



HUNGARIAN MINISTRY
OF RURAL DEVELOPMENT

PM/BC situation in Hungary and measures for its reduction

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Clean Air for European Cities
Bratislava, 12-13 February 2013.



Air quality

PM situation
BC data

Emissions

total PM emissions/source distribution
NEC ceilings

Reduction measures

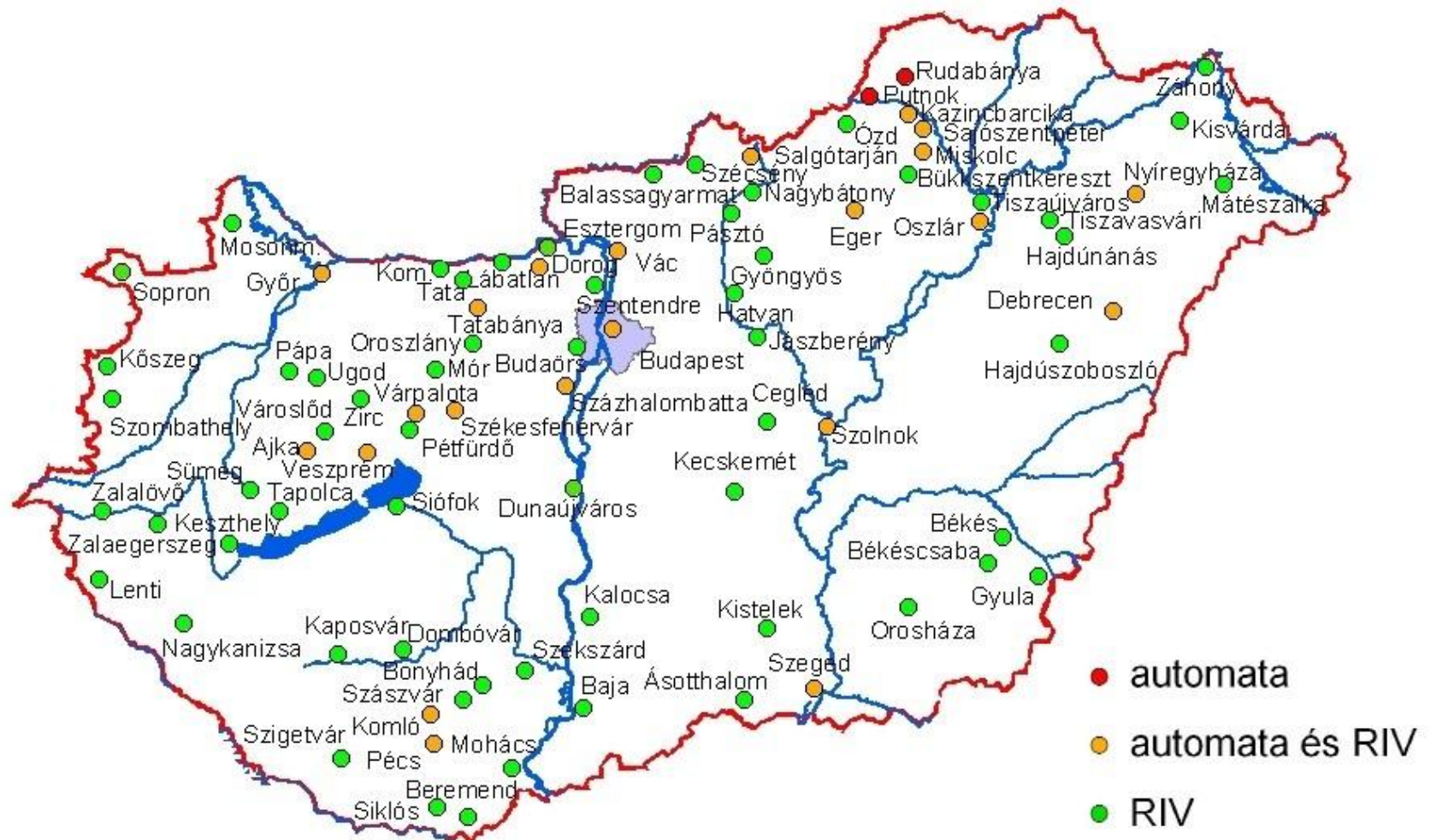
*Hungarian Intersectoral Action Program for Reduction of
Particulate Matter (PM₁₀)*

Year 2011

possible causes of high PM pollution



Hungarian Air Quality Network





Annual $\mu\text{g}/\text{m}^3$
Daily N° days $> 50 \mu\text{g}/\text{m}^3$

PM₁₀ pollution in Hungary

	2005		2006		2007		2008		2009		2010		2011		2012*	
	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily
Ajka	29	38	26	20	24	10	24	20	24	15	23	16	28	43	22	14
Bp. Baross	48	129	42	91	40	46										
Bp. Gilice	45	106	38	69	30	43	32	43	30	37	28	43	33	48	30	46
Bp. Kőrakás	47	113	54	161	43	94	39	74	31	31	37	84	35	64	29	40
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Miskolc	57	177	62	224	41	89	41	91	36	59	39	77	44	112	36	80
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Szigetújfalu	31	36	31	37	25	6	23	1	27	4	24	3	39	14		
Tatabánya	23	5	35	52	27	25	26	26	26	20	27	35	30	48	26	22
Veszprém	29	28	27	14	26	20	25	21	25	16	28	38	26	37	15	9

Automatic monitoring station

SZEGED



	BC	PM ₁₀	PM _{2.5}
2005	1.83	44.32	29.07
2006	2.49	44.74	24.79
2007	2.65	43.09	24.23
2008	2.84	41.16	27.65
2009	2.43	37.20	22.89
2010	2.24	32.46	21.94
2011	1.76	33.93	23.63
2012	1.13	25.42	13.99

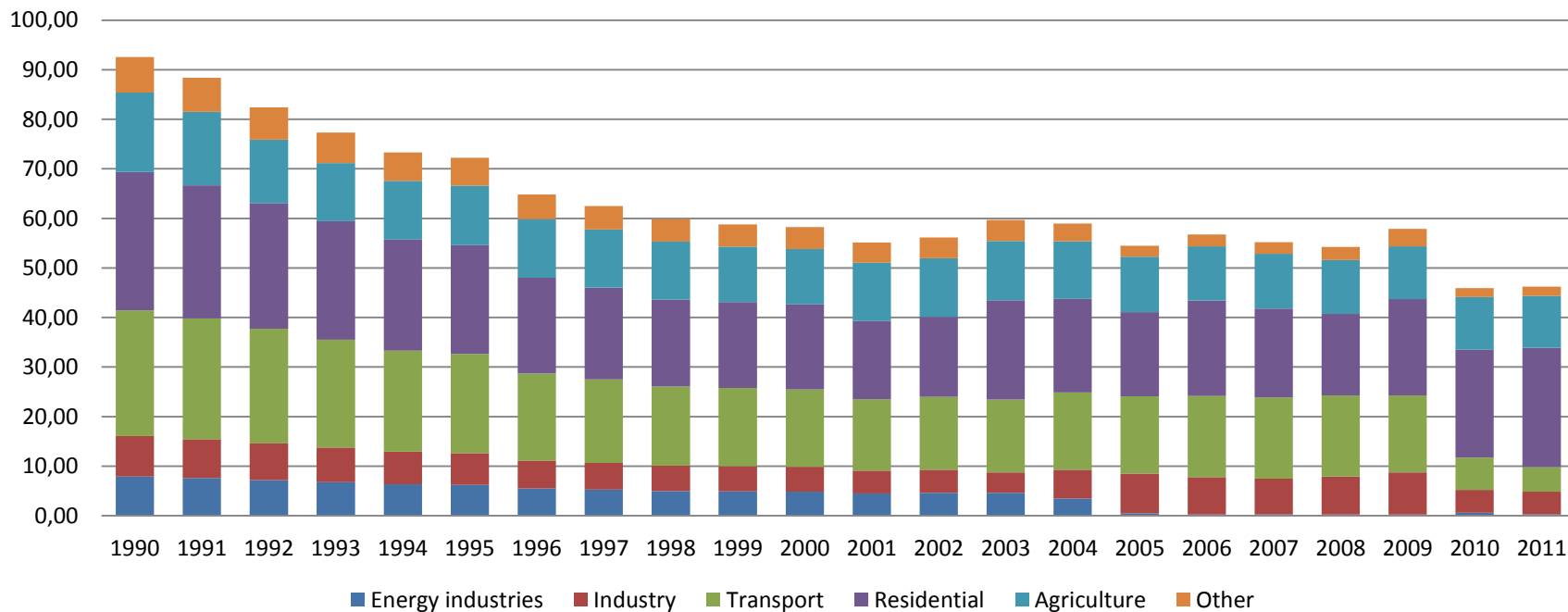
70 %

55 %

Annual average
 $\mu\text{g}/\text{m}^3$

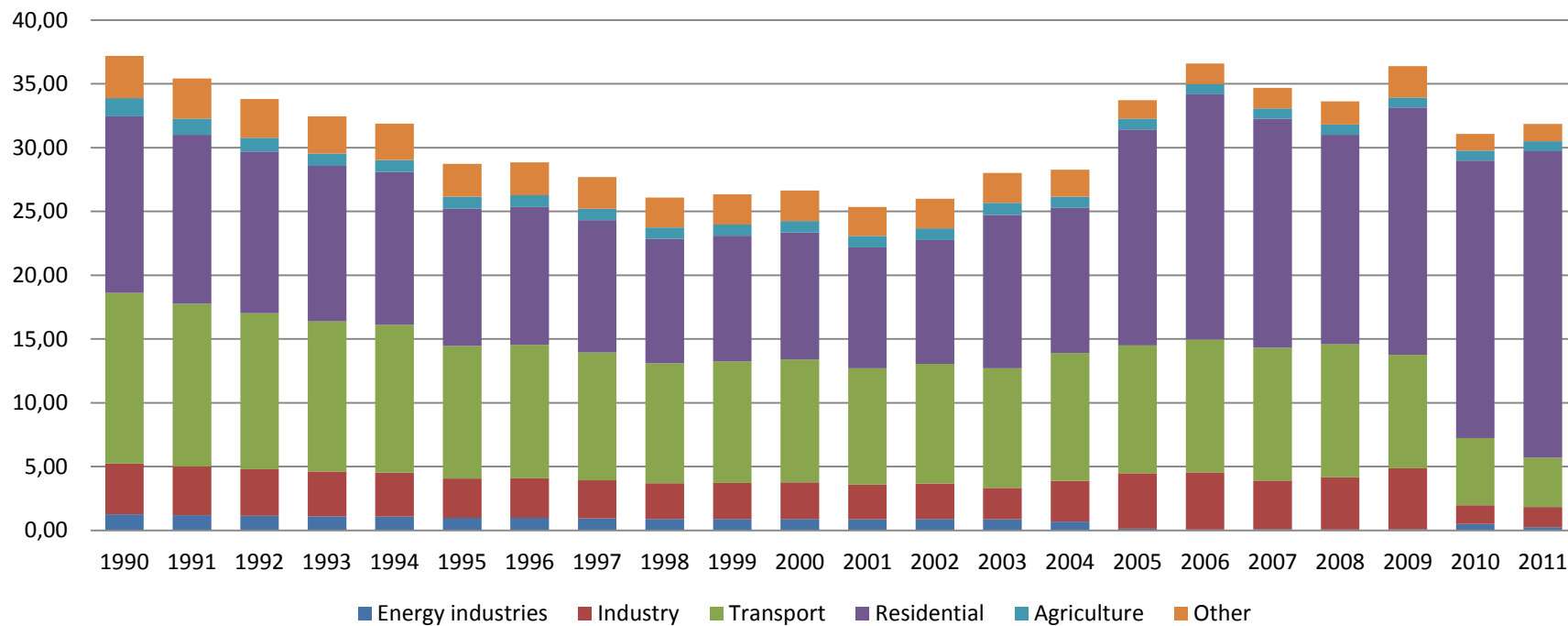


HU PM₁₀ (Gg)





HU PM_{2.5} (Gg)





kt/év	SO ₂	NO _x	NH ₃	VOC	PM _{2,5}
2020 ceilings	70 (46%)	134 (34%)	72 (10%)	124 (30%)	27 (13%)
2010 ceilings	500	198	90	137	-
2010	32	162	65	109	32
2009	80	167	68	128	28
2008	88	183	71	141	23
2007	84	190	71	148	21
2006	118	208	81	177	29
2005	129	203	80	178	31

	SO2		NOX		NH3		VOC		PM 2.5	
	Emission levels 2005	Reduction from 2005 level	Emission levels 2005	Reduction from 2005 level	Emission levels 2005	Reduction from 2005 level	Emission levels 2005	Reduction from 2005 level	Emission levels 2005	Reduction from 2005 level
Belarus	79	20%	171	21%	136	7%	349	15%	46	10%
Croatia	63	55%	81	31%	40	1%	101	34%	13	18%
Norway	24	10%	200	23%	23	8%	218	40%	52	30%
Switzerland	17	21%	94	41%	64	8%	103	30%	11	26%
Austria	27	26%	231	37%	63	1%	162	21%	22	20%
Belgium	145	43%	291	41%	71	2%	143	21%	24	20%
Bulgaria	777	78%	154	41%	60	3%	158	21%	44	20%
Cyprus	38	83%	21	44%	5.8	10%	14	45%	2.9	46%
Czech Rep.	219	45%	286	35%	82	7%	182	18%	22	17%
Denmark	23	35%	181	56%	83	24%	110	35%	25	33%
Estonia	76	32%	36	18%	9.8	1%	41	10%	20	15%
Finland	69	30%	177	35%	39	20%	131	35%	36	30%
France	467	55%	1,430	50%	661	4%	1,232	43%	304	27%
Germany	517	21%	1,464	39%	573	5%	1,143	13%	121	26%
Greece	542	74%	418	31%	68	7%	222	54%	56	35%
Hungary	129	46%	203	34%	80	10%	177	30%	31	13%
Ireland	71	85%	127	49%	189	1%	57	25%	11	18%
Italy	403	35%	1,212	40%	416	5%	1,286	35%	166	10%
Latvia	6.7	8%	37	32%	16	1%	73	27%	27	16%
Lithuania	44	55%	58	48%	39	10%	84	32%	8.7	20%
Luxemburg	2.5	34%	19	43%	5.0	1%	9.8	29%	3.1	15%
Malta	11	77%	9.3	42%	1.6	4%	3.3	23%	1.3	25%
Netherlands	65	28%	370	45%	141	13%	182	8%	21	37%
Poland	1,224	59%	866	30%	270	1%	593	25%	133	16%
Portugal	177	63%	256	36%	50	7%	207	18%	65	15%
Romania	643	77%	309	45%	199	13%	425	25%	106	28%
Slovakia	89	57%	102	36%	29	15%	73	18%	37	36%
Slovenia	40	63%	47	39%	18	1%	37	23%	14	25%
Spain	1,282	67%	1,292	41%	365	3%	809	22%	93	15%
Sweden	36	22%	174	36%	55	15%	197	25%	29	19%
UK	706	59%	1,380	35%	307	8%	1,088	32%	81	30%
Eu ^{a)}	7,828	59%	11,355	42%	3,813	6%	8,842	28%	1,504	22%

a) The sum of the exact emission levels in 2005 by EU Member States, as reported

Action Programs on PM₁₀ abatement

Local

environmental action plans and programs of **local governments** contains measures on air pollution

Regional

regional **environmental inspectorates/agencies** prepare special PM₁₀ abatement action programs on their territories of air quality zones (2004, 2008, 2013)

Nation-wide

Intersectoral Action Program for the Reduction of Particulate Matter (PM₁₀)

Intersectoral Action Program for the Reduction of Particulate Matter (PM₁₀)

Hungarian Government accepted the program
on the 12^{ve} of October 2011
by Governmental decree N^o 1330/2011.

Aim: to reduce PM₁₀ concentration below limit values in the whole
area of the country.

Time coverage: 2011-2030

Estimated financial need: HUF 700 billion

Actions of the PM₁₀ reduction program

Traffic:

- Establishment of **low emission zones** and introduction of other actions for mitigating the traffic (R+D)
- Preferring the **public traffic** over the individual motorized traffic. Revision and modification of the vehicle's **environmental classification system**.
- **Ecodriving** (application system)
- **Bus replacement** program (application system)
- Program for **particle filtering** (application system)
- Decrease of the amount of **dust reaching the public roads** and settling there (application system)
- Popularization of the **non motorized traffic** (campaigns)

Traffic:

- Tightening up the traffic restriction of **heavy duty trucks** (legislation)
- Improvement and support of the **railway and combined** transport of goods (application system)
- Preparing the **traffic plans of workplace** (R+D)
- Environmental based reform in the accounting of **the official use cars** (legislation)
- Revision of the **parking systems** (R+D)
- Increase the share of **more environmental-friendly alternative fuels** and **drive systems** related to the means of transport (electrical, CNG, hybrid, Hydrogen) (R+D, legislation, application system)
- **City logistics** (application system)
- Initiation of the **electronic toll** for the heavy trucks (legislation)

Industry:

- Review of **dust separating technologies** and introduction of control obligation of dust separating systems (legislation)
- Exploration of PM₁₀ emission of **mining** and involvement of this activity into the mandatory reporting system (R+D)

Residential sector:

- Improving **competitiveness of district heating**, decrease of pollution caused by domestic combustion plants (application system)
- Suppression of **smoking** (legislation, economic tools)
- Ban on **garden waste burning** in parallel with developing domestic composting systems on national level (legislation, application system)
- Reduction in emission of **residential combustion plants under 140 kW** thermal input (application system)



Agriculture:

- Reduction of agricultural PM₁₀ emission (R+D)

Horizontal actions:

- **Modelling of transboundary air pollution** (R+D)
- Reviewing the regulation related to **short-term action plans** (legislation)

Information threshold: 75 µg/m³

Alert threshold: 100 µg/m³

*On two consecutive days
and weather forecast predict no dilution of pollution*



Expected results of implementation

Emission of PM_{10} can be decreased by 10-15% with measures of the program. According to international studies it can be declared that such extent of emission reduction can predict an **average 10-20% decrease in PM_{10} concentration** when actions of the program are realized.



Possible causes of high PM₁₀ pollution

Emission

Geographic situation

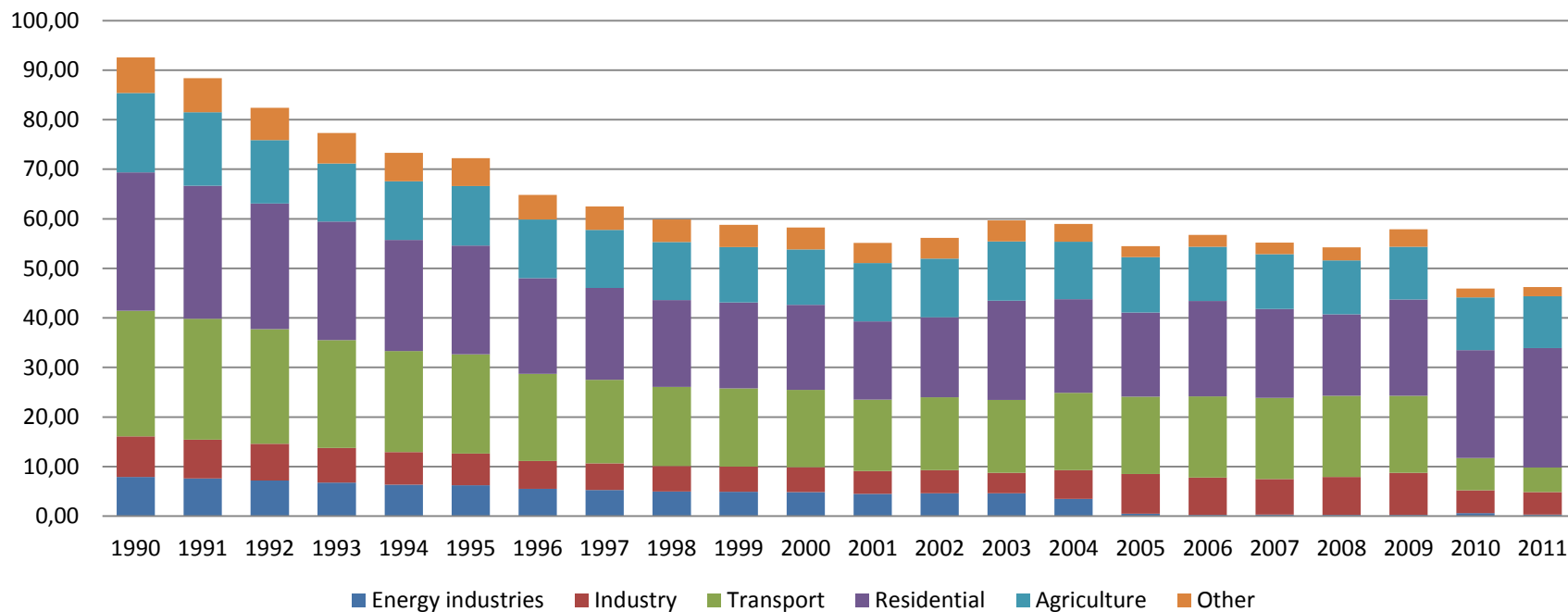
Weather conditions

2011	
Annual	Daily
28	43
33	48
35	64
31	51
37	79
39	79
33	47
34	66
38	65
34	60
32	47
26	27
41	99
44	112
38	66
49	127
40	101
21	25
33	51
27	38
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Emissions

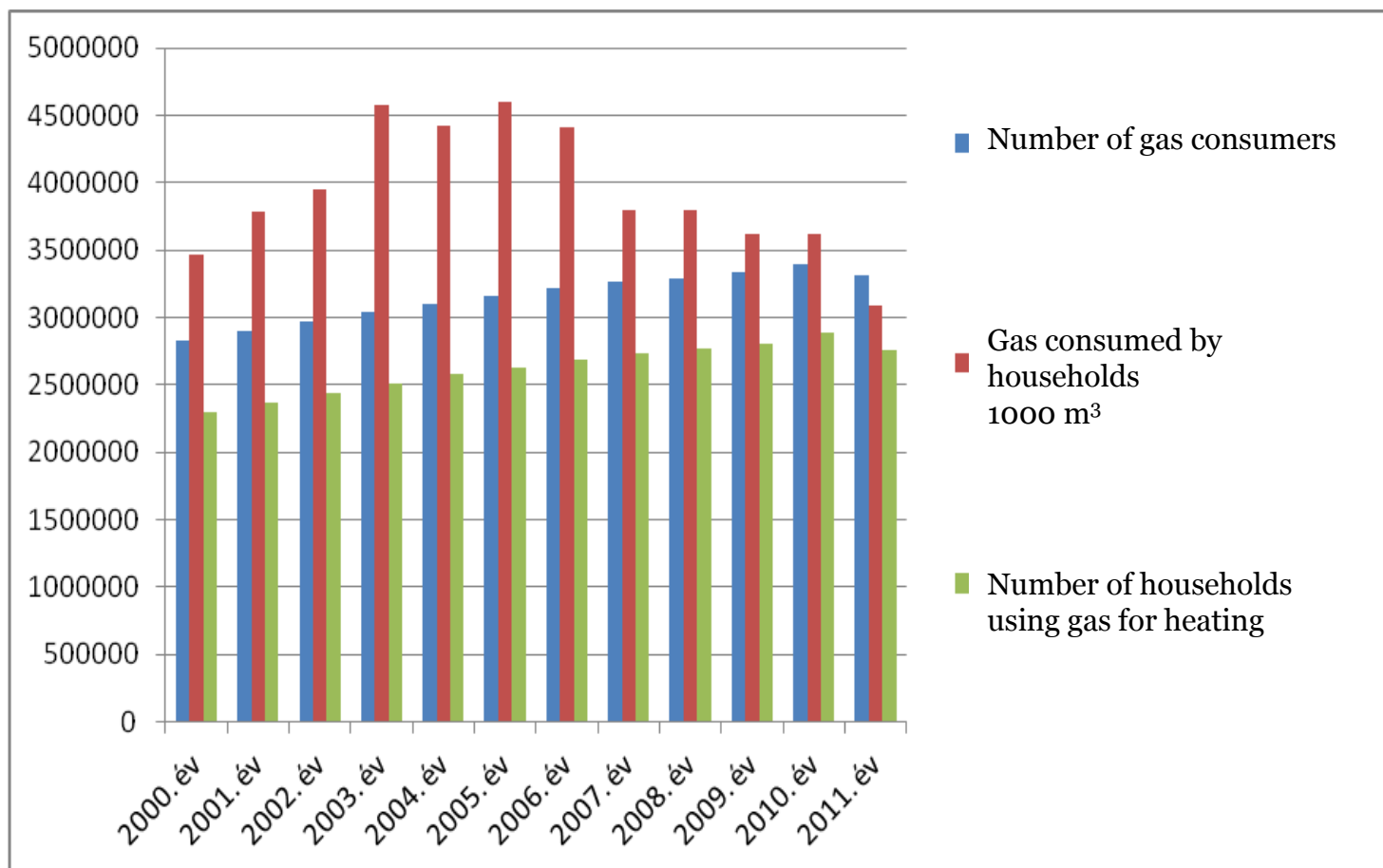
HU PM₁₀ (Gg)





Emissions

Shift in residential fuel consumption

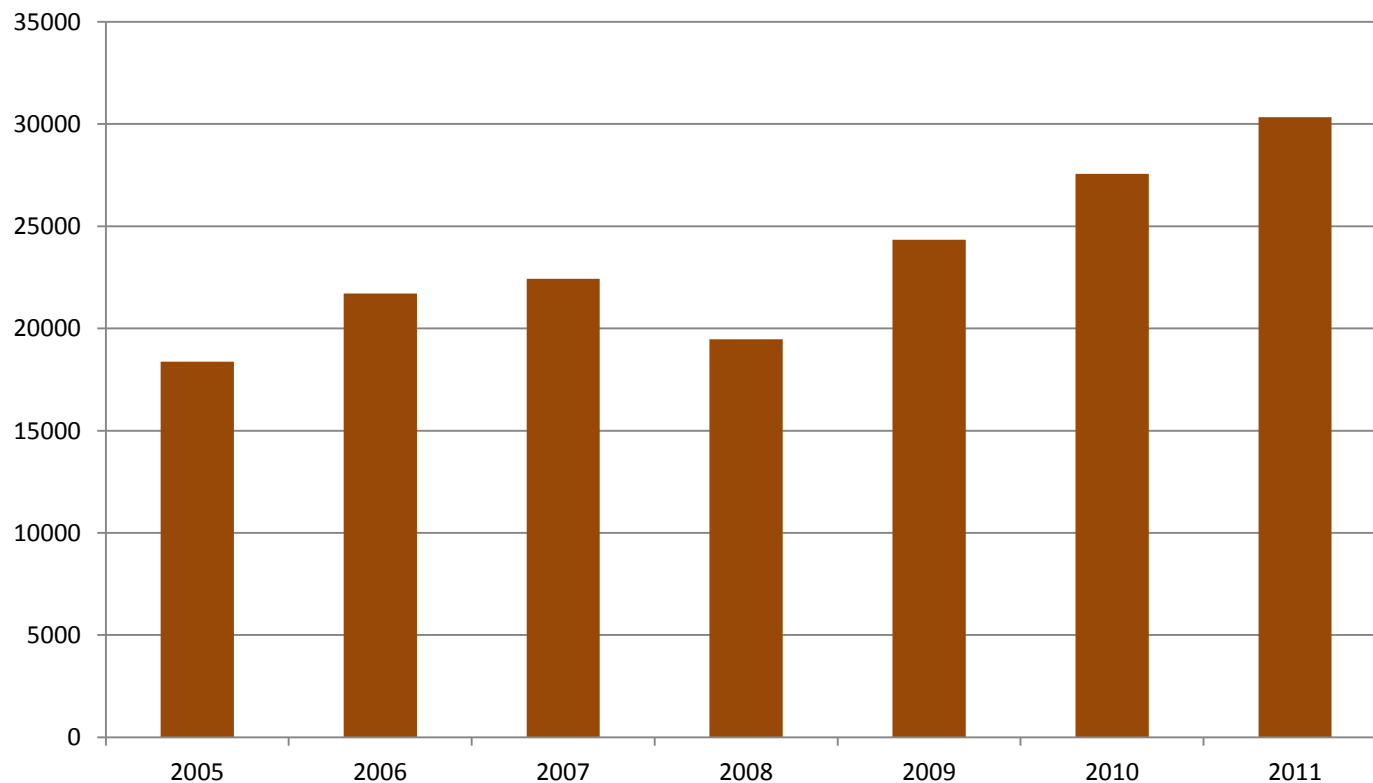




Emissions

Shift in residential fuel consumption

wood and wood waste use (TJ)





Geographical situation



More frequent appearance of inversion weather situation





Weather conditions

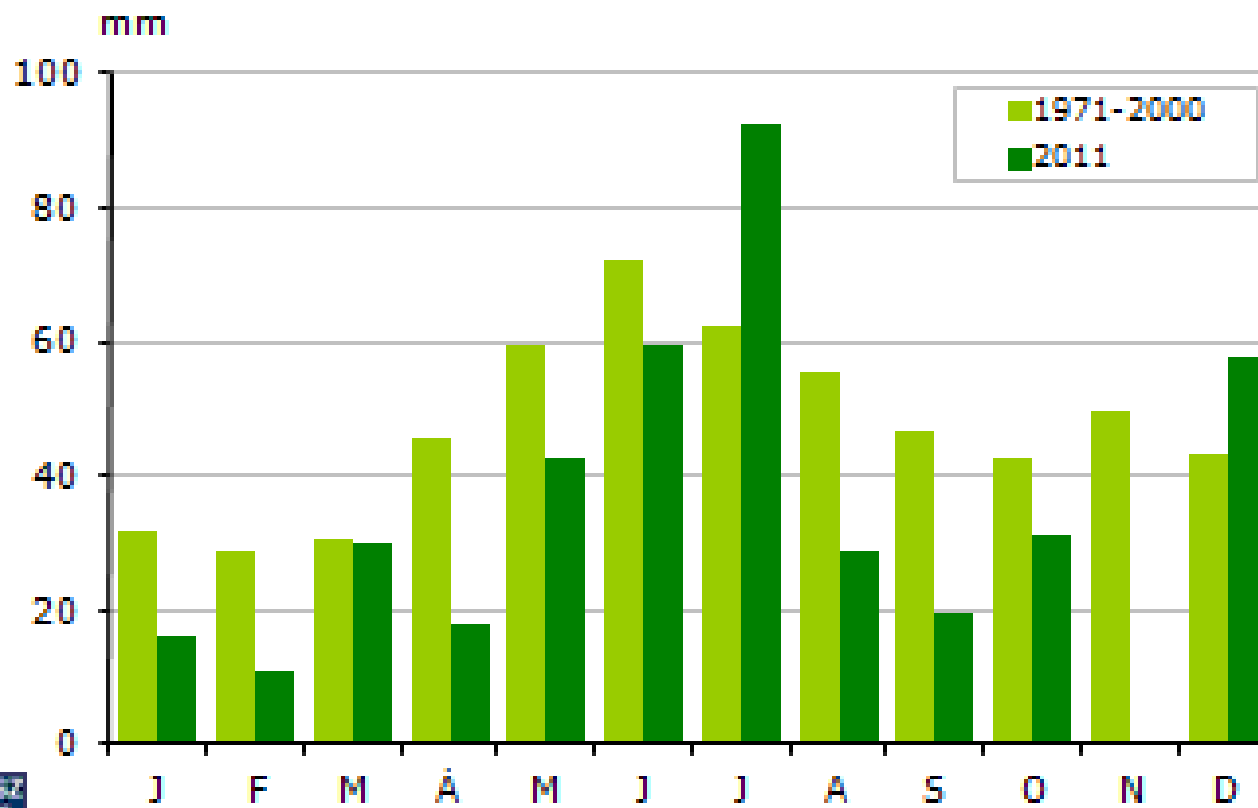
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Annual precipitation*	120	95	108	102	105	169	72	*
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* Normal % compared to average of 1971-2000

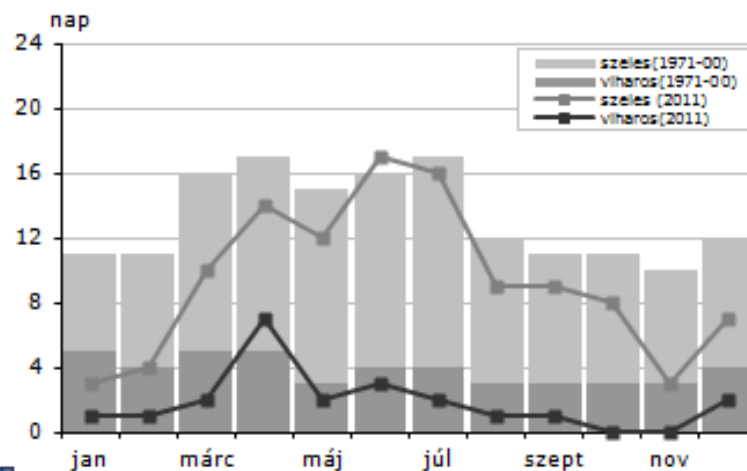
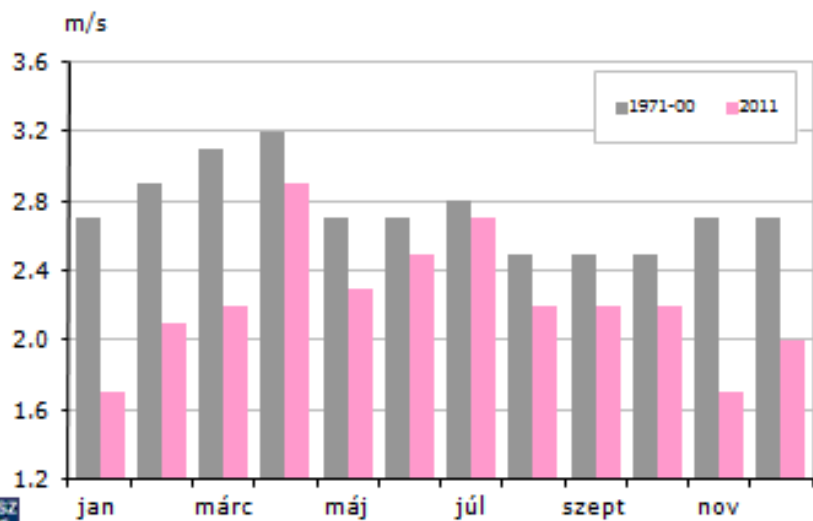


Annual distribution of precipitation in 2011





Wind data in 2011





VIDÉKFEJLESZTÉSI
MINISZTERIUM

Thanks for your attention!

