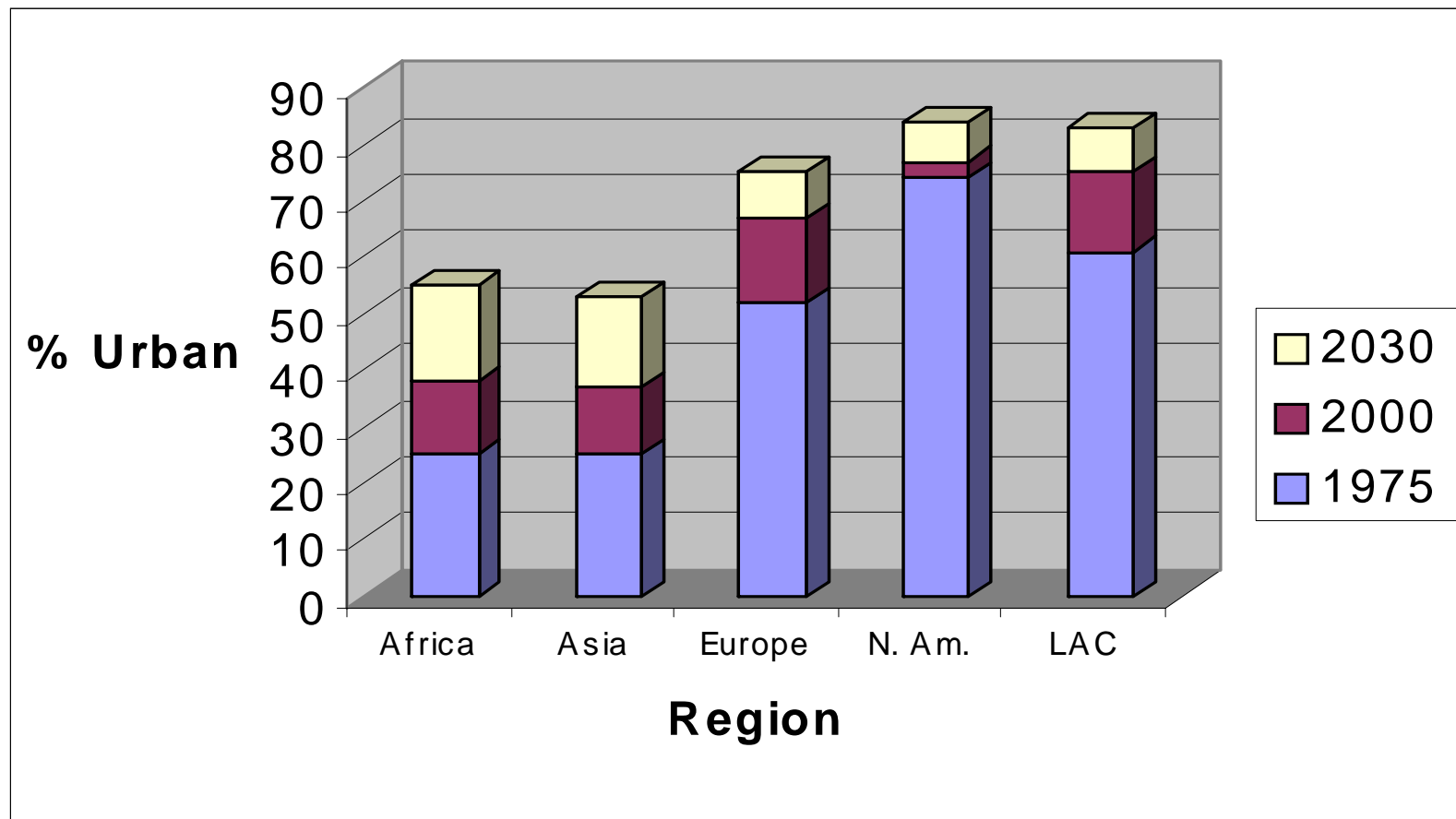
Urban development

- ❑ Cities or urban areas are defined as the physical environment that it is composed by a complex mix of natural elements including air, water, land, climate, flora and fauna, and the built environment that is constructed or modified for human habitation and activity, encompassing buildings, infrastructure and urban open spaces.
- ❑ Urban citizens, in the developed countries, have benefit from the huge technological developments offered by the industrial revolution. Major problems of the 19th century have been solved, while the economic development has permitted to improve the life standards both quantitatively and qualitatively.

Urban development

- ❑ Social pressures and higher income associated with the urban lifestyle increased the capacity and the tendency of urban citizens to consume: the wealthiest 25 percent of the human population consumes almost 80 percent of the world's economic output. However, such an over-consumption has an important impact on the city as well as on the global environment.
- ❑ Approximately 64 percent of the world's economic production/consumption and pollution is associated with cities in rich countries, while other environmental problems like heat island and indoor air quality have an important impact on the overall environmental quality of cities and health of city – dwellers.

Graphic: Percentage of population residing in urban areas, 1975 - 2030



Data source: UN Population Division, 1999

An Urban Future

- In 2007: half of world's population will be urban (about 3.2 billion people)
- Developed world & Latin America:
 - About 75% of population lives in urban areas
 - By 2030 84% will live in urban areas
- Developing world:
 - 40% of the population lives in urban areas
 - By 2030 56% will live in urban areas

Urban development

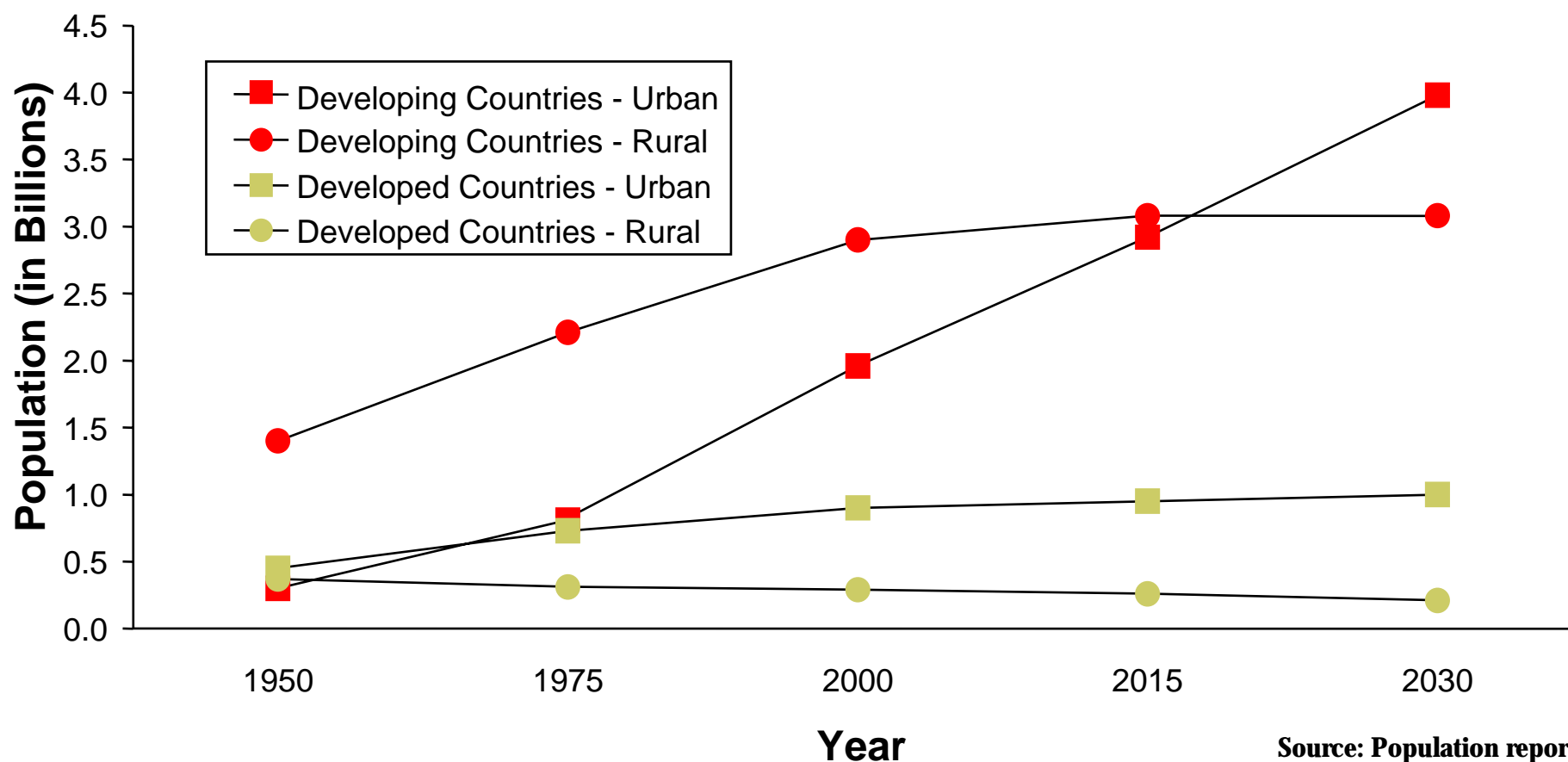
- ❑ The widely agreed set of priorities to improve cities, define an agenda of actions, which usually is called the agenda of sustainable cities.
- ❑ However, the term is quite misleading as there is no agreed and clear definition what the term 'sustainable cities' mean. In parallel, as cities are systems that just import energy and material from their immediate and host environment and then export back degraded energy, waste and pollution, can not be 'sustainable' by definition.
- ❑ Despite that, cities have to meet human needs in settlements without depleting environmental capital and poverty, inequalities and the very important depletion of the environmental capital, are emerging problems that ask for immediate actions.

Urban development

- ❑ Appropriate strategies aiming to reduce over consumption, increase the use of renewable resources and reduce the production of wastes and of the degraded energy up to a level not exceeding the assimilative capacity of local ecosystems or the ecosphere seems to be the high priorities in cities of the developed world.
- ❑ In parallel, sustainable strategies for cities in less developed regions focus mainly on the provision of basic human needs, such as appropriate dwellings, energy and water supply, sanitation systems, education, and health care services.

Urban Growth Most Rapid in Developing Countries

Estimated and Projected Urban and Rural Populations of Developing and Developed Countries, 1950-2030

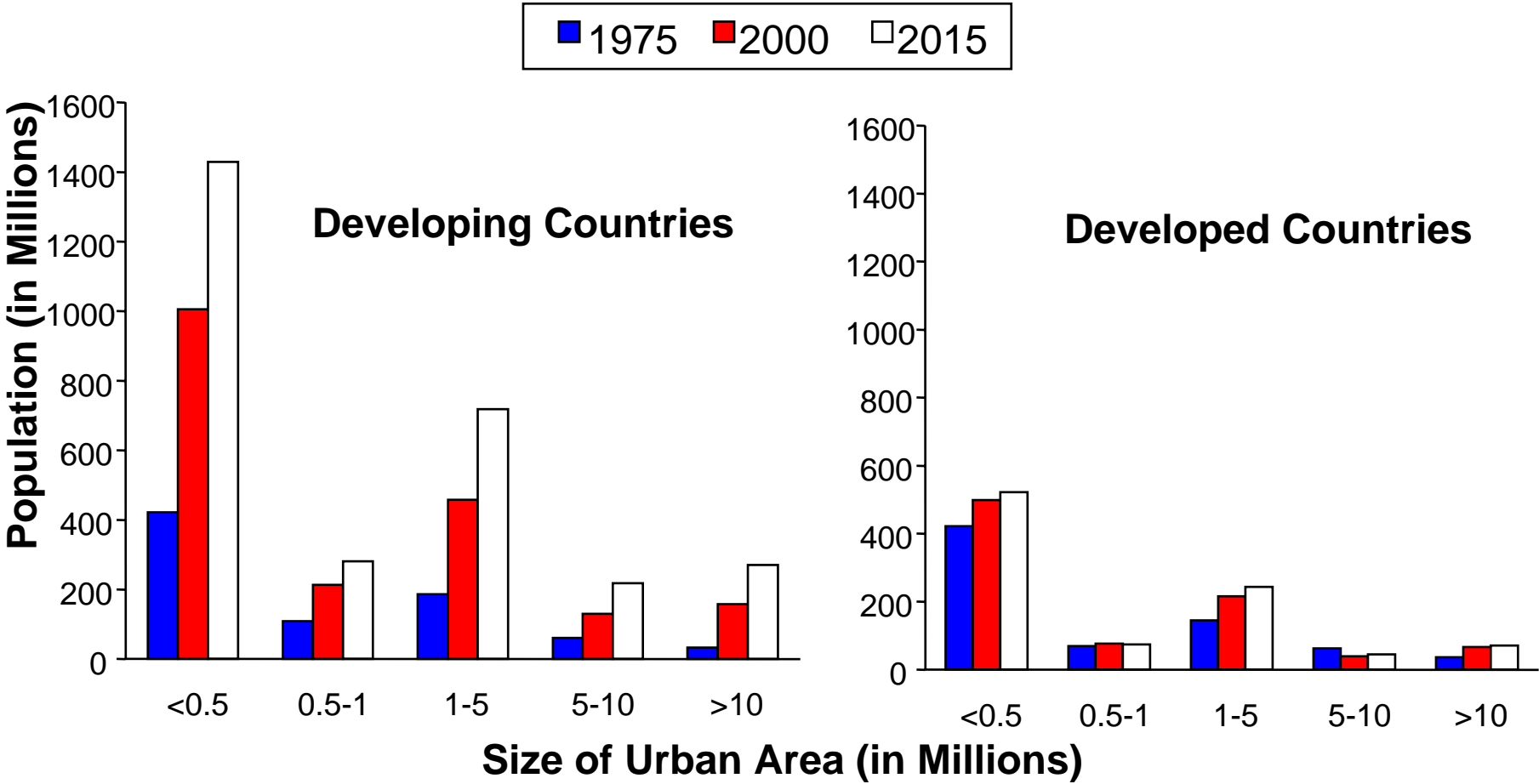


Source: Population reports,
<http://www.infoforhealth.org/pr/index.shtml>

Growing Number of Big Cities

Size of City	2000	2015
Million cities	388	554
Developing	274	426
Developed	114	128
Megacities	17	21
Developing	13	17
Developed	4	4

Population Distribution of Developing and Developed Countries by Size of Urban Area and Year



Source: Population reports, <http://www.infoforhealth.org/pr/index.shtml>

Explaining Urban Growth

- Migration from rural and other urban areas
 - more prominent during initial phases of urbanization
- Natural population increase
 - more prominent during later phases of urbanization
- Reclassification of rural areas to urban

Urban Growth and Energy

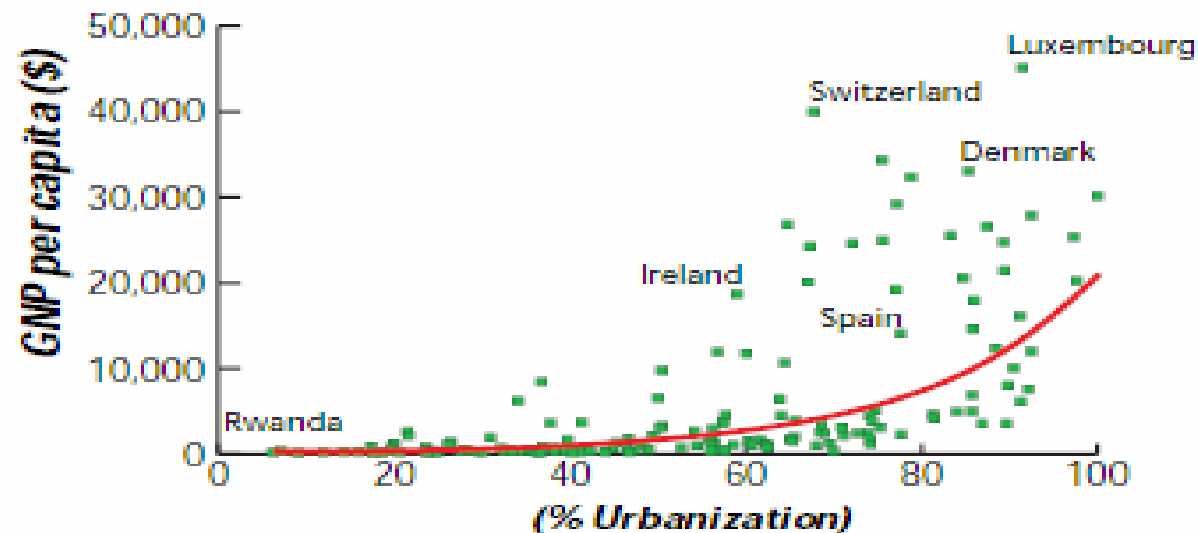
- ❑ Energy is one of the more important factors that define the quality of urban life and the global environmental quality of cities. The urbanisation process dramatically affects energy consumption. A recent analysis, showed that a 1 percent increase in the per capita GNP leads to an almost equal (1.03), increase in energy consumption.
- ❑ However, as reported, an increase of the urban population by 1 %, increases the energy consumption by 2.2 %, i.e., the rate of change in energy use is twice the rate of change in urbanization.
- ❑ Increase of the energy efficiency, use of renewable resources to supply cities, improvement of the urban thermal microclimate and adoption of sustainable consumption policies, seems to be the main tools to reduce the energy consumption in cities of the developed world.

Social dimension of urban environmental problems

- ❑ The concept: City as a space where different groups of actors interact and look for compromises and solutions of problems, which could be relevant to local context.

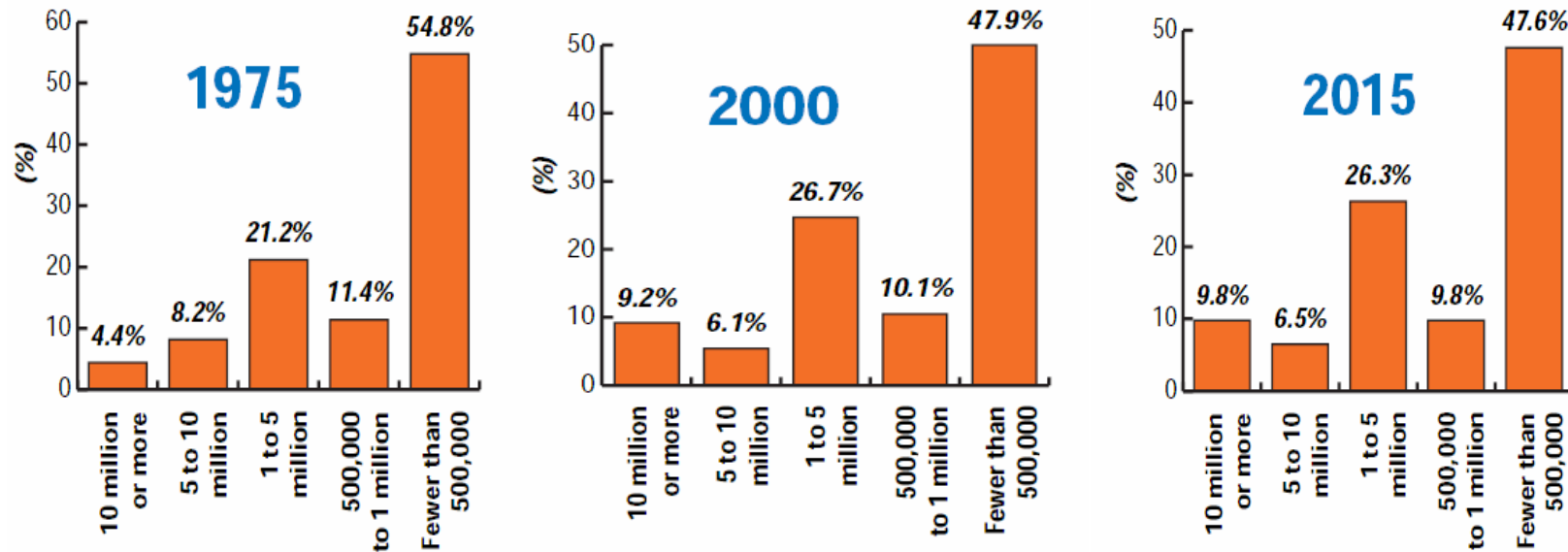
Urbanisation vs. GNP

URBANISATION VERSUS GNP



As a result of the rapid urban growth, important environmental, social, political, economic, institutional, demographic and cultural problems have appeared. Poverty, environmental degradation, lack of sanitary and other urban services, lack of access to land and adequate shelters are among the more serious ones.

Size of urban agglomerations



As a result of the rapid urbanization, the size of the world's urban agglomerations has grown dramatically. As mentioned by the United Nations, our planet host 19 cities with 10 million or more people, 22 cities with 5-10 million people, 370 cities with 1-5 million people and 433 cities with 0.5 to 1 million people.

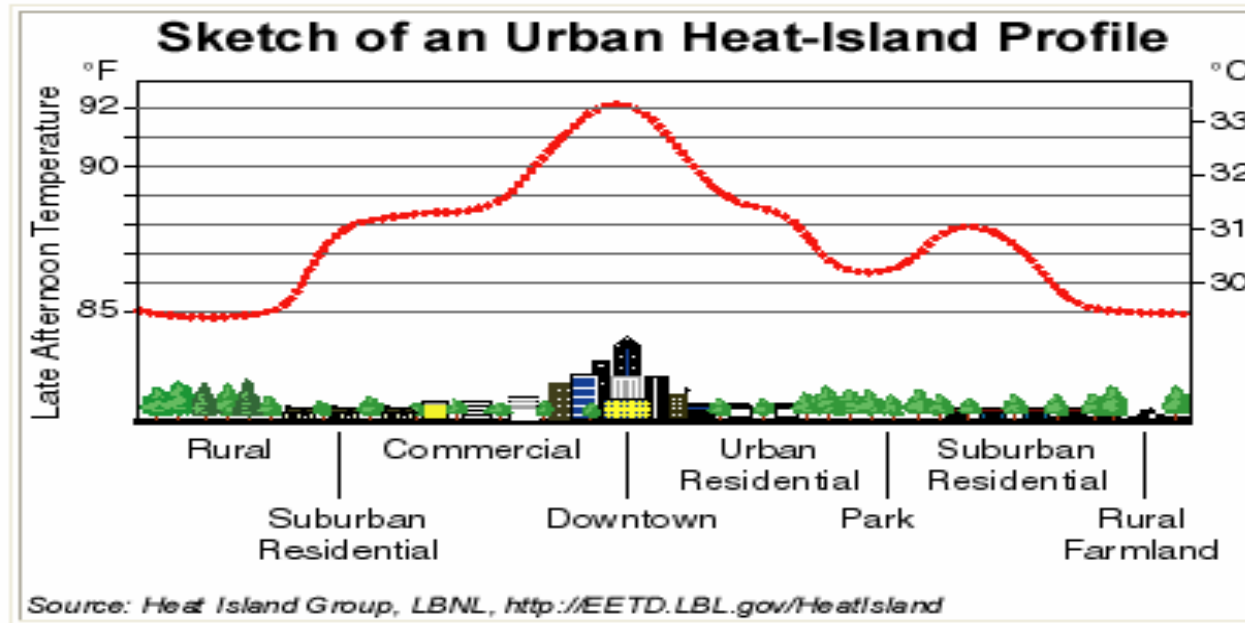
Problems of the Urban Environment

- ❑ Human activity has accumulated problems that has left increased pollutants in the atmosphere, vast areas of land resources degraded, depleted and degraded forests, biodiversity under threat, increasingly inadequate freshwater resources of deteriorating quality and seriously depleted marine resources.
- ❑ Cities contribute highly to that. In a general way, the urban environmental problems may be summarized on three main aspects : the over-consumption of energy and resources that exceed their production by the nature, the production of degraded energy, wastes and pollution more than the assimilative capacity of the ecosphere, and the lack of the necessary infrastructures to ensure health and well being of all citizens in cities of less developed countries.

Problems of the Urban Environment

- ❑ Over-consumption of resources, mainly energy, increased air pollution, heat island, noise pollution, and solid waste management, seems to be the more important environmental problems in urban areas of developed countries.
- ❑ Poverty, increasing unemployment, environmental degradation, lack of urban services, overburdening of existing infrastructure and lack of access to land, finance and adequate shelter, are the more important environmental, social and economic problems in cities of less developed countries

The city influences the environment



- ❑ Deficiencies in development control have important consequences on the urban climate and the environmental efficiency of buildings. Increasing number of buildings has crowded out vegetation and trees. As reported, New York has lost 175000 trees, or 20 % of its urban forest in the last ten years.
- ❑ As a consequence of heat balance, air temperatures in densely built urban are higher than the temperatures of the surrounding rural country. The phenomenon is known as 'heat island'.

Source: Group of Building Environment Research, <http://grbes.phys.uoa.gr/>

But some times the environment defends itself

- Evidence for Athens, Greece:
- Aristotle, Hippocrates, Karapiperis: Etesian winds (“meltemia”) are still more or less the same!
- Aiginitis: mellowing of palm tree fruits => the mean temperature of Athens has not changed the last 23 centuries!

Pollution

- ❑ In Europe it is estimated that in 70 to 80 percent of European cities with more than 500000 inhabitants, the levels of air pollution, regarding one or more pollutants exceeds the WHO standards at least once in a typical year.
- ❑ Health problems associated with the urban environment are mainly associated to the increased use of cars. This has been acknowledged recently by the British Medical Association. Pollution from gasoline and petrol has been proved to be partly responsible for heart diseases. It has been shown that in London, 1 in 50 heart attacks treated in hospitals were strongly linked with carbon monoxide which is mainly derived from motor vehicle exhausts.
- ❑ Indoor air quality and noise problems are also extremely important in Developed Countries. Indoor air quality problems have been identified as the major source of health problems like allergies, asthma, and respiratory problems.

Less developed world: General

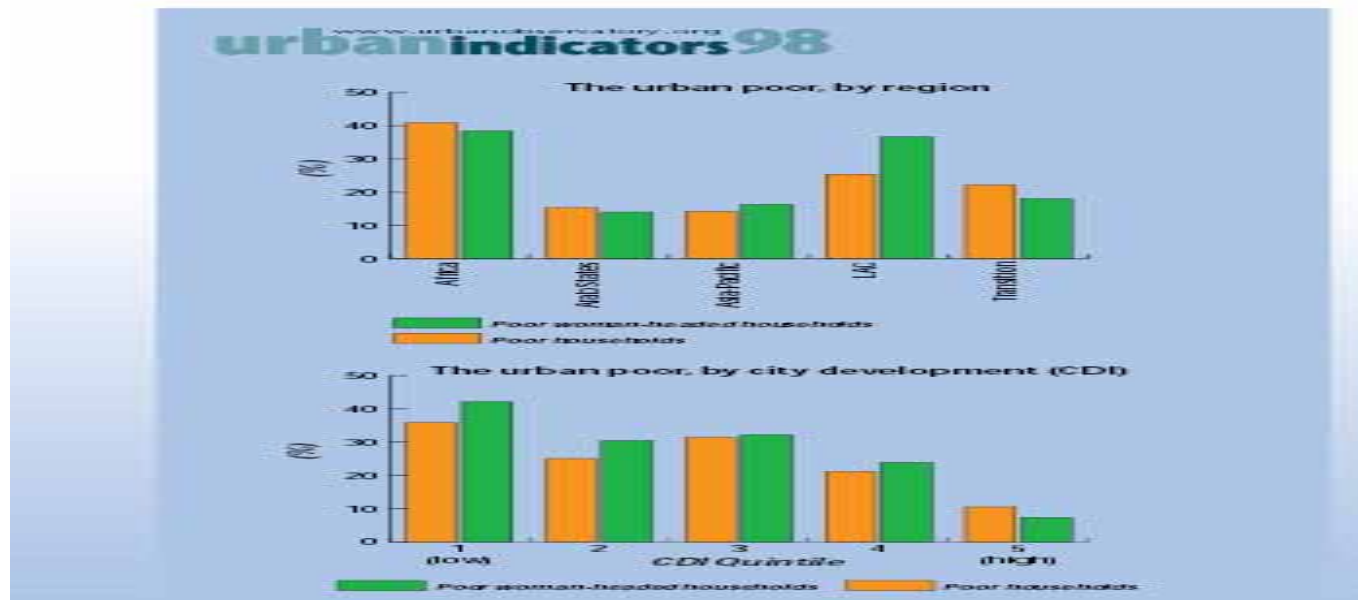
- Poverty, increasing unemployment, environmental degradation, lack of urban services, overburdening of existing infrastructure and lack of access to land, finance and adequate shelter, are among the more important environmental, social and economic problems in cities of less developed countries

Indicator	City product category			
	Low	Lower-middle	Upper-middle	High
Household connections (percent)				
water	48.0	78.8	92.9	99.9
sewerage	45.6	68.7	84.3	99.9
electricity	72.3	93.6	95.0	100.0
Water consumption				
liters per person per day in all settlements	88	161	232	247
Wastewater treated				
percent treated	29.4	56.7	68.2	97.4
Solid waste disposal (percent)				
sanitary landfill or incinerated	30.7	41.4	37.6	77.7
other (open dump, recycled, burned)	65.9	58.3	62.2	22.3
Under-five mortality per 1,000	104.2	39.7	25.8	5.2
Households below the locally defined poverty line (percent)	31.7	23.2	16.0	6.9
Sample size (cities)	49	36	25	20

Source: Group of Building Environment Research, <http://grbes.phys.uoa.gr/>

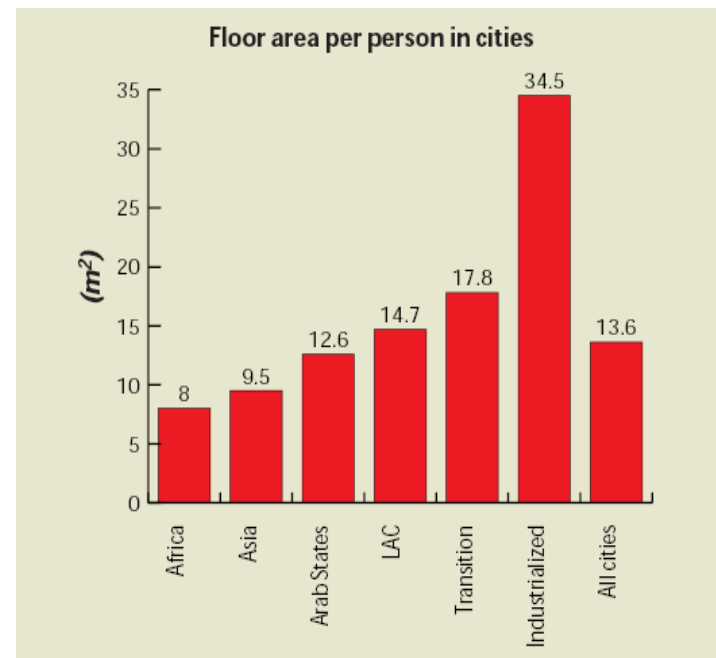
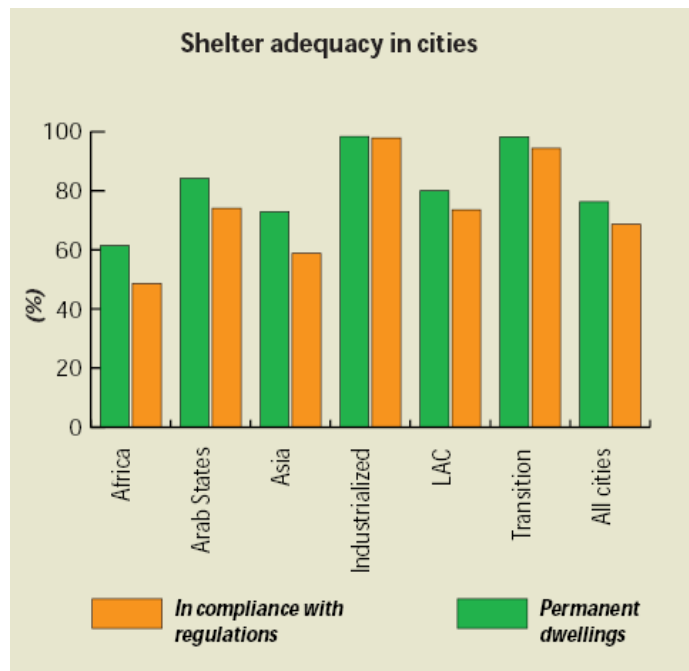
Less developed world: Poverty

- In cities of the less developed world, one out of every four households lives in poverty; 40 per cent of African urban households and 25 per cent of Latin American urban households are living below locally defined poverty lines'. It is characteristic that in 1970, the richest 20 percent of the planet had almost 30 times more income than the poorest 20 percent. In our days, this figure has doubled. The net income of the 358 richest people of the world is larger than the combined annual income of the poorest 45 percent of the world's population.



Less developed world: Housing

- As estimated by the United Nations more than one billion of urban citizens, live in non appropriate houses mostly in squatter and slum settlements, while in most of cities between one and two thirds of the population live in poor quality and overcrowded housing, with insufficient water supply inadequate or no sanitation, non appropriate rubbish collection, no electricity and energy networks and under the risk of flooding and other environmental phenomena.



Source: Group of Building Environment Research, <http://grbes.phys.uoa.gr/>

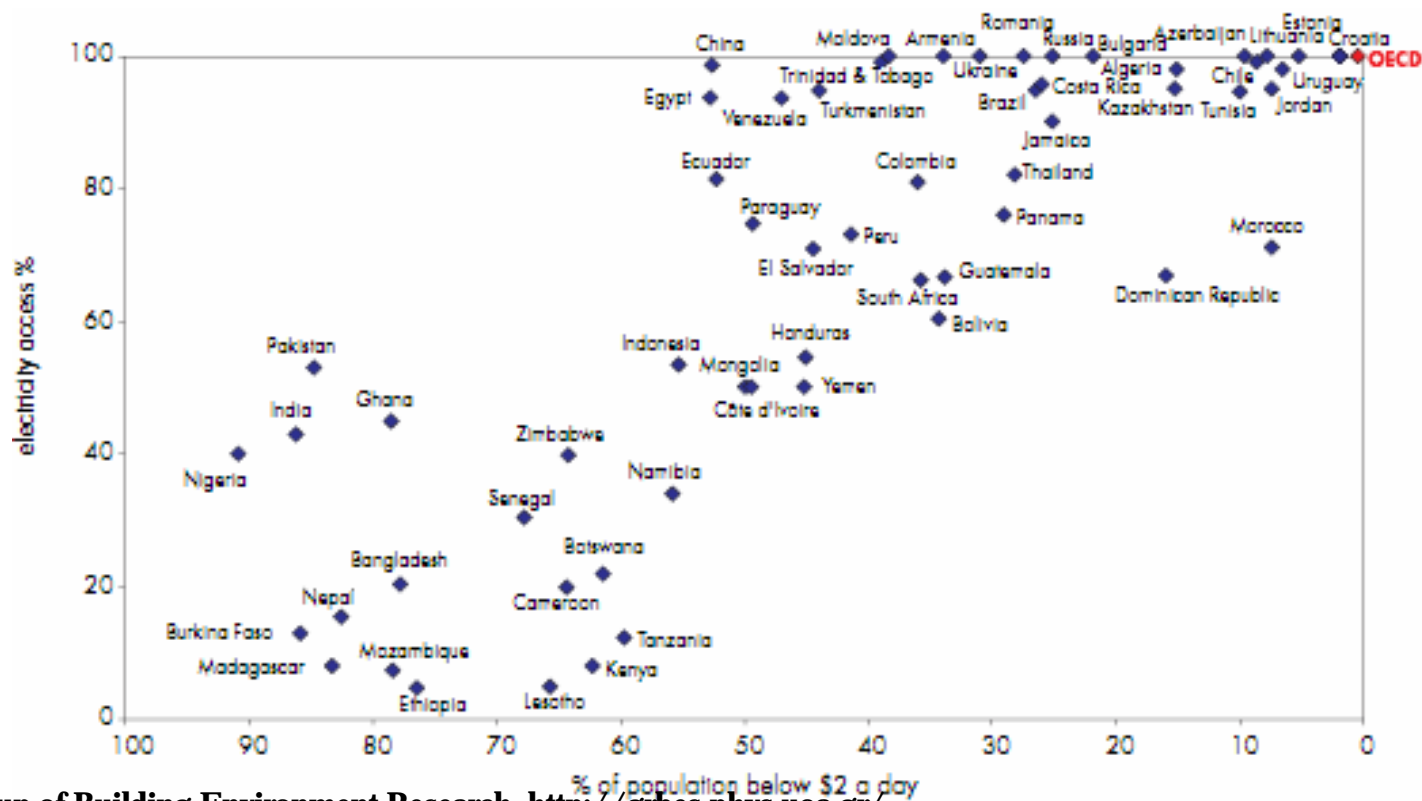
Less developed world: Housing

Squatters in selected cities

City	Country	% of households living as squatters
Guayaquil	Ecuador	49.00%
Ulaanbaatar	Mongolia	48.40%
Monrovia	Liberia	42.00%
Tacna	Peru	30.00%
Mysore	India	18.80%
Lima	Peru	18.80%
Bangkok	Thailand	17.90%
Phnom Penh	Cambodia	16.40%
Jinja	Uganda	16.00%
Pokhara	Nepal	14.00%
Camaguey	Cuba	10.30%
San Salvador	El Salvador	9.50%
Cajamarca	Peru	8.50%
Vientiane	Lao	7.40%
Bishkek	Kyrgyzstan	6.00%
Algiers	Algeria	5.90%
Buenos Aires	Argentina	5.70%
Cebu	Philippines	5.00%
Vina del mar	Chile	3.90%
Cienfuegos	Cuba	3.30%
Belgrad	Yugoslavia	2.30%
Valparaiso	Chile	1.67%
Katowice	Poland	1.50%
Kuwait	Kuwait	0.80%
Ljubijana	Slovenia	0.10%
Yerevan	Armenia	0.04%
Gdansk	Poland	0.02%

Less developed world: Energy & IAQ

- Electricity provision, use of non appropriate fuels for heating , cooking and lighting, and indoor air quality are major problems in cities. In low-income cities, less than 750 US \$/ person, only 70 % of the population is connected to grid, which provide electricity just for some hours per day.

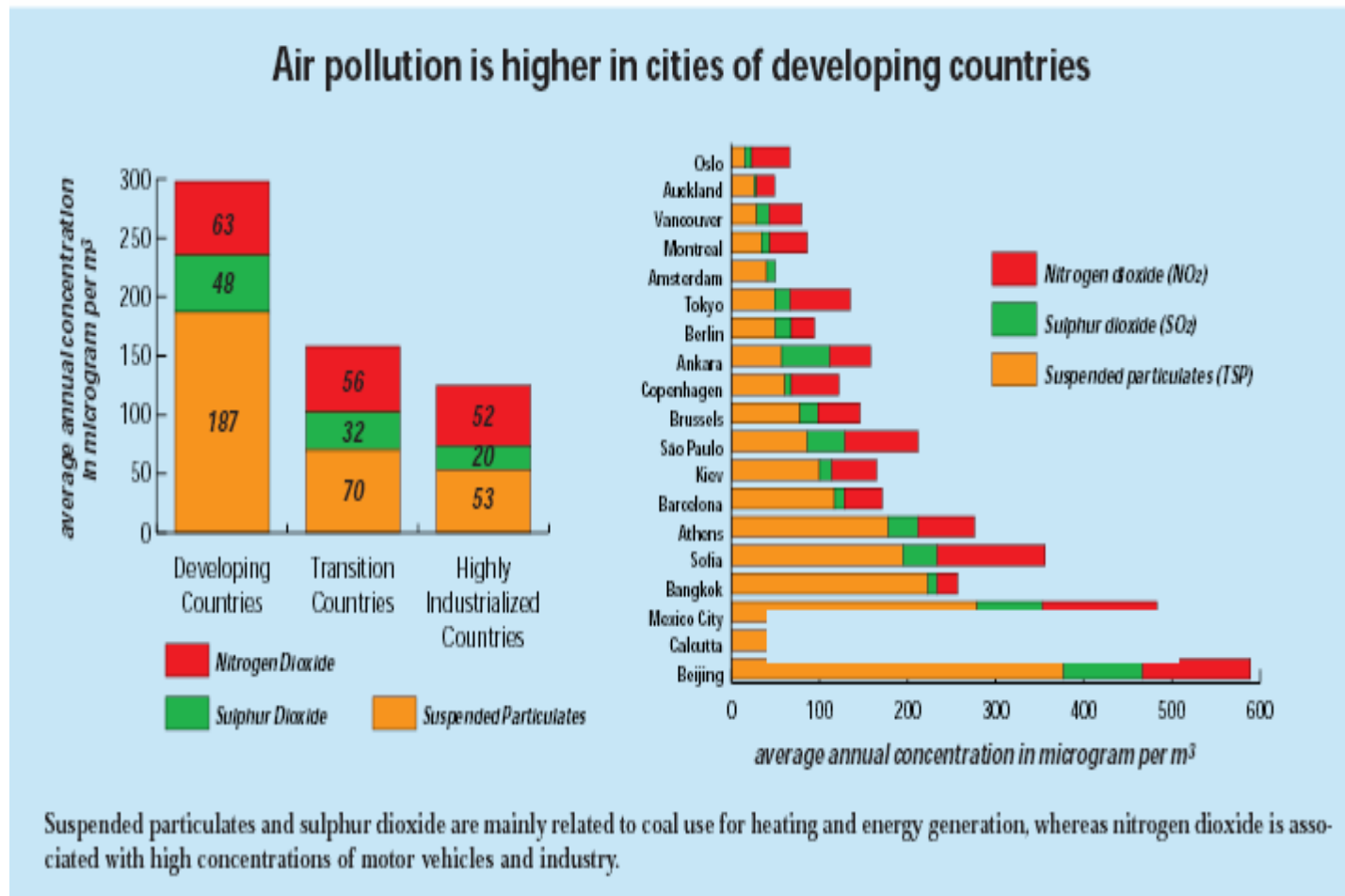


Source: Group of Building Environment Research, <http://grbes.phys.uoa.gr/>

Less developed world: Energy & AQ

- ❑ The use of open fires and of non appropriate fuels, in overcrowding houses, are important sources of indoor air quality that contributes to acute respiratory infections that that kill 4 million people a year, mostly children under the age of five years .
- ❑ Existing studies suggests indoor concentrations of total suspended particulates 10 to 100 higher than the existing standards. In South Asia, indoor air pollution from solid fuels burned in open fireplaces probably contribute for a larger total exposure than outdoor pollution sources.
- ❑ As it concerns outdoor air quality, there are more than 1.5 billion of urban dwellers that are exposed to levels of outdoor air pollution that are above the accepted maximum concentrations, while it is estimated that 400000 additional deaths are attributed every year to outdoor air pollution.

Less developed world: Energy & AQ

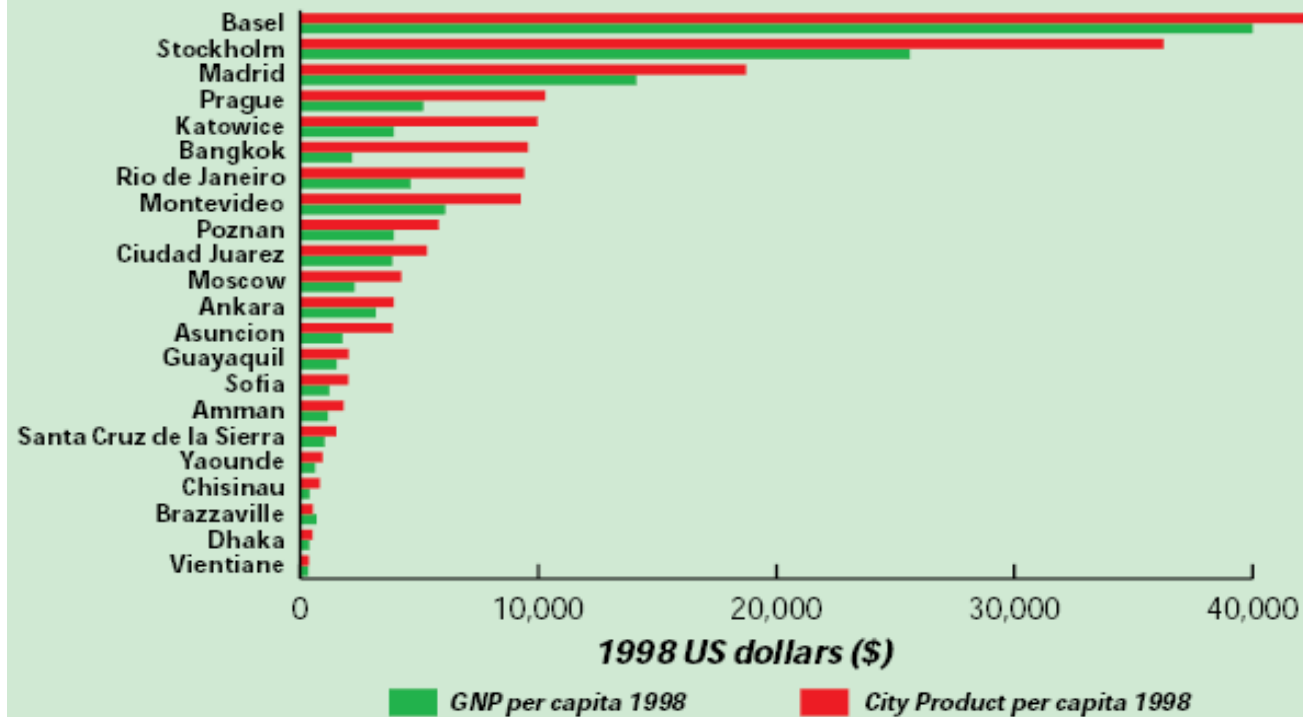


Source: Group of Building Environment Research, <http://grbes.phys.uoa.gr/>

Urban Sustainability

- ❑ Cities are systems that import energy and resources and produce degraded energy and matter that has to be assimilated by the surrounded area. Thus, is hard to consider cities as sustainable systems
- ❑ Cities present important advantages and should not be considered as places that only generate environmental cost. It may provide high quality living conditions with lower levels of energy use, waste, pollution and in general low environmental impact, than the wealthy rural or suburban areas. In parallel, health services in cities are much better developed than in rural areas and this is well proven by international epidemiological and demographic studies that suggests much higher survival rates in cities.
- ❑ Economy of scale in cities decreases considerably land pressure and the cost of new infrastructure and services like water treatment plants, energy and other networks, educational and health services, etc.

Cities generate more wealth per capita than national economies



Benefits provided by cities, to people outside their boundaries should not be neglected as the city economical activities provide incomes by purchasing goods. Thus, cities may hold promise for sustainable development mainly when are able to support a large number of people and limit their per capita impact on the natural environment.

Urban Sustainability – An Oxymoron or a Perspective

Cities have to satisfy five broad categories of environmental goals :

- ❑ To provide the environmental conditions that can ensure health of urban citizens and reduces vulnerability of the population. This includes basic infrastructures and services like adequate provision of water, sanitation, garbage collection and drainage for all the urban area and citizens.
- ❑ To reduce the risk of chemical and physical hazards in the every day life of the city
- ❑ To provide citizens with a high quality urban environment that protect the natural and cultural heritage, provide comfort and the necessary urban spaces for the well being of citizens
- ❑ To reduce as much as possible the shift of the environmental load and cost generated by the cities to the inhabitants and ecosystems surrounding the city
- ❑ To ensure that the consumption of resources and goods and the corresponding generation of matter and degraded energy are compatible with the limits of the natural capital and do not transfer environmental load and cost to future generations or to other human groups

Air Emissions associated to the automobile



Source:

Sandrine Dixson-Declève, International Fuel Quality Center
<http://www.unep.org/pcfv/Documents/RomeSDDpres.ppt>

The Drivers for Better Air Quality Vary



Local Economic Situation

- governmental interest
- taxes
- fuel adulteration
- availability

Politics

Energy Security

Industry Economics

Industry Competition

Fuel specifications

- Lead
- Sulphur
- Distillation
- Aromatics
- Octane
- Additives
- Oxygenates
- Lubricants



Alternative fuels

- Bio-fuels
- LPG
- CNG
- GTL
- H2



The Situation in Each Country Varies....



**Refining Industry
& Technology**



Vehicle Park/ Engine Technologies

- Age
- Gasoline & Diesel
- After Treatment Technology
- Direct Injection
- Hybrids
- Fuel cells

Emissions

- WHO/Kyoto
- CO
- NO_x
- VOC
- PM

Environment & Health

- Global
- Country
- Regional
- Local



Case Study: EU Auto Oil Program

Goals

- ❑ Respond to Ambient Air Quality Targets and an integrated approach requiring further measures to reduce atmospheric pollution caused by vehicles
- ❑ Address growing concern over pollution from the transportation sector
 - Passenger cars represent within EU member states from 75 to 90% of the total traffic volume, goods transport 8 to 20%, while bus and two-wheeler traffic are limited to 1 to 2% each .
 - Number of Vehicles on the road and increase in vehicle miles traveled offset decline in most pollutants
 - Motor vehicles generate about 30% of all emissions of nitrogen oxides and volatile organic compounds--the pollution that causes smog.
 - CO₂ emissions from transport increased by 41% between 1985 and 1996 quickly becoming the largest source of CO₂ emissions next to the energy sector. Road transport accounts for 85% of transport emissions
- ❑ Implement a cost effective program with significant environmental and health benefits
 - When fully implemented, this program is estimated to reduce urban NO_x emission by >39%, urban CO by >51%, urban benzene by >48%, urban PM by >39%, total NO_x by >35%, total VOCs by >46%.
 - The European Commission and national Governments calculate that the Auto Oil legislation will prevent many deaths especially in urban centers, as well as cases of chronic and acute bronchitis, and other respiratory problems.

Auto-Oil I Air Quality Targets

Pollutant	Auto-Oil I Targets
NO ₂	200 µg/m ³ 1 hour average as a 98 th percentile (upper value) 200 µg/m ³ as a maximum value (lower value)
CO	10mg/m ³ 8hour rolling mean
Benzene	16 µg/m ³ annual mean (upper value) 2.5 µg/m ³ annual mean (lower value)
PM10	Not modelled
Ozone	180 µg/m ³ 1 hour mean 120 µg/m ³ 8 hour rolling mean

Source: Arthur D. Little, 1998. Case Study – The Introduction of Improved Transport Fuel Qualities in Finland and Sweden

Auto-Oil II Air Quality Targets

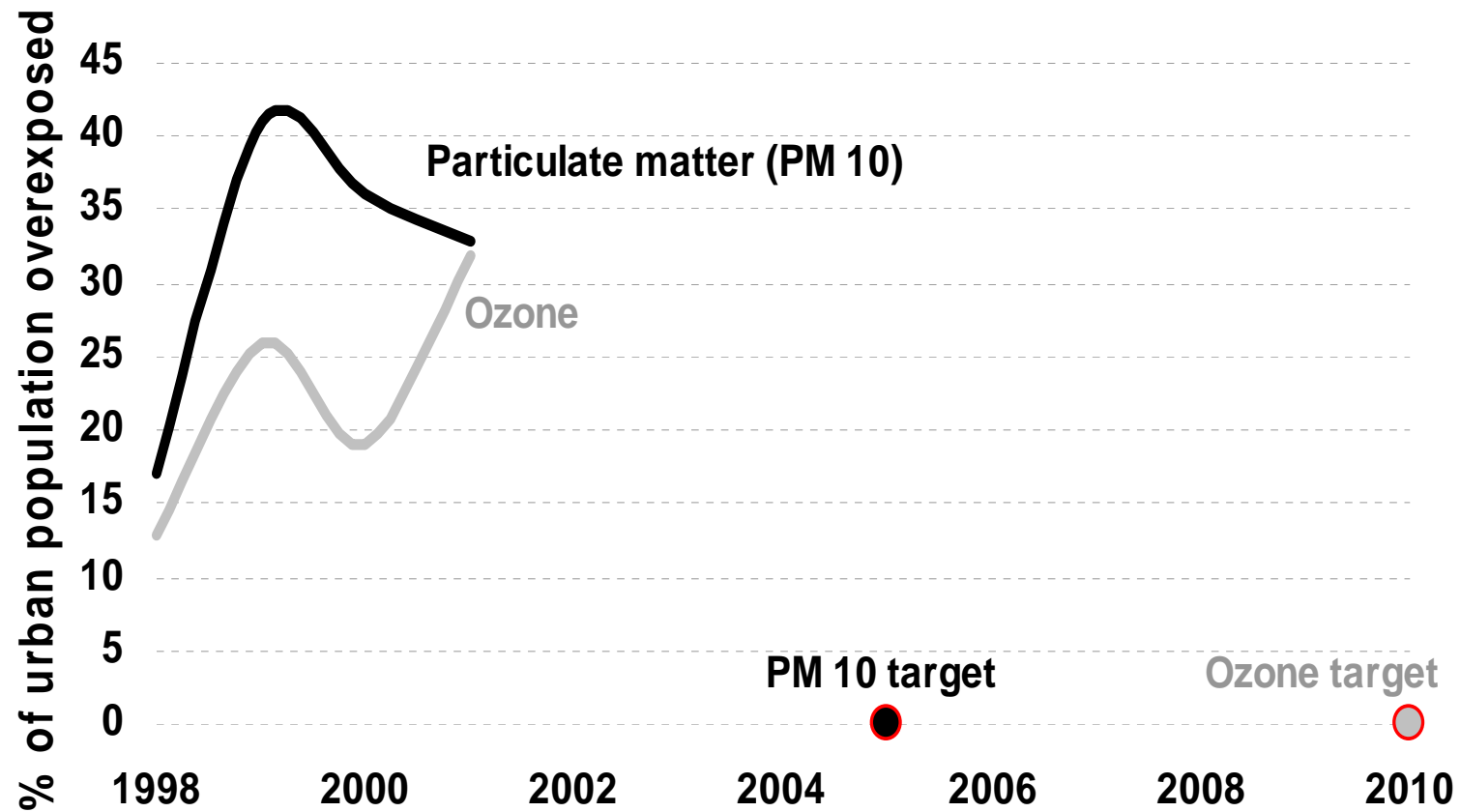
Pollutant	Auto Oil II Target
NO ₂	200 µg/m ³ 1 hour average 99.8 percentile 40 µg/m ³ annual
CO	10 mg/m ³ 8 hour rolling mean
Benzene	5 µg/m ³ annual
PM10	50 µg/m ³ 24 hour average 20 µg/m ³ annual
Ozone	120 µg/m ³ 8 hour mean (within one day) 20 day exceedances per year - averaged over three years

Source: Arthur D. Little, 1998. Case Study – The Introduction of Improved Transport Fuel Qualities in Finland and Sweden

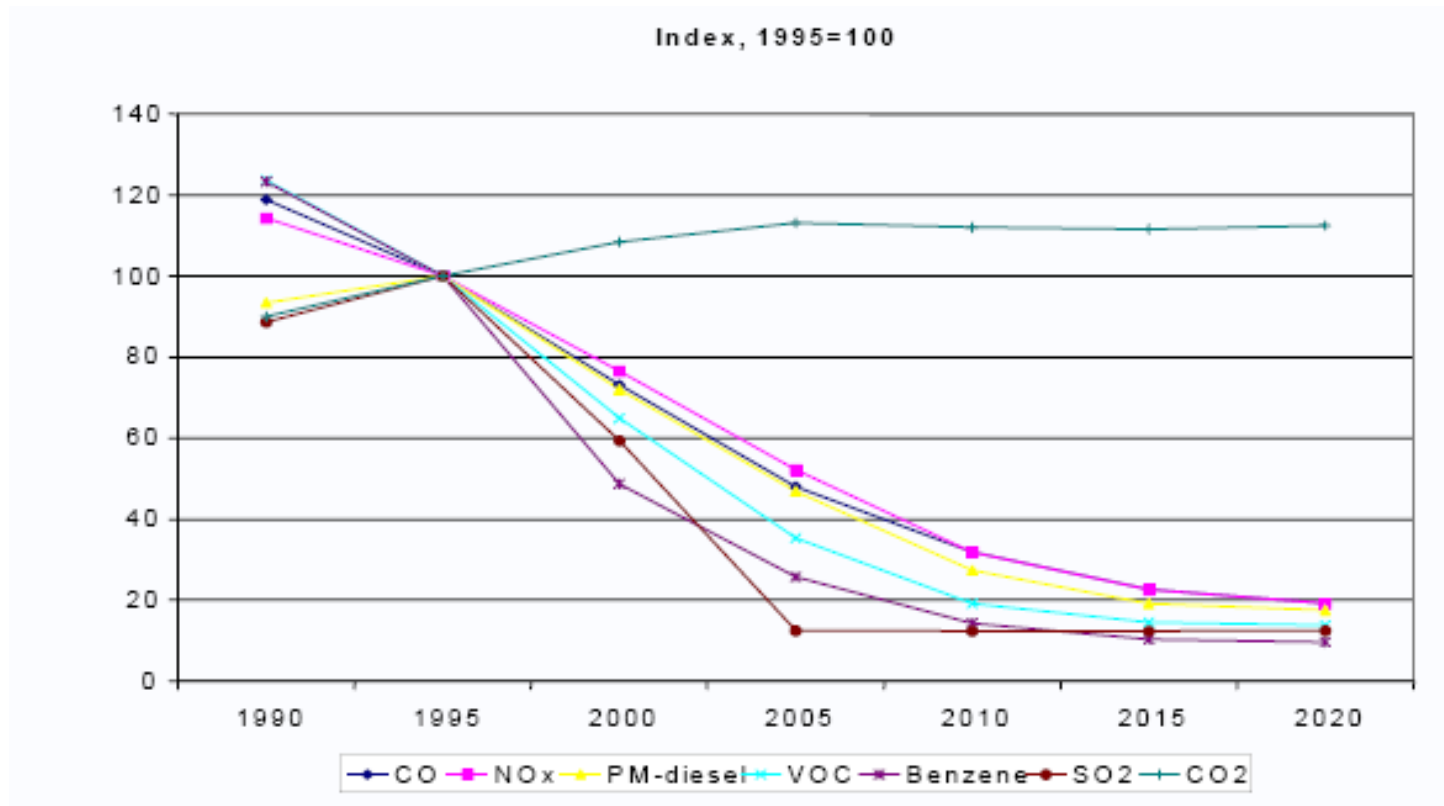
EU Air Quality Legislation

- ❑ Directive 1999/30/EC : SO₂, NO_x, Pb and Particulate Matter
- ❑ Directive 2000/69/EC : CO and Benzene
- ❑ Directive 2002/03/EC : Ozone
- ❑ Proposal : Heavy metals (As, Cd, Ni, Hg) and PAH
[B(a)P as marker]

Urban Air Quality



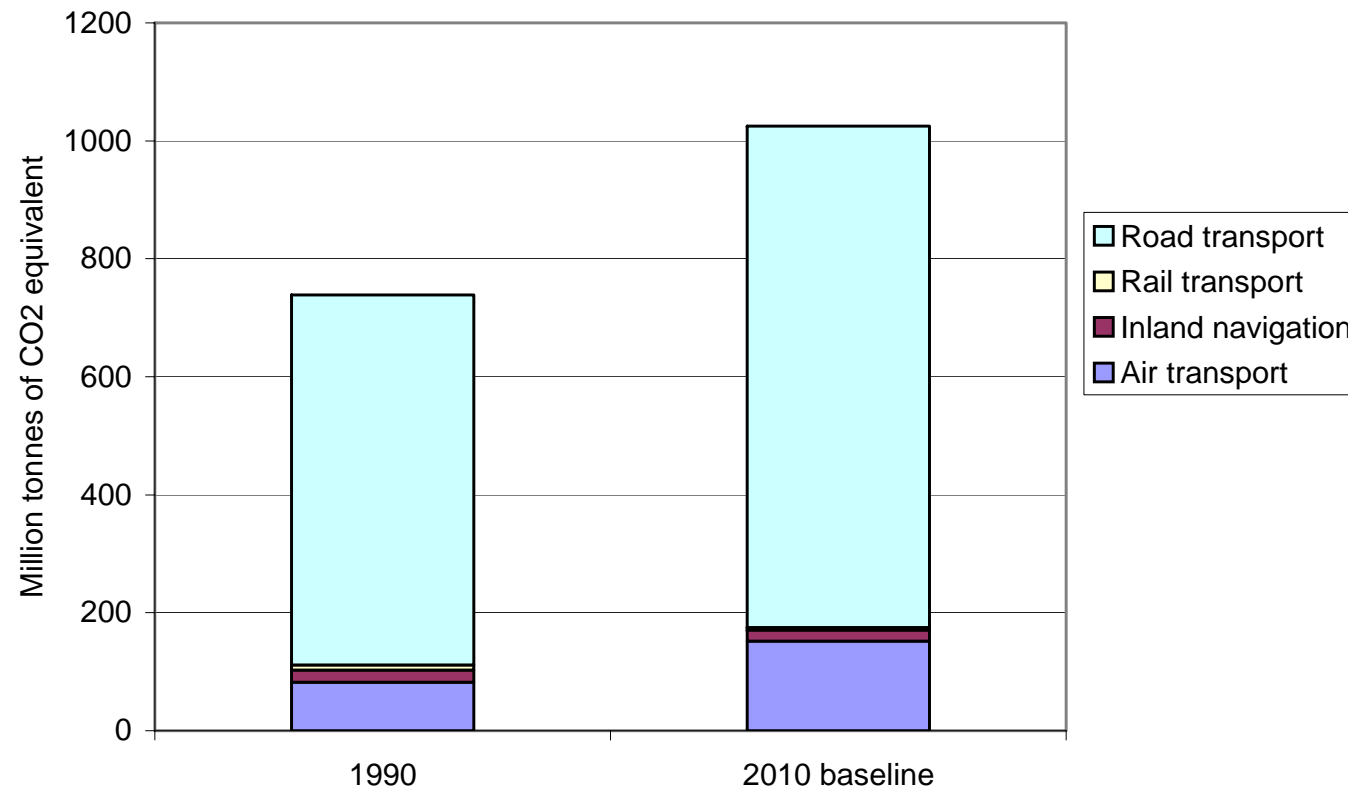
EU Road Transport Emissions



Source : European Commission, Peter Gammeltoft 2004

Climate Change

- CO₂ emissions per transport mode, 1990 and 2010 (projected) in EU15 (PRIMES Baseline Projection)





EU Automotive Emissions Policy

Light-duty Vehicles Legislation

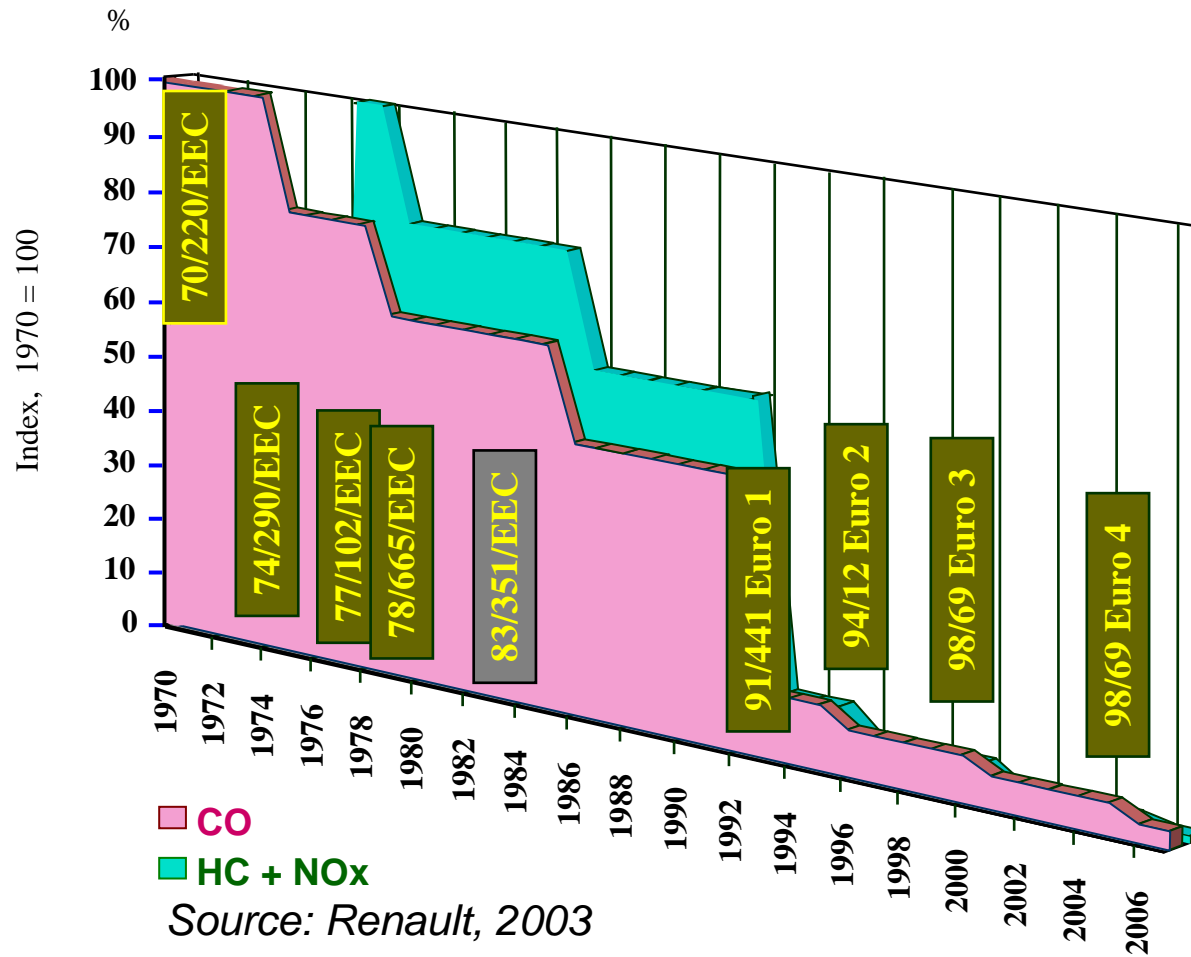
- Directive 98/69/EC, since 1 January 2000

M1 petrol		CO (g/km)	HC (g/km)	NOx (g/km)
Euro-3	2000	2.3	0.2	0.15
Euro-4	2005	1.0	0.1	0.08

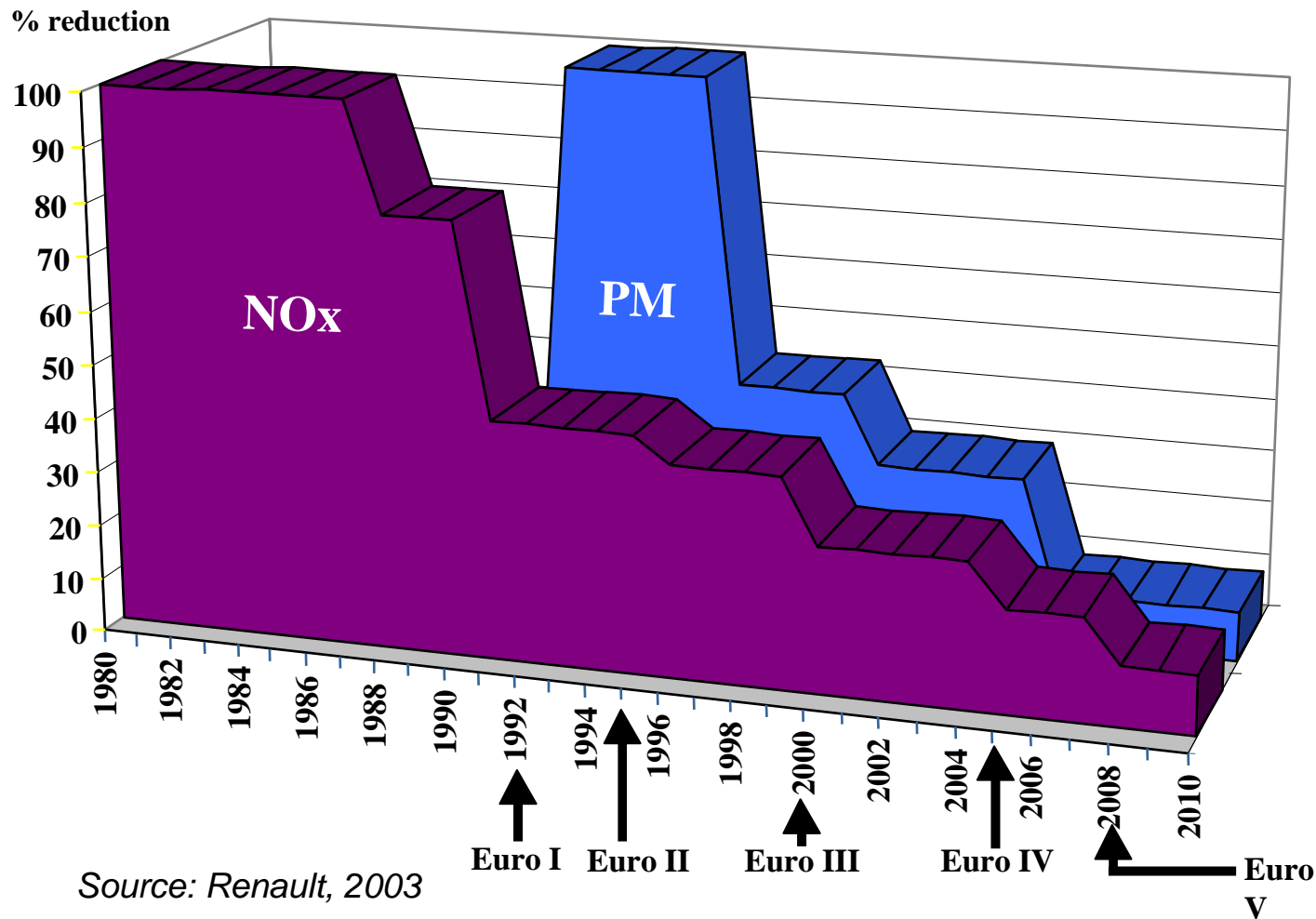
M1 diesel		CO (g/km)	NOx (g/km)	NOx + HC (g/km)	PM (g/km)
Euro-3	2000	0.64	0.5	0.56	0.05
Euro-4	2005	0.5	0.25	0.3	0.025

Source: P. Good, Commission DG Industry, Hart's World Fuels & Refining Conference, Brussels 2005

EU Emission Limits for Gasoline Vehicles



EU Emission Limits for HDV's



Euro-5: Some Key Issues

- Particulate matter from diesel:
 - Mass reduction
 - Ultrafine PM
- NOx from diesel:
 - How much NOx reduction?
 - Means of achieving it
- Cost effectiveness

Euro-5: Emission Limit Scenarios

- Diesel 7 Initial Scenarios
 - NO_x: 40 - 75% reduction
 - PM: 50 - 90% reduction
- Gasoline 6 Initial Scenarios
 - NO_x: 0 - 70% reduction
 - HC: 0 - 50% reduction
 - PM: Limit for lean burn direct injection
- Fiscal Incentives Paper (Jan 2005) suggested
 - PM limit of 5 mg/km (80% reduction)

Euro 6: Heavy Duty

Being considered for 2013:

- Questionnaire developed 6 scenarios for diesel and 5 for gas engines
 - NOx: 0 . 90% reduction
 - PM: 0 . 66% reduction
 - THC: 0 . 70% reduction
- Key issues
 - PM traps
 - How much NOx reduction
 - Effectiveness of SCR

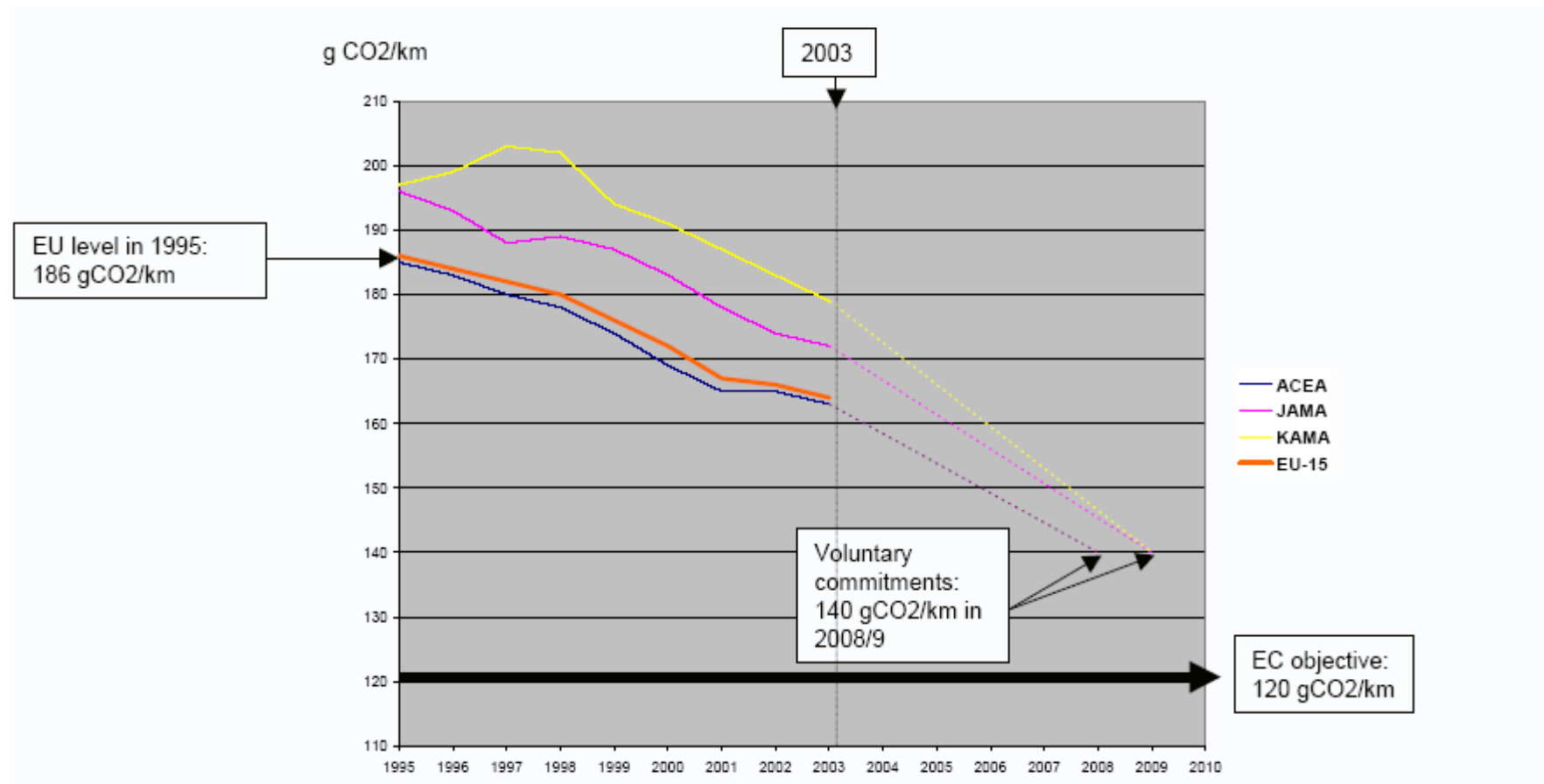
CO2 Cars Strategy

- Community target for new registrations (EU 15): 120 g CO₂/km, 140 g CO₂/km agreed
- Three pillar strategy:
 - Voluntary Commitments of the car industries
 - Fuel efficiency labelling
 - Fiscal measures
- Two pillars erected; fiscal measures still pending

CO2 Cars Strategy

Car Manufacturers	2003 Average new passenger cars emissions (mg CO2/km)	Reduction (%) between 1995-2003	% reduction between 2002- 2003	Interim targets mg CO2/km (year)
ACEA (European Automobile Manufacturers' Association)	163 mg/km	11.9%	1.2%	165/170 mg/km (2003)
JAMA (Japan Automobile Manufacturers' Association)	172 mg/km	12.2%	1.1%	165-175 mg/km (2003)
KAMA (Korea Automobile Manufacturers' Association)	179 mg/km	9.1%	2.2%	165-170 mg/km (2004)

CO2 Cars Strategy



Air Quality & CAFE



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CAFE

Clean Air For Europe



Communication from the Commission
COM(2001)245 final, 4/5/2001

CAFE: Background

- ❑ Integrated Programme of technical analysis and policy development to further reduce air pollution
- ❑ It follows Auto-Oil I/II initiatives (1992/2000) which were specifically focused on road transport emissions

Auto-oil I and II: results

- Auto-Oil I (1992/1996) and II (1997/2000) have concluded with the adoption of legislative measures giving rise to the so-called EURO 3/4/5 standards for road transport emissions

Auto-oil I and II: results

Cars - *petrol* (emission limit value in g/km)

	directives	date application	CO	HC	NO_x	HC + NO_x	PM
EURO 1	dir 93/59/CEE	01/10/1993	2.72	-	-	0.97	-
EURO 2	dir 94/12/CE	01/10/1996	2.2	-	-	0.50	-
EURO 3	dir 98/69/CE	01/01/2001	2.3	0.20	0.15	-	-
EURO 4	dir 98/69/CE	01/01/2006	1.0	0.10	0.08	-	-

Auto-oil I and II: results

Cars - *diesel* (emission limit value in g/km)

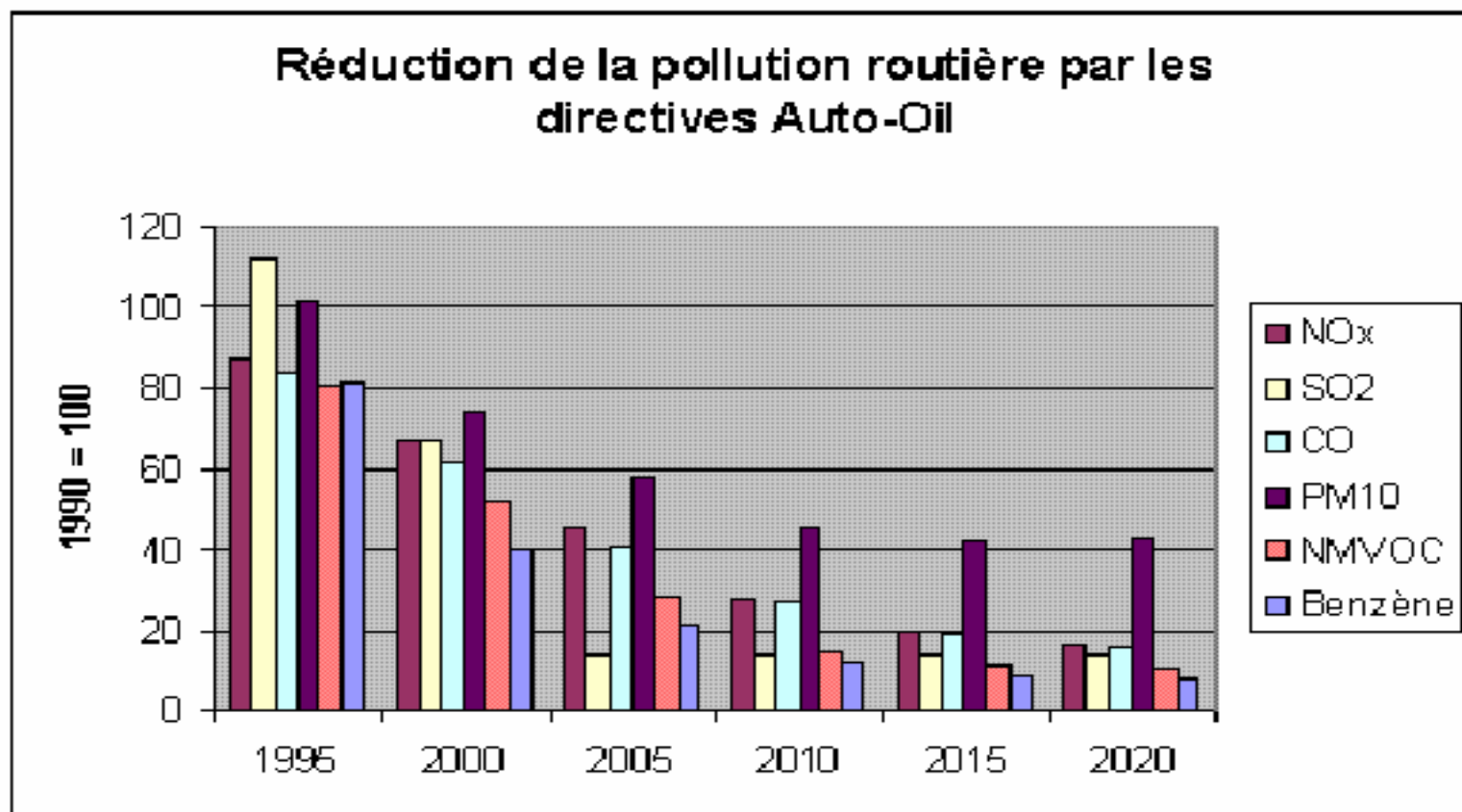
	Directives	date application	CO	HC	NO_x	HC + NO_x	PM
EURO 1	Dir. 93/59/CEE	01/10/1999	2.72			0.97	0.14
EURO 2	Dir. 94/12/CE	01/10/1996	1.00	-	-	0.70	0.080
EURO 3	Dir .98/69/CE	01/01/2001	0.64	-	0.50	0.56	0.050
EURO 4	Dir. 98/69/CE	01/01/2006	0.50	-	0.25	0.30	0.025

Auto-oil I and II: results

Heavy duty vehicles - *diesel* (emission limit value in g/km)

	Directives	date of application	CO	HC	NO_x	Particules PM
EURO 3	Dir. 1999/96/CE	01/10/2001	2.1	0.66	5.0	0.10
EURO 4	Dir. 1999/96/CE	01/10/2006	1.5	0.46	3.5	0.02
EURO 5	Dir. 1999/96/CE	01/10/2009	1.5	0.46	2.0	0.02

CAFE: development/aim



CAFE

- ❑ CAFE: Programme launched in 2001
- ❑ Approach: knowledge- and cost-effective based, focus on stakeholders consultation
- ❑ Scope: wider than Auto-Oil and open to all industry sectors: transport & heating and industry processes etc.

CAFE

aims at developing

- ❑ a long-term strategic and integrated policy to mitigate the effects of air pollution on human health and environment
- ❑ a thematic strategy under 6th Environmental Action Programme in 2004/2005

CAFE: Issues

- Auto-oil programmes have achieved good results for most emissions
- 2 specific air quality issues still remain:
 - particulate matters
 - tropospheric ozone precursors: NO_x and VOC (Volatile Organic Compounds - solvents)

CAFE

Main objectives

- ❑ particulate matters: cause premature deaths and reduce quality of life
- ❑ tropospheric ozone (NO_x and VOC precursors): affects human health and ecosystems

Other specific objectives

- ❑ heavy metals: deposition issue (toxicity bioaccumulability and persistency)
- ❑ PAH: polyaromatic hydrocarbons (carcinogenicity)

CAFE: areas of work

- ❑ study of air pollution effects
- ❑ development of scenarios for emissions and pollution levels up to 2020
- ❑ development of indicators
- ❑ target setting
- ❑ assessment of integrated policy options

(Cardiff process: integration of environmental, energy, urban issues & land use planning)

CAFE: organisation I

- Secretariat: DG ENV
- Steering Group:
 - Informal committee with experts from MS, chaired by DG ENV
 - Advice on the programme strategy
 - 2/3 meetings per year

CAFE: organisation II

Working Groups (WG): scientific external experts (consultants, university) dealing with specific areas

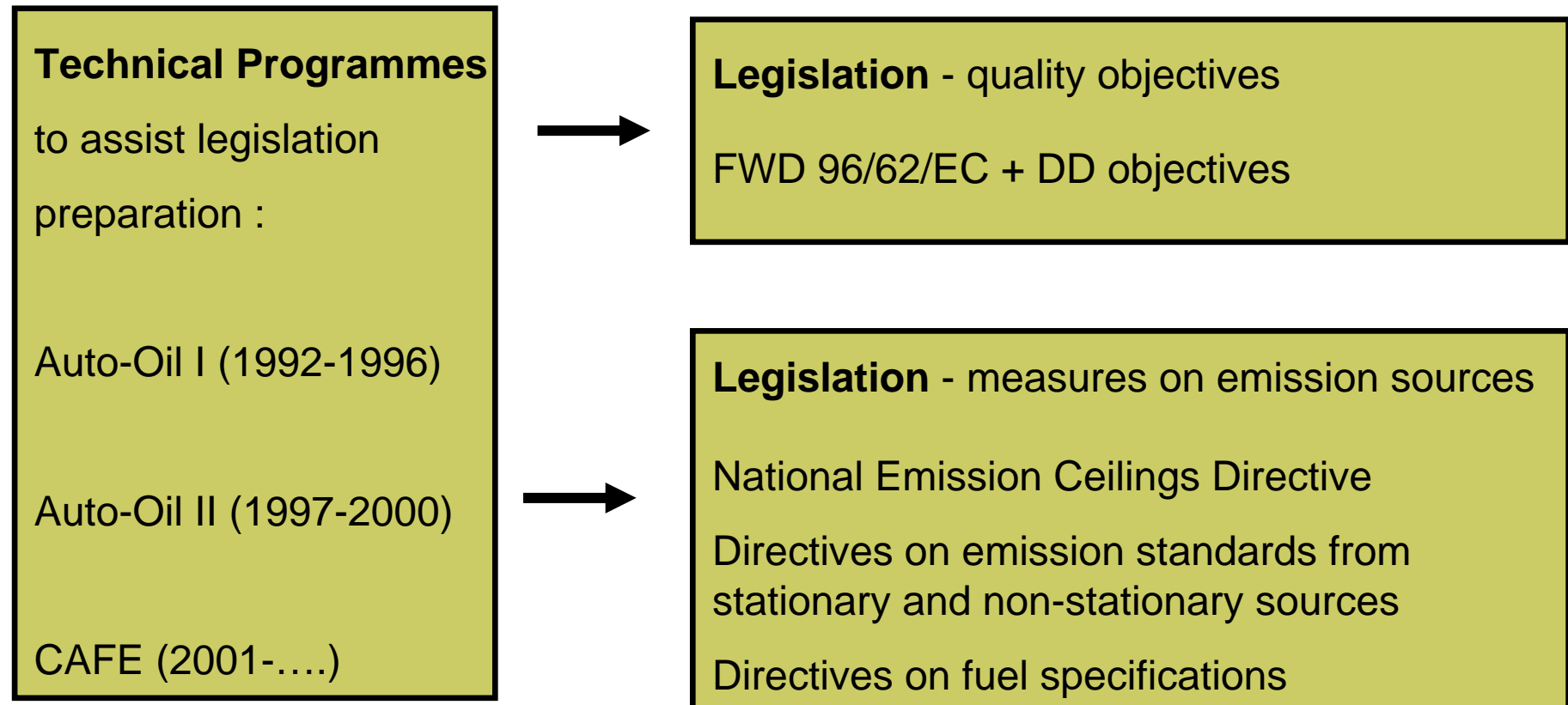
- ❑ WG on Implementation
- ❑ WG on Baseline scenarios and integrated assessment modelling
- ❑ WG on target setting and policy assessment
- ❑ WG on Particulates

CAFE: Clean Air For Europe

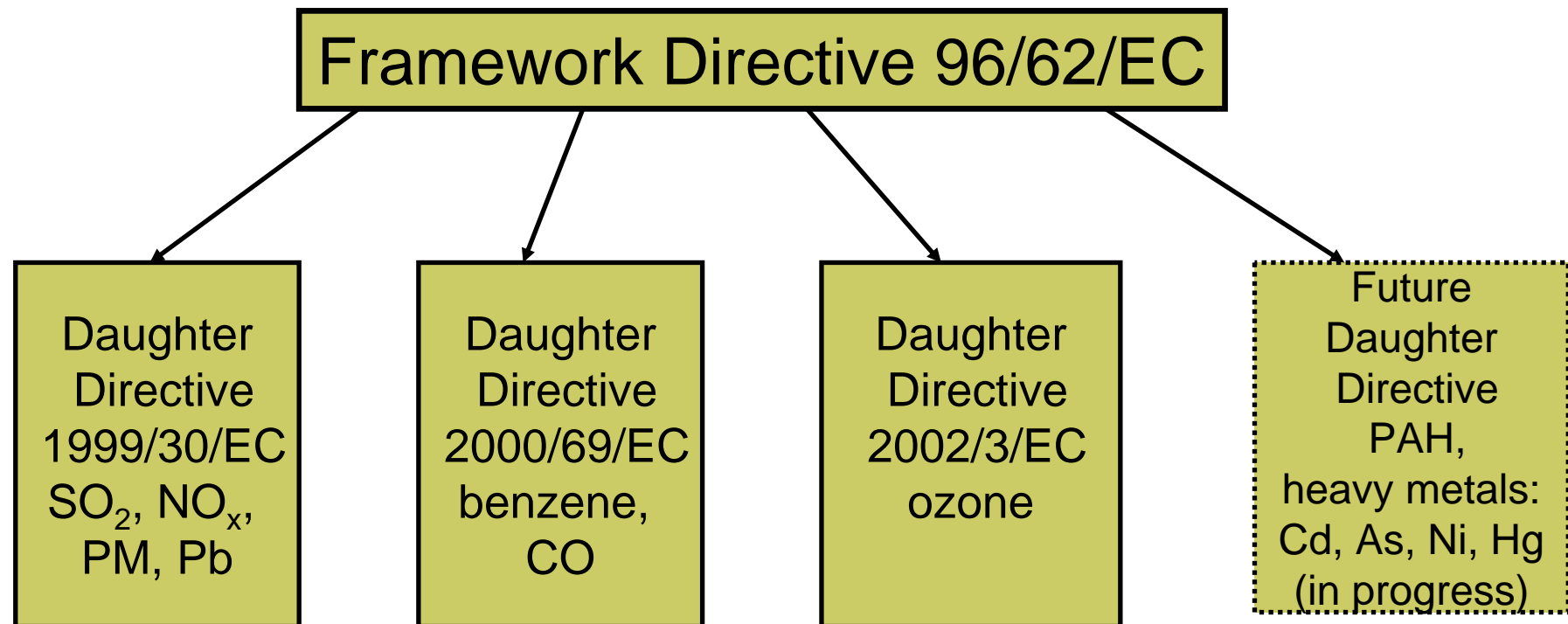
- Website:

<http://europa.eu.int/comm/environment/air/cafe>

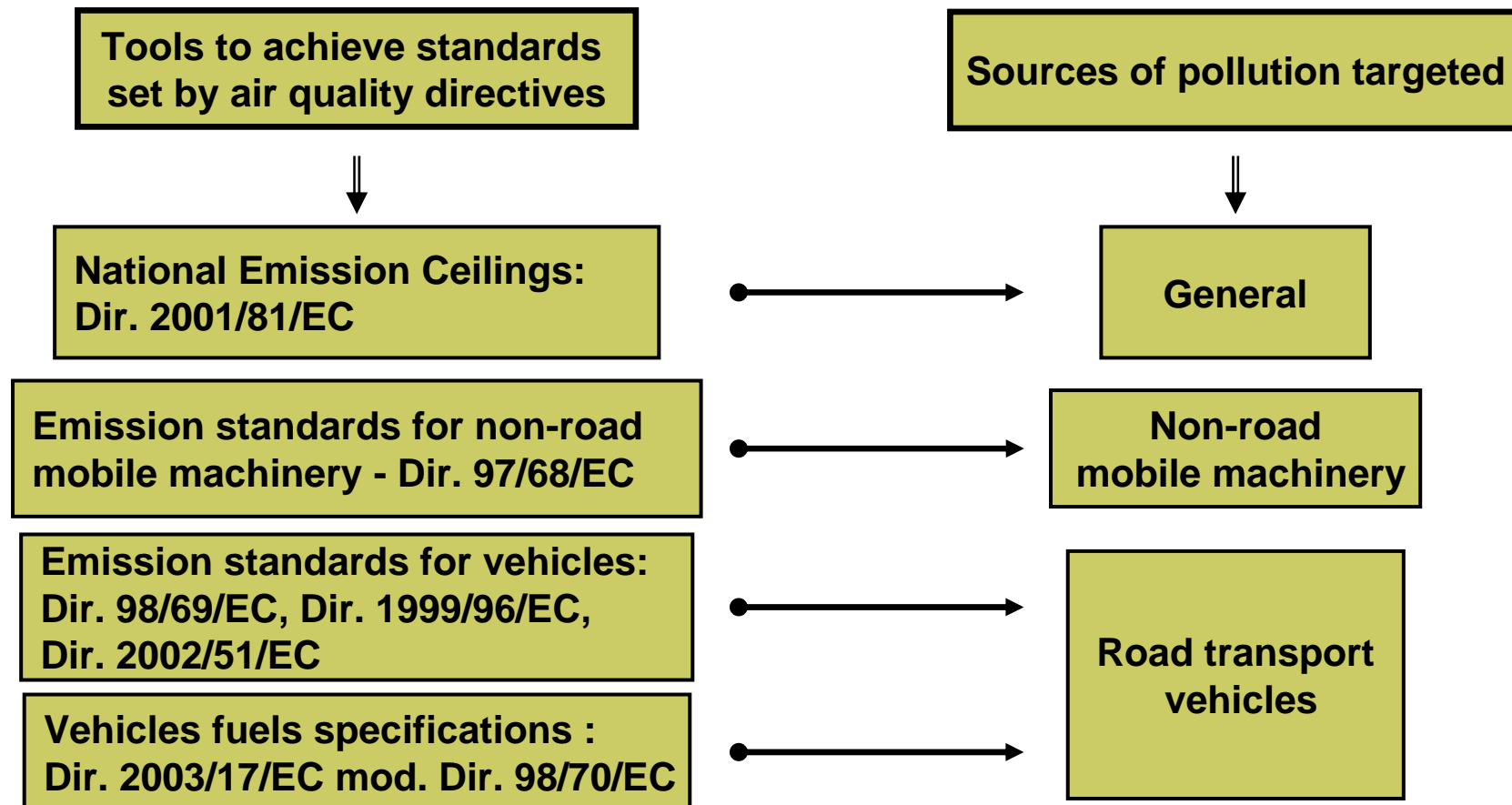
Air quality and technical programmes: overview



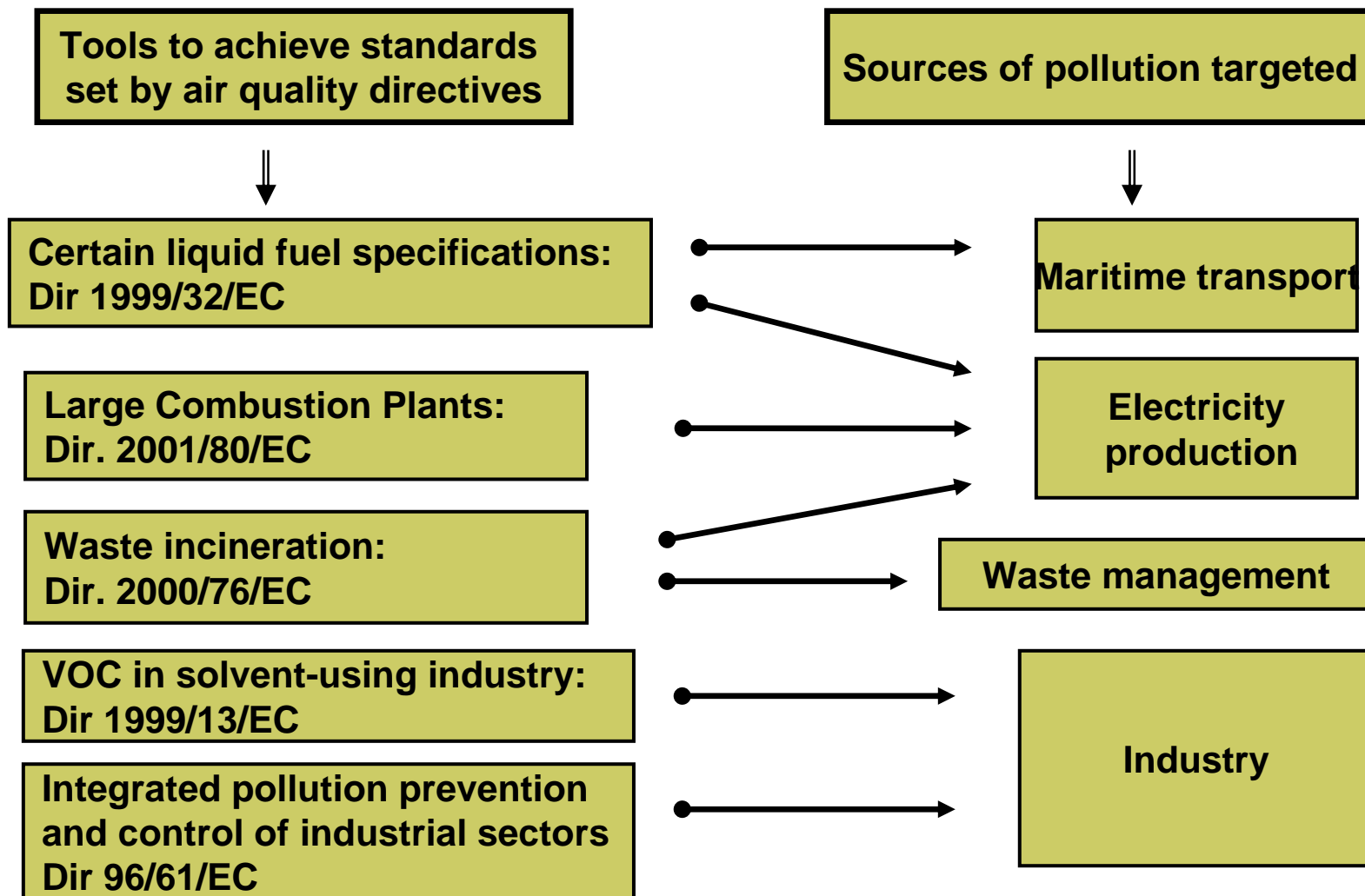
Air quality: legislation on quality objectives



Air quality: legislation on emission sources



Air quality: legislation on emission sources



Summing-up

- ❑ The city: proof of human life development and pursue of quality of life
- ❑ Pros and cons...
- ❑ The environment
 - Dynamic, evolving
 - Under pressure (traffic being among the most pronounced when it comes to AP)

- ❑ And what about people?
- ❑ They know/should know, and about what?