



Cities beyond Noise and Dust, Consequences of EU Directives on Urban Transport Policies and Infrastructure Planning

Péter Mészáros
Hungarian Traffic Club
Budapest University of Technology and
Economics

meszaros@kku.bme.hu

Cities beyond Noise and Dust

- Survey of recent and present EU legislation
- Conditions and consequences – the case of PM₁₀ (2.5) and noise -
- Sustainability objectives and criteria
- Channels, instruments, NGOs' role,

Series of Directives, to control and monitor air pollutants

- **Framework Directive 96/62/EC** on ambient air quality assessment and management.
- Targeting: sulphur dioxide, nitrogen dioxide, particulate matter, lead and ozone,
- + benzene, carbon monoxide, poly-aromatic hydrocarbons, cadmium, arsenic, nickel and mercury

Air Quality legislation

- **Council Decision 97/101 EC** on reciprocal exchange of information and data, to measure air pollution and the air quality measurements.
- Pollutants listed: SO₂, NO₂, PM₁₀, PM_{2.5}, SPM, Pb, O₃, C₆H₆, CO, Cd, As, Ni, Hg,
- Technical difficulties, inconsistency, insufficient exchange of information, EIA, Air-View system,

Daughter directives

- Numerical limit values and target values for the identified pollutants,
- Harmonise monitoring strategies, measuring methods, calibration and quality assessment methods to arrive at comparable measurements throughout the EU,
- Good public information,

Daughter directive I.

- 1999/30/EC, relating to limit values for **NO_x, SO₂, Pb and PM₁₀**
- Limit values for NO_x for the protection of vegetation must have been met by 2001.
- The health limit values for SO₂ and PM₁₀ must have been met by 2005.
- The other health limit values for NO₂ and Pb must be met by 2010.

Daughter directive II.

- 2000/69/EC to limit values for **benzene and carbon monoxide**.
- Limit value for carbon monoxide must have been met by 2005.
- The limit value for benzene must be met by 2010.
- Attainment programmes on national level

Daughter directive III.

- 2002/3/EC target values for **ozone** in ambient air to be attained where possible by 2010.
- Non-compliance: reduction plans and programmes to be reported to the Commission and to be made available to the public.
- Requirements to monitor and assess ozone concentrations and to inform citizens.
- Alert thresholds and requirements to Member States' authorities to take short-term action if exceeded.

Daughter directive IV.

- 2004/107/EC to **arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons** in ambient air.
- Target values: Ar: 6ng/m³, Cd: 5ng/m³, Ni: 20ng/m³, BP: 1ng/m³, (in PM₁₀ fraction, annually).
- List of zones and agglomerations – level of these pollutants under the target values – to preserve.
- List of zones, level exceeded.

Noise – policy -

- **COM (96)540 – Green paper –**
- 20 percent of the Union's population or close on 80 million people suffer from unacceptable noise levels - annoyance, disturbance, adverse health effects.
- 170 million citizens are living in "grey areas" - noise levels are such to cause serious annoyance during the daytime –
- No significant improvements – traffic growth, high speed rails, aircraft noise -

Directive 2002/49/EC on Environmental noise

- Monitoring – strategic noise maps (people annoyed and sleep disturbed), harmonized noise indicators – L_{den} , L_{night} ,
- Information and communication – Aarhus convention –
- Local noise issues, action plans
- Long term EU on noise reduction

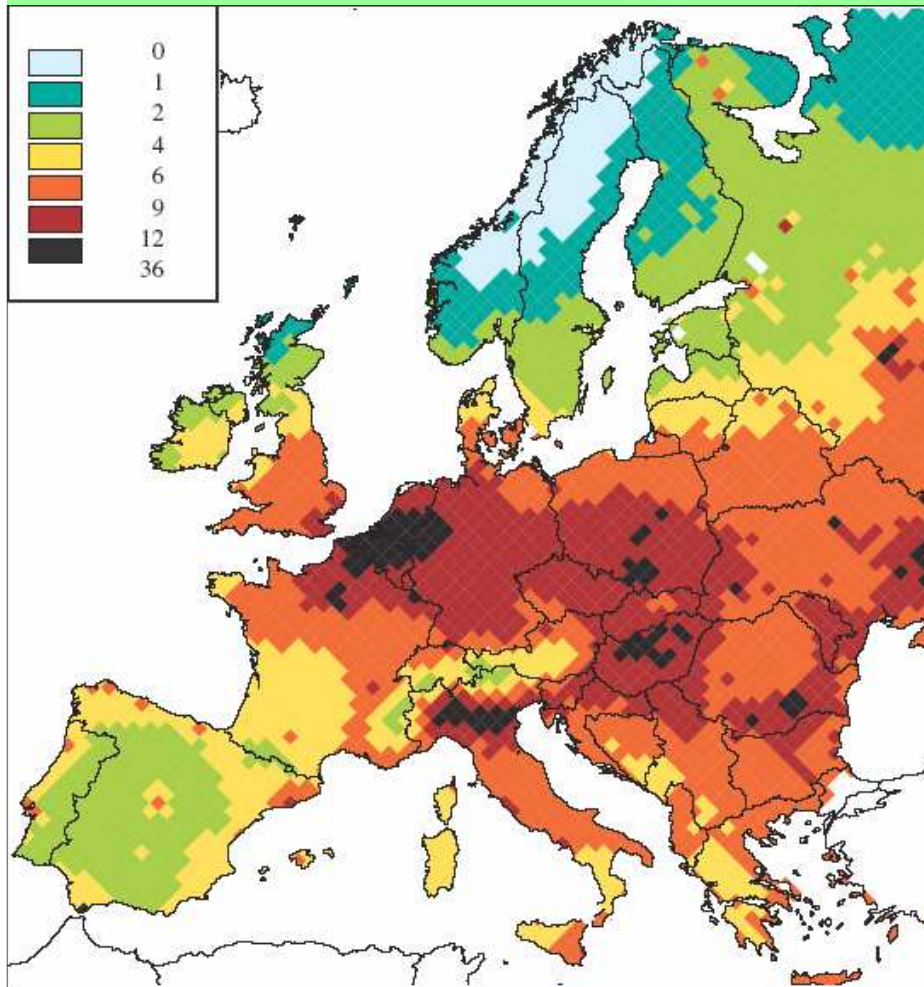
Noise – ongoing activities, and efforts -

- CBA, - cost benefit analysis – noise valuation,
- Good practice guide for noise mapping,
- Computation methods for noise, - also aircraft, road traffic and railway – Commission recommendation
- Additional CORDIS activities – transportation noise and sleep disturbance – Harmonoise, and CALM networks -

EC – Clean air for Europe,

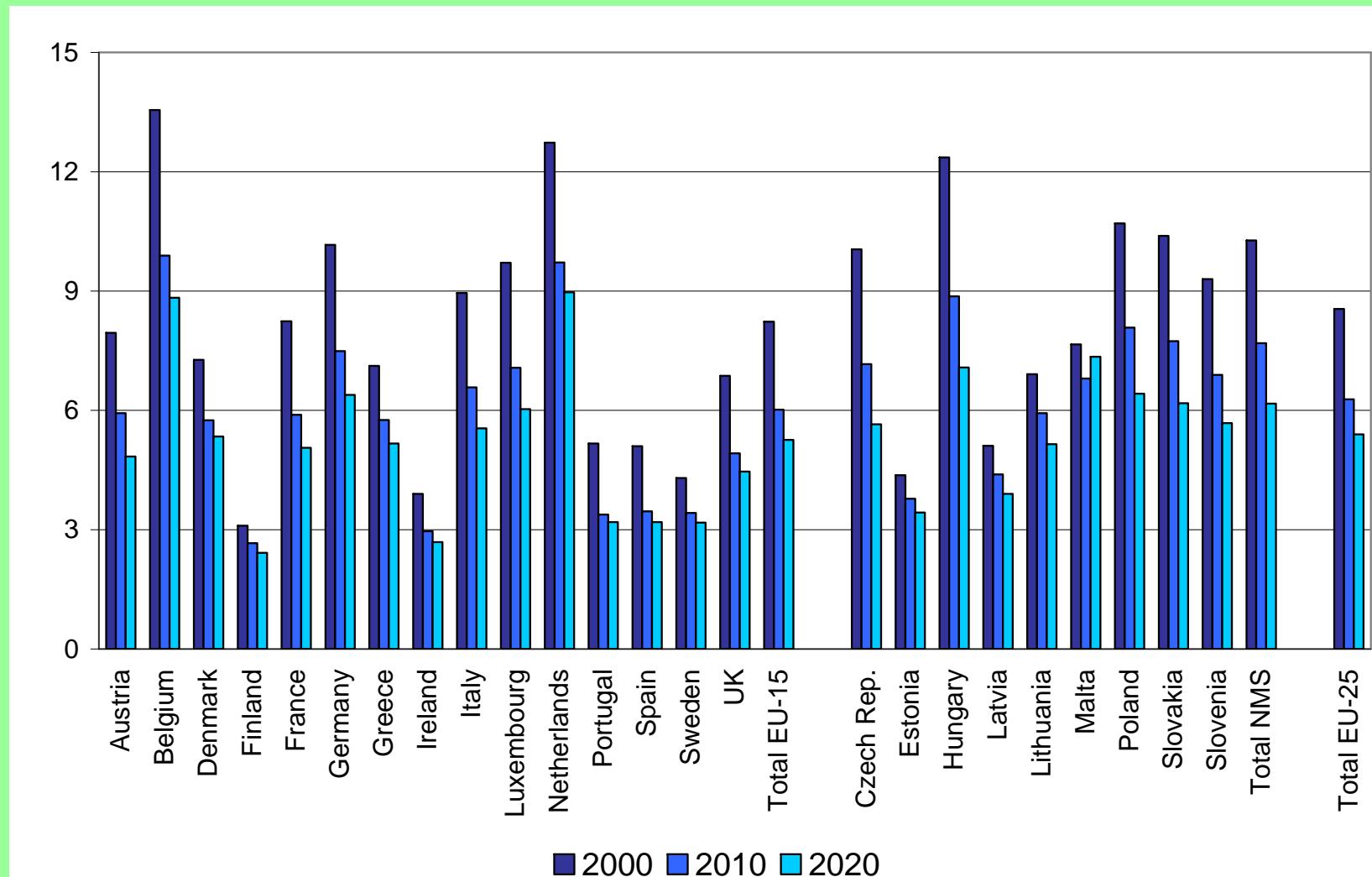
analysis on air pollution impacts
on nature and human health

Expected loss of life in months, due to human PM2.5 emission



- 300.000 deaths in EU, in connection with PM2.5 emission
- Hungary: average one year loss of life as consequence of PM2.5

Expected loss of life in months, due to human PM2.5 emission



Hungarian regulation on ambient air quality (PM10)

	Limit value [$\mu\text{g}/\text{m}^3$]				
	24 hours		annual		Hazard level
	limit value	tolerance	limit value	tolerance	
Flying dust (PM10)	50	50%	40	20%	III.
	annually 35 days allowed for exceedance of limit	reduced from 2001. until 2005. to 0%		reduced from 2001. until 2005. to 0%	

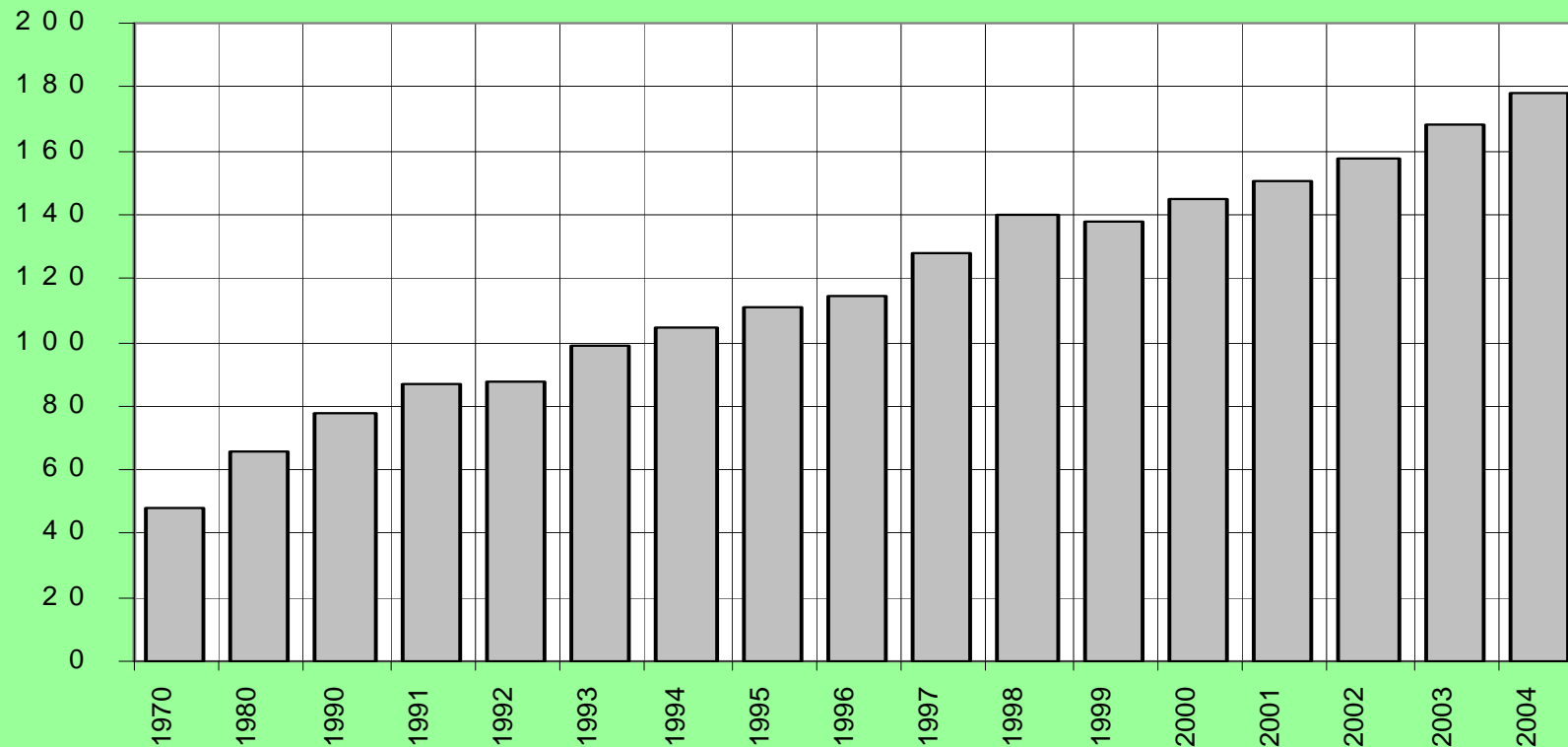
Transport's role in Budapest air pollution situation (t)

	NO _x	CO	Dust	SO ₂
Industry	3 344	2 620	320	1 647
Road transport	14 448	98 227	1 854	275
Residential heating	1 418	2 608	379	625
Services	249	263	5	21
Air transport	883	1 266	0	39
Total	20 342	104 984	2 558	2 607

Lung cancer cases in Budapest

A tüdőrákos betegek számának alakulása
Budapesten 1970-2004 között
(100 000 lakosra)

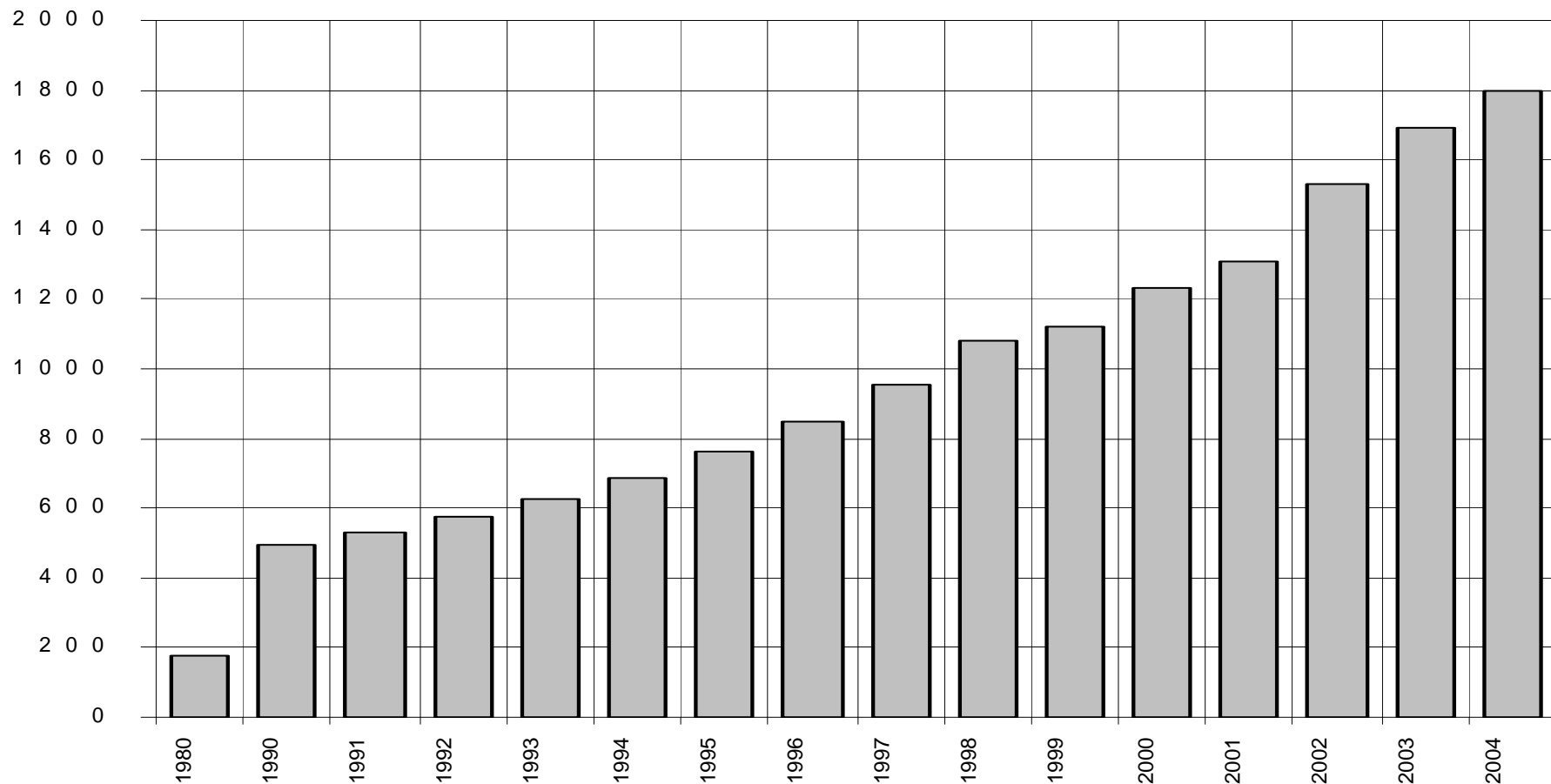
Forrás: Országos Korányi TBC és Pulmonológiai Intézet



Asthmatic cases in Budapest

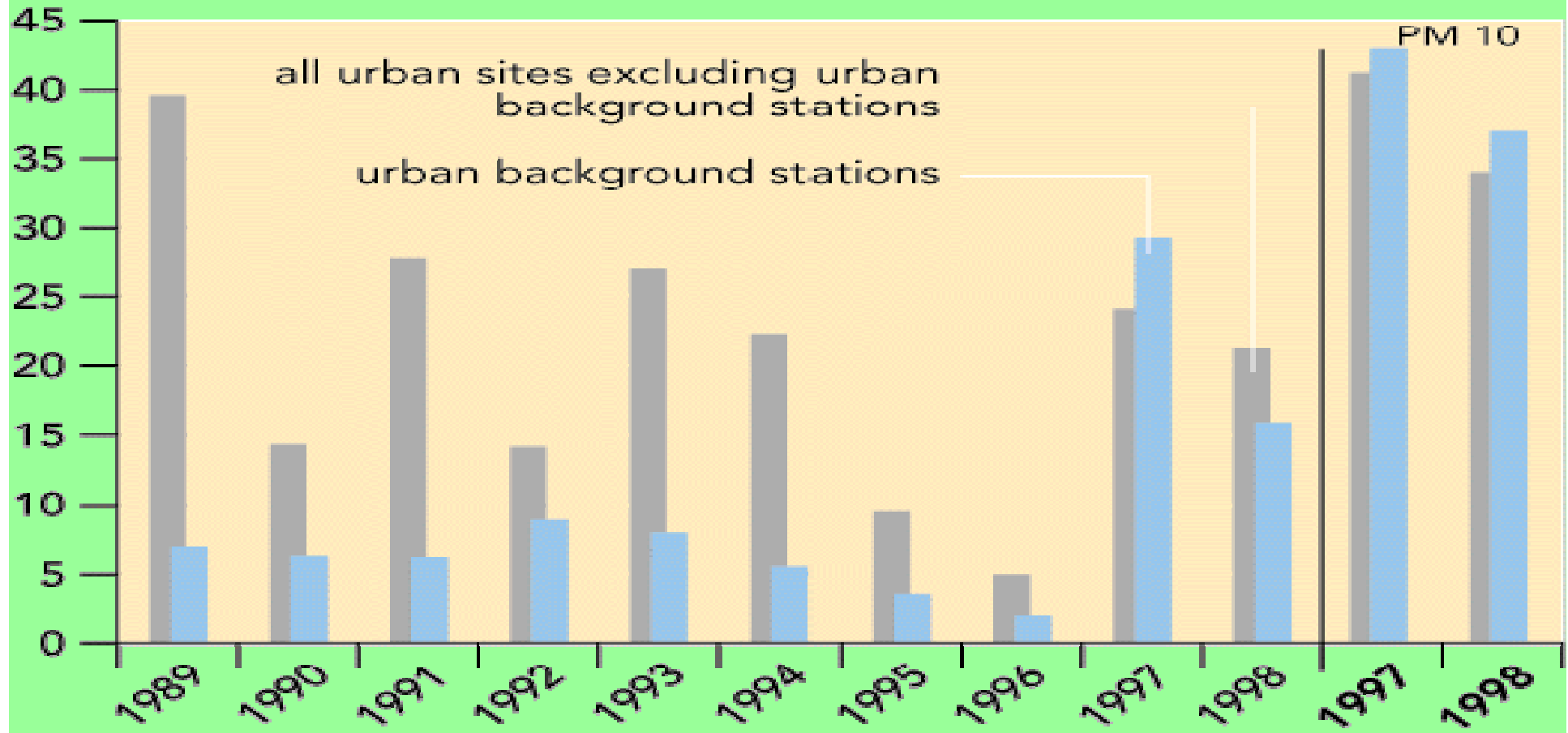
Az asztmás betegek számának alakulása
Budapesten 1980 – 2004 között
(100 000 lakosra)

Forrás: Országos Korányi TBC és Pulmonológiai Intézet

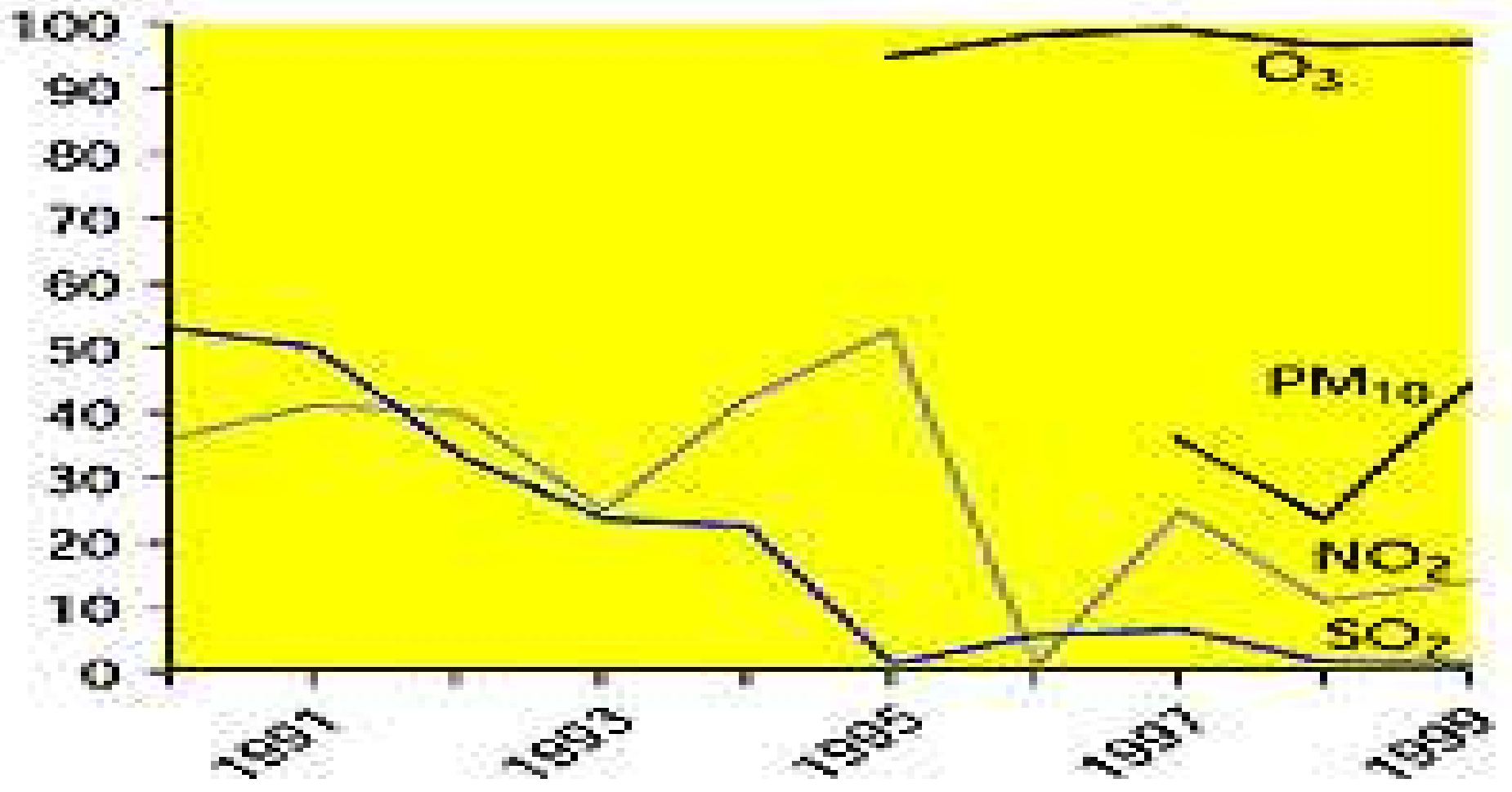


Number of exceedance days in EU cities – flying dust – PM10

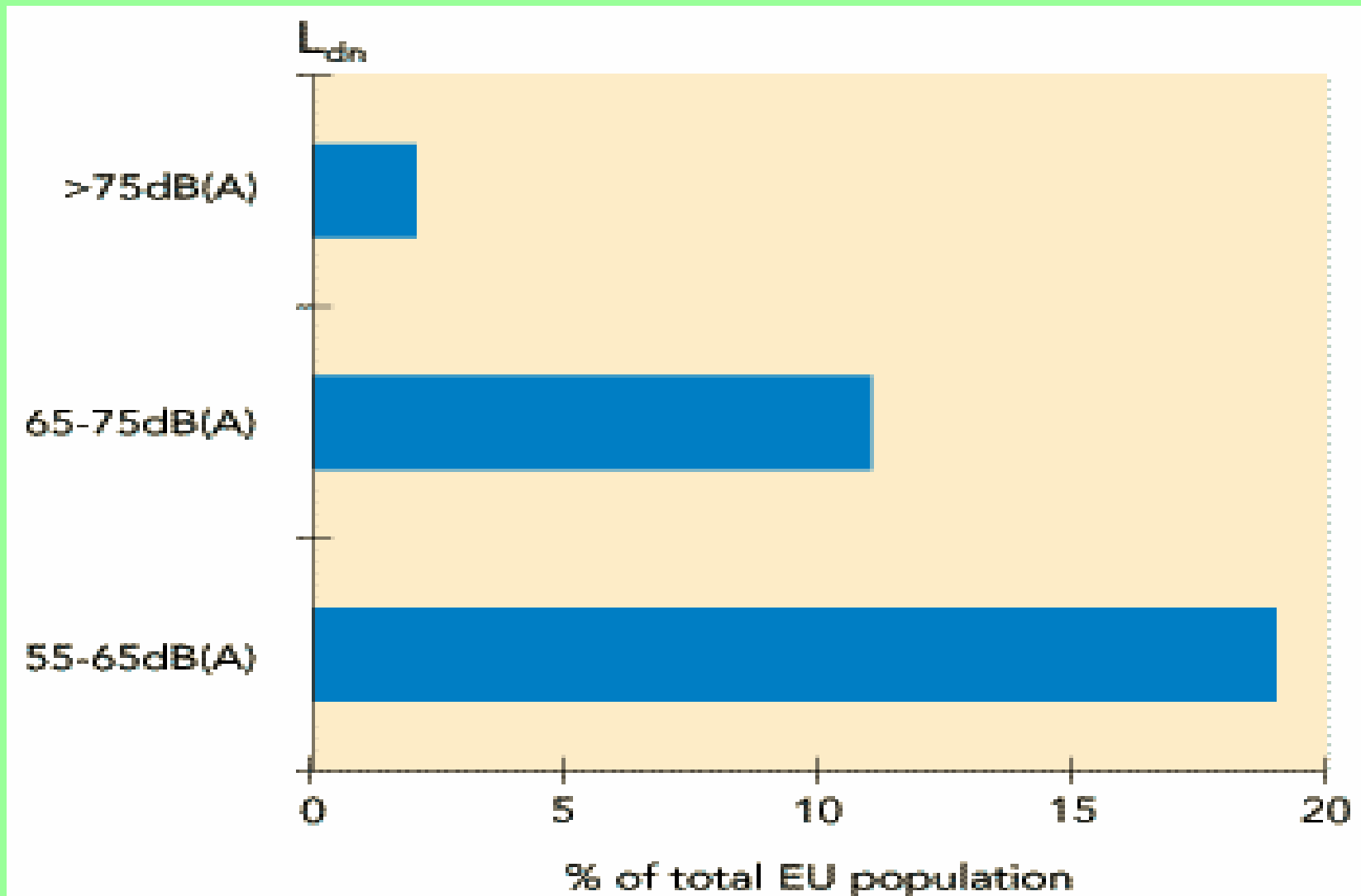
average number of exceedance days



Exposed population rate in EU cities over limit values

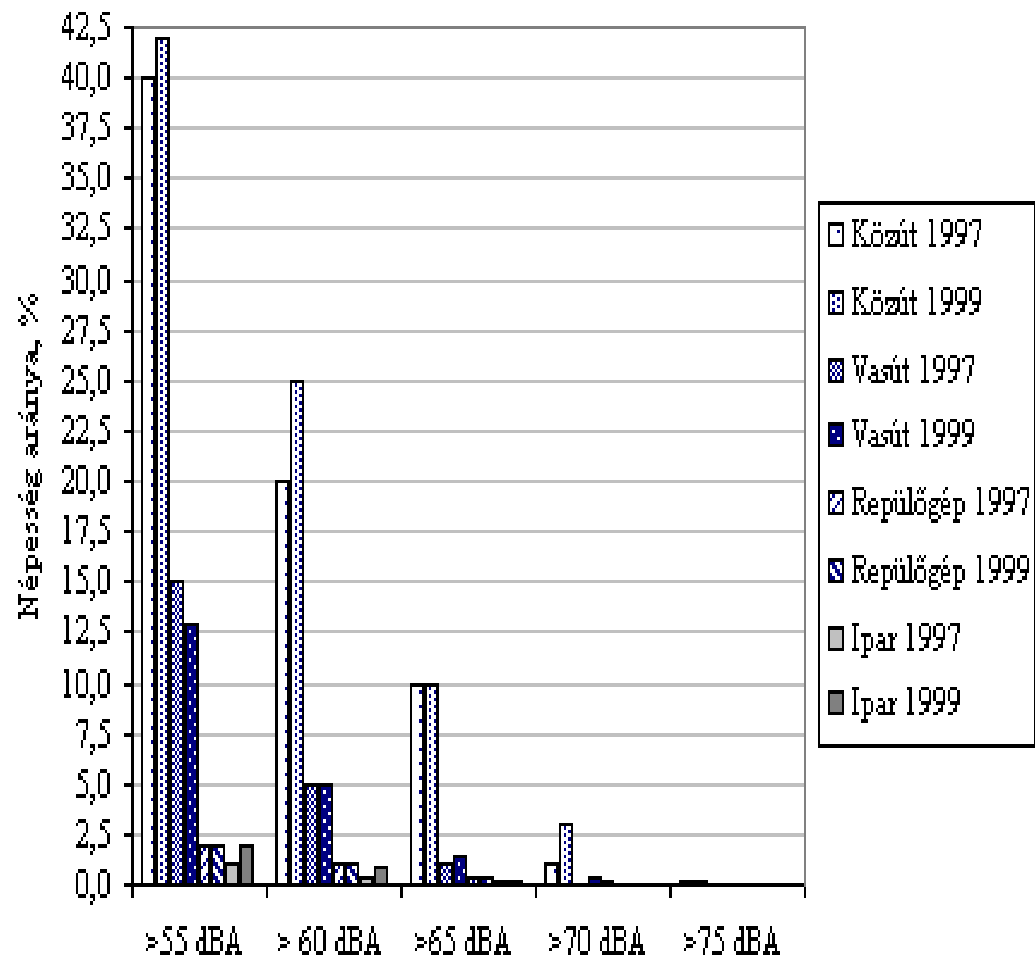


Rate of exposed EU population by noise



Rate of exposed population by noise – Hungary -

A különböző zajterhelésű lakásokban élő népesség, 1997 és 1999



- Road '97
- Road '99
- Rail '97
- Rail '99
- Air '97
- Air '99
- Industry '97
- Industry '99

Sustainable mobility

conditions, requirements, approaches

- **Survey of criteria and factors, research works** – European Union, and OECD thematic projects.
- **Basic-mobility**, without endangering, damaging the nature and environment.
- Today's **basic mobility needs**, expected environment and resources in the future, clearing of public health threats, and threshold limits of emission factors, polluters.

Sustainable mobility

- **Social and economic** considerations of sustainability – equity, fairness, practical implementation.
- **Qualitative** definitions and **quantitative** criteria for fulfilment - formulation of mobility objectives, demands, and those relation with environmental criteria and objectives.

Sustainable mobility - priorities

- Improvement of market access and operation conditions, emphasizing the **rail sector** and **ports**.
- **Development of integrated transport systems** with the TEN networks and support of intelligent transport systems, by GNSS - global navigation satellite systems -.
- **Fair and efficient pricing of transport** by elimination of competition inconveniences between transport modes.
- More attention to the **social conditions** of Transport.

Sustainable mobility - criteria

Environmental and Public Health Objectives		
Noise – WHO guidelines -	⇒	Noise sources - 50% - 70%
Air quality – WHO guidelines, NO ₂ PM – reduction Ozone level reduction	⇒	Emissions - 50% NO _x , 90% PM - 80% NO _x , és VOC
Acidification, eutrofisation Reduction of critical level	⇒	SO _x , NO _x , emissions - 75% - 80% (- 50% NH ₃)
Climate protection CO ₂ emission stabilization	⇒	Greenhouse gas, CO ₂ emissions OECD 80%, globally 50%

Sustainable mobility criteria and objectives for 2030

<p>CO₂ Reduction under the 1990 level, on the field of transport 20% of the level of 1990 is the objective.</p>	<p>NO_x Reduction of Transport related emissions to 10%- of the 1990h level.</p>
<p>VOC. Reduction of carcinogene hydrocarbon chemicals emission under the 10% of 1990 level.</p>	<p>Particulate Matter – PM10 Reduction of the 1990 level by 55-99%, based on local, and regional conditions.</p>
<p>Noise 55 dB daily and 45 dB night noise level</p>	<p>Land use Reduction of land use for transport infrastructures and service facilities under the 1990 level.</p>

Tools, channels, policy instruments – towards sustainability -

- **Technology** – infrastructure, vehicles, and control –
- **Regulation** tools and network management – control and traffic influence – traffic calming, parking, pedestrian areas, advantage of public transport and soft modes, level of services (access, frequency, reliability)

Tools, channels, policy instruments – towards sustainability

- **Information** and communication tools, - service of traffic data, signals (static and dynamic), onboard information, route planning, promotion, telecommunication (e-
- **Economic tools**, charges, fees, parking, road tolls, fares, taxes (fuel, vehicle, land use etc.)

Integration of tools

**into strategic
directions:**

		Strategic directions				
		Travel demand management	Car use management	Development of alternatives	Road network development	Vehicle and fuel development
Tools of influence	Technology: infrastructure, vehicle, energy	- Traffic oriented planning	- Public networks - P+R, B+R systems	- Rail and public transport infrastructure - Comfort of vehicles	- New roads, - Parking facilities	- Low emission vehicles - Alternative fuels - Alternative drives
	Regulation: control and management	-Land use regulation - Control of sub-urbanisation	- Limits of drive in - Regulation of parking - Traffic calming	- Offering advantages - Service management	- Traffic management - Urban traffic control	- Emission limits - Fuel quality - Vehicle control systems
	Information services: advising, warning and communication	- Tele work, - Navigation (ITS)	- Campaigns	- Real time information services	- Network guidance - Safety advises - Traffic forecasting	- Environmental awareness
	Economic tools: charges, taxes	- Land use charges, taxes	- Road tolls, - Fuel taxes, - Vehicle taxes	- Support policies	- Road tolls - Parking charges	- Fuel taxes - Environmental charges

What NGOs can do

- **Participation:** Local Master Plans, Environmental Strategic Plans – preparation, discussion, implementation, on local authority level,
- **Local initiatives:** green areas, traffic calming, pedestrian and cycling arrangements,

What NGOs can do

- **Control** of large, mass and traffic attracting **investments**, malls, shopping and trade centers, (green-field) residential areas – in and outside of the cities, suburb regions - .
- Requirement of **EIA** + Transport, Social, Trade and Economic Impact Assessments,

What NGOs can do

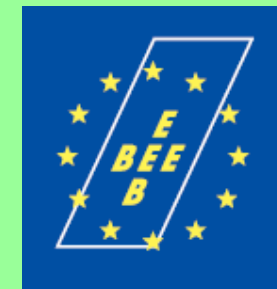
- **Public awareness**, - citizens – groups, other types of NGOs, local decision makers, MPs, and governmental authorities,
- **Campaigns**, actions, publications, newsletters, internet channels, forums, public meetings,
- **Studies, projects** on targeted areas, presentations,

„Environmentally harmful subsidies and ways to eliminate them”

International Conference

Budapest, September 2-3, 2004

Hungarian Academy of Sciences



November 23.-24. 2005.

Proposals of the Clean Air Action Group



- Proposals to the State Budget – Opportunities of the environmentally sound reform of the State finances