Mit mutatnak a hazai kibocsátási adatok?

Kis-Kovács Gábor

Lovas Katalin, Ludányi Erika, Tarczay Klára

Alapítva: 1870

Egy főre jutó kibocsátás

CO_2

PFC

N_2O

SF_6

6,2 tonna

(CO_2 eé)

HFC

CH_4

NF_3

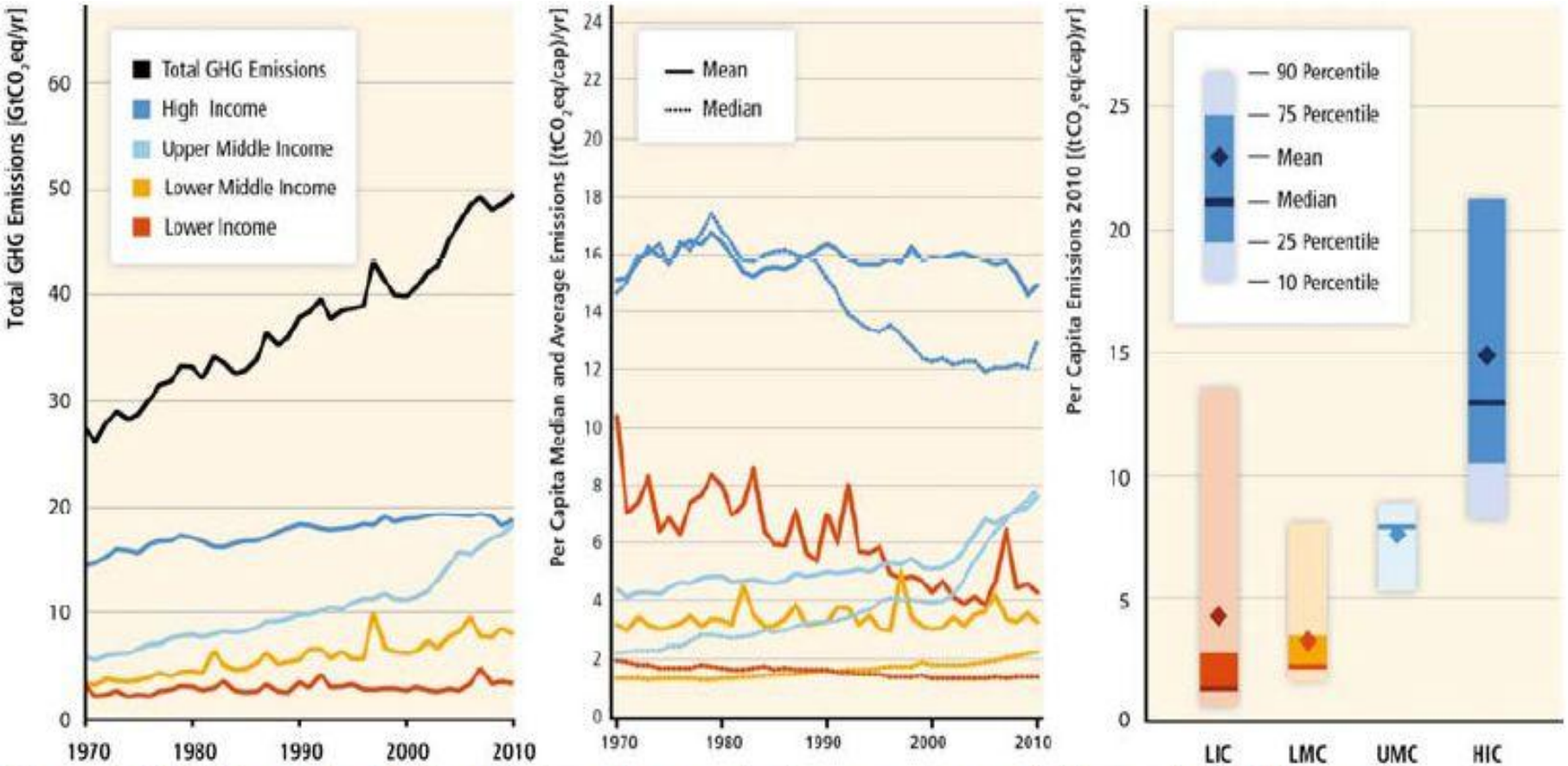


Figure TS.4. Trends in GHG emissions by country income groups. Left panel: Total annual anthropogenic GHG emissions from 1970 to 2010 ($GtCO_2eq/yr$). Middle panel: Trends in annual per capita mean and median GHG emissions from 1970 to 2010 ($tCO_2eq/cap/yr$). Right panel: Distribution of annual per capita GHG emissions in 2010 of countries within each income group ($tCO_2/cap/yr$). Mean values show the GHG emission levels weighed by population. Median values describe GHG emission levels per capita of the country at the 50th percentile of the distribution within each income group. Emissions are converted into CO_2-equivalents based on Global Warming Potentials with a 100 year time horizon (GWP_{100}) from the IPCC Second Assessment Report. Assignment of countries to income groups is based on the World Bank income classification in 2013. For details see Annex II.2.3. [Figure 1.4, Figure 1.8] [Figure 1.4, Figure 1.8]

10,0 t

8,5 t

11,0 t

12,0 t

7,6 t

18,5 t

6,2 tonna

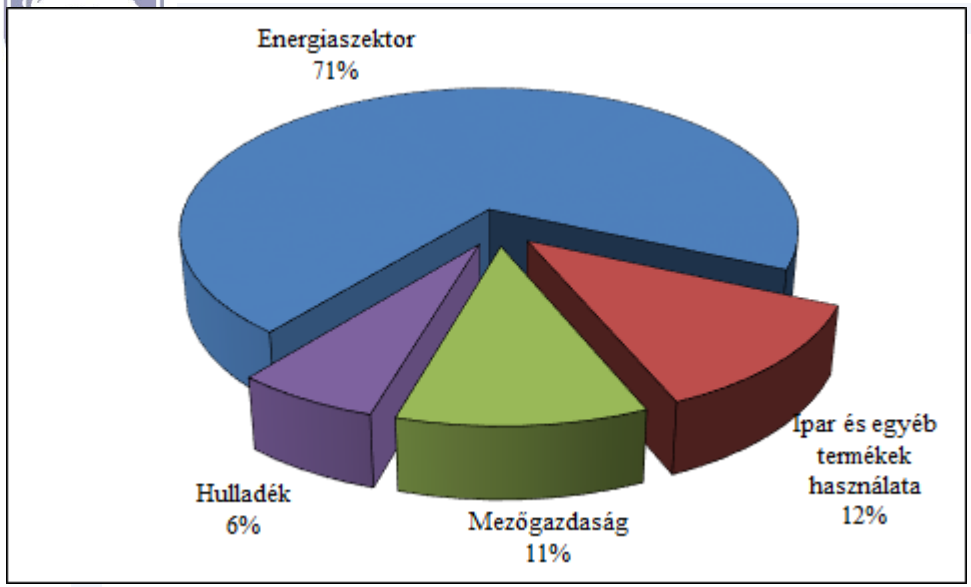
(CO_2 eé)

20,2 t

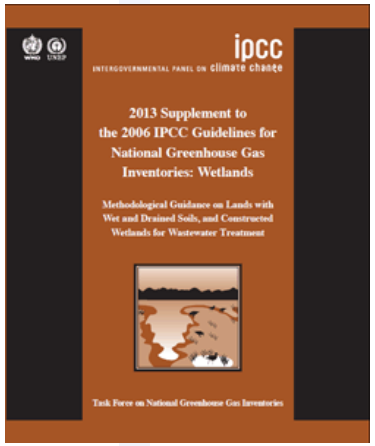
8,7 t

1,8 t

6,8 t



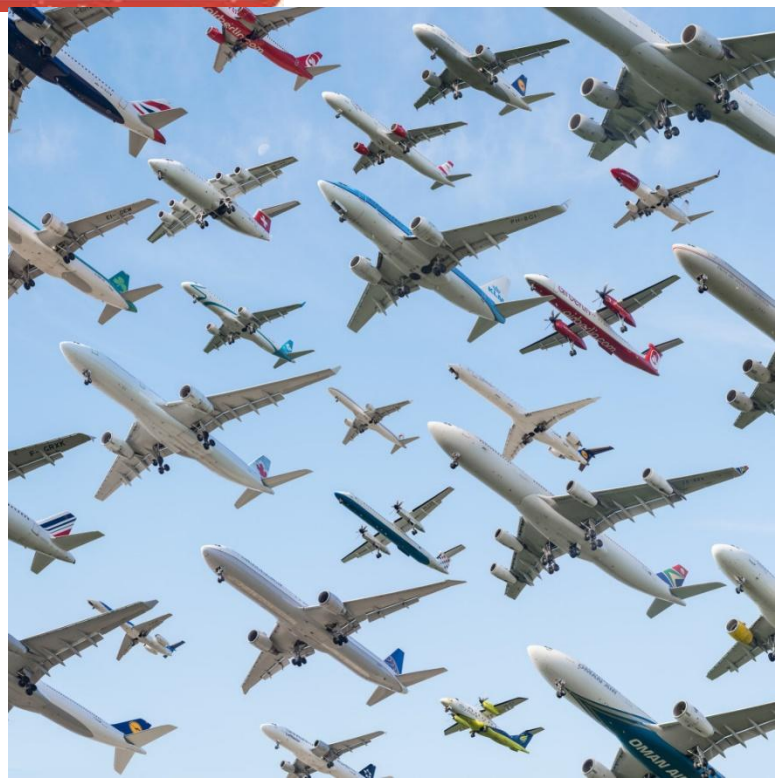
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF$_3$	Total
	CO_2 equivalent [kt]								
Total national emissions [2]	48194.66	7643.36	4364.48	2266.53	1.45	111.88	NO	NO	54579.64
1. Energy	41629.29	1324.66	923.88						43874.77
A. Fuel combustion activities (sectoral approach)	41451.66	573.25	923.64						42588.42
1. Energy industries	13815.53	25.88	65.54						13906.95
2. Manufacturing industries and construction	4238.33	7.35	18.67						4326.35
3. Transport	12842.33	23.54	134.74						12982.64
4. Other sectors	11345.84	513.34	118.54						12847.23
5. Other	17.83	0.88	0.15						18.86
B. Fugitive emissions from fuels	134.67	642.41	0.27						774.35
1. Solid fuels	NO,IE,NA	56.67	NO,IE,NA						56.67
2. Oil and natural gas	134.67	585.75	0.27						717.69
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	4775.15	58.45	96.75	2266.53	1.45	111.88	NO	NO	7382.81
A. Mineral industry	1148.28								1148.28
B. Chemical industry	2325.78	45.36	58.23	NO	NO	NO	NO	NO	2421.36
C. Metal industry	1156.15	1.44	NO	NO	NO	NO	NO	NO	1157.52
D. Non-energy products from fuels and solvent use	142.37	NO,NA	NO,NA						142.37
E. Electronic industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				2266.53	1.45	NO	NO	NO	2267.74
G. Other product manufacture and use	NO	NO	46.45	NO	NO	111.88	NO	NO	158.34
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
3. Agriculture	184.88	2722.53	3268.85						6176.35
A. Enteric fermentation		2836.53							2836.53
B. Manure management		557.88	455.81						1133.69
C. Rice cultivation		18.32							18.32
D. Agricultural soils		NA	3382.84						3382.84
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	17.31								17.31
H. Urea application	86.83								86.83
I. Other carbon-containing fertilizers	88.86								88.86
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry [3]	-5592.14	18.88	52.63						-5512.11
A. Forest land	-5884.14	17.35	18.28						-5848.58
B. Cropland	-282.63	0.15	22.27						-260.22
C. Grassland	-288.55	0.54	8.56						-155.23
D. Wetlands	224.56	NO	1.27						222.83
E. Settlements	288.84	NO,NA	18.17						248.21
F. Other land	8.85	NO,NA	NO						8.85
G. Harvested wood products	-548.28								-548.28
H. Other	NA	NA	NA						NA
5. Waste	134.33	3531.84	113.26						3858.62
A. Solid waste disposal	NO,NA	3858.88							3858.88
B. Biological treatment of solid waste		38.85	34.25						133.18
C. Incineration and open burning of waste	134.33	0.34	2.14						136.77
D. Waste water treatment and discharge		373.88	76.86						443.34
E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1.A)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items: [4]									
International bunkers	543.17	0.83	4.53						547.73
Aviation	543.17	0.83	4.53						547.73
Navigation	NO,NE	NO,NE	NO,NE						NO,NE
Multilateral operations	NO	NO	NO						NO
CO_2 emissions from biomass	12452.14								12452.14
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	11537.13								11537.13
Indirect N_2O			NO,NE						
Indirect CO_2 [5]	NO,NE								
Total CO_2 equivalent emissions without land use, land-use change and forestry									51851.75
Total CO_2 equivalent emissions with land use, land-use change and forestry									54579.64
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

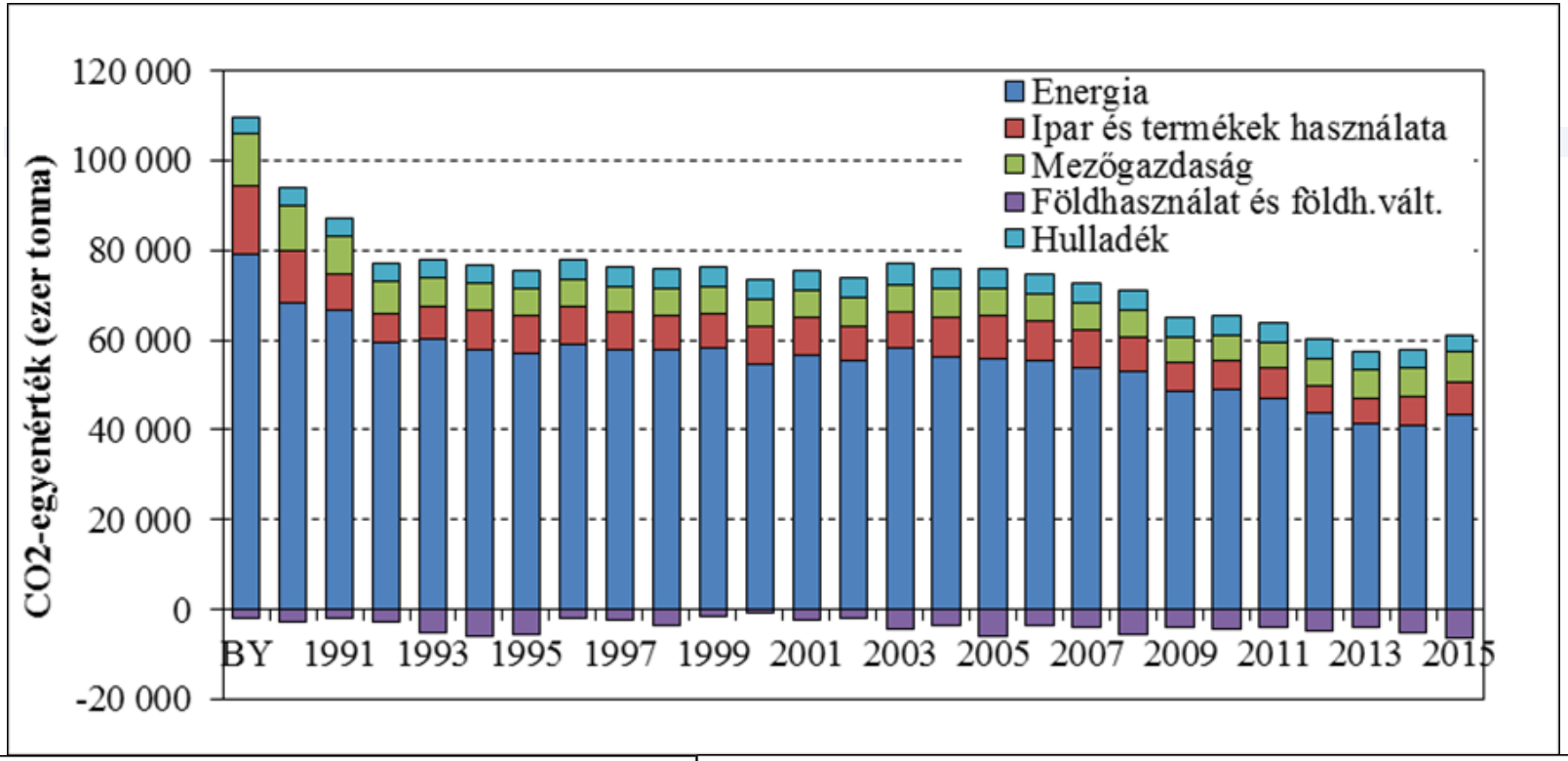


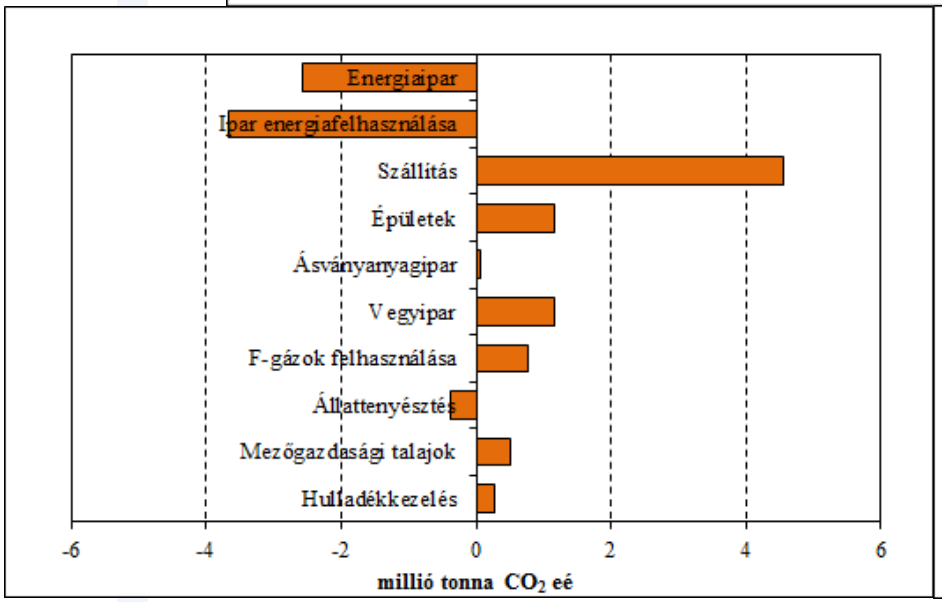
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Amount of waste incinerated (kt wet weight)	IMPLIED EMISSION			EMISSIONS		
		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
		(kt/t waste)			(kt)		
1. Waste Incineration	91.86	2115.45	0.13	0.08	194.33	0.01	0.01
Biogenic [1]	5.31	980.88	0.14	0.20	5.21	0.00	0.00
Municipal solid waste	NO	NO	NO	NO	NO	NO	NO
Other (please specify) [2]	5.31	980.88	0.14	0.20	5.21	0.00	0.00
Non-biogenic	86.55	2245.29	0.13	0.06	194.33	0.01	0.01
Municipal solid waste	NO	NO	NO	NO	NO	NO	NO
Other (please specify) [3]	86.55	2245.29	0.13	0.06	194.33	0.01	0.01
2. Open burning of waste	NO	NO	NO	NO	NO	NO	NO
Biogenic [1]	NO	NO	NO	NO	NO	NO	NO
Municipal solid waste	NO	NO	NO	NO	NO	NO	NO
Other (please specify)	NO	NO	NO	NO	NO	NO	NO
Non-biogenic	NO	NO	NO	NO	NO	NO	NO
Municipal solid waste	NO	NO	NO	NO	NO	NO	NO
Other (please specify)	NO	NO	NO	NO	NO	NO	NO

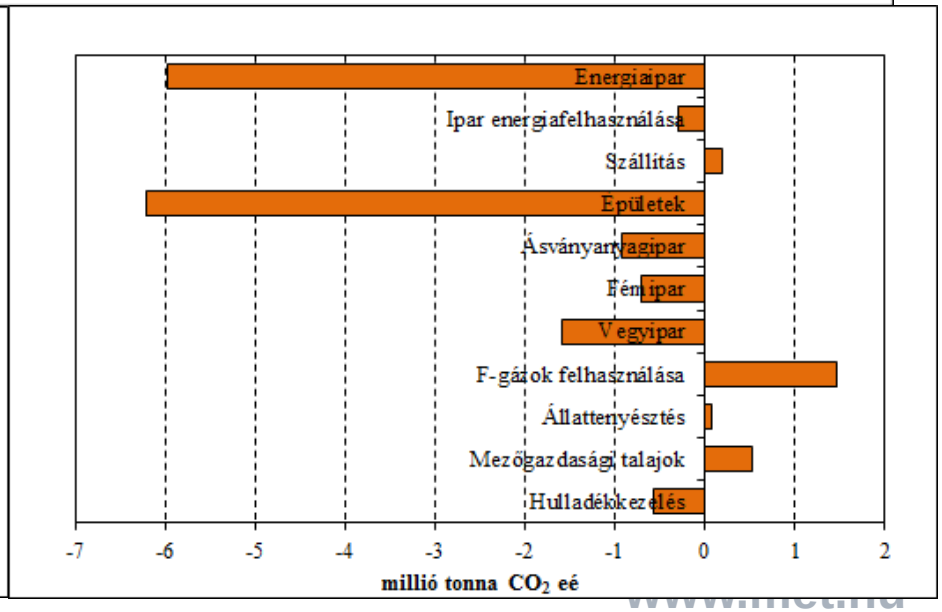
OMSZ

MADE IN CHINA

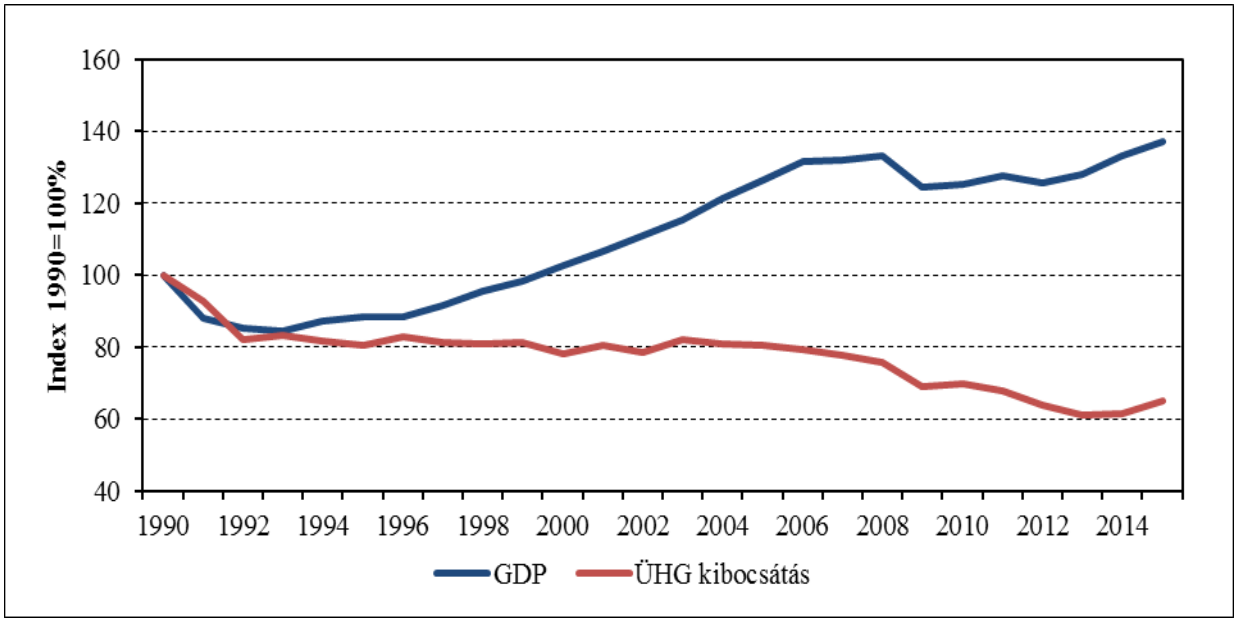



CO2-egyenérték (ezer tonna)
120 000
100 000
80 000
60 000
40 000
20 000
0
-20 000
BY 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015
Energia
Ipar és termékek használata
Mezőgazdaság
Földhasználat és földh.vált.
Hulladék

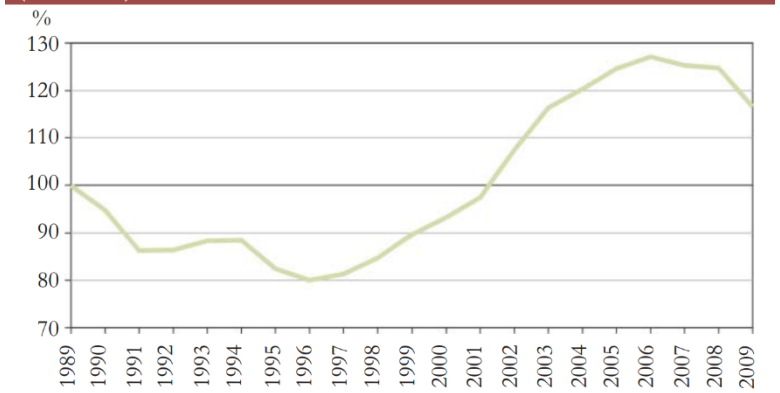

Energiaipar
Ipar energiafelhasználása
Szállítás
Épületek
Ásványanyagipar
Vegyipar
F-gázok felhasználása
Állattenyésztés
Mezőgazdasági talajok
Hulladékkezelés
-6 -4 -2 0 2 4 6
millió tonna CO2 eé


Energiaipar
Ipar energiafelhasználása
Szállítás
Épületek
Ásványanyagipar
Fémipar
Vegyipar
F-gázok felhasználása
Állattenyésztés
Mezőgazdasági talajok
Hulladékkezelés
-7 -6 -5 -4 -3 -2 -1 0 1 2
millió tonna CO2 eé

GAZDASÁGI NÖVEKEDÉS/VÁLSÁG



Egy főre jutó fogyasztás volumenének alakulása
(1989=100)



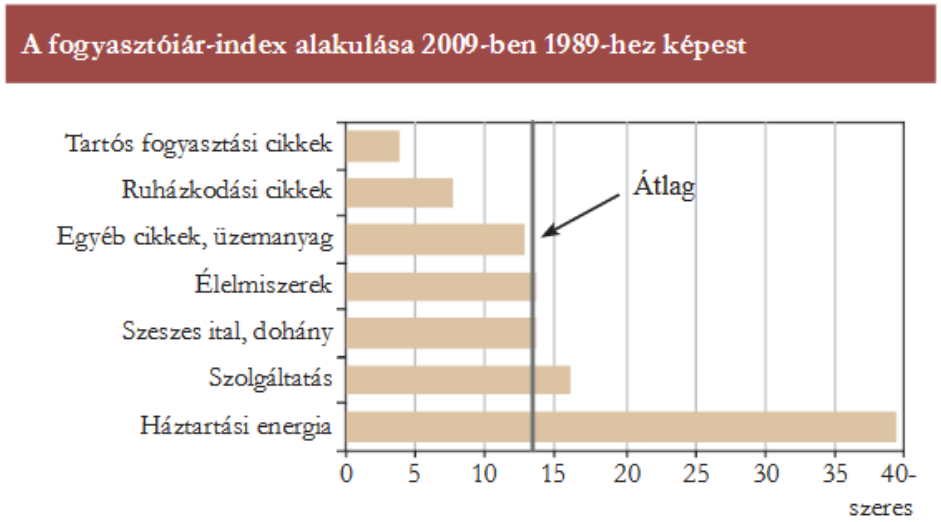
GDP: -7% Kibocsátások: -9%

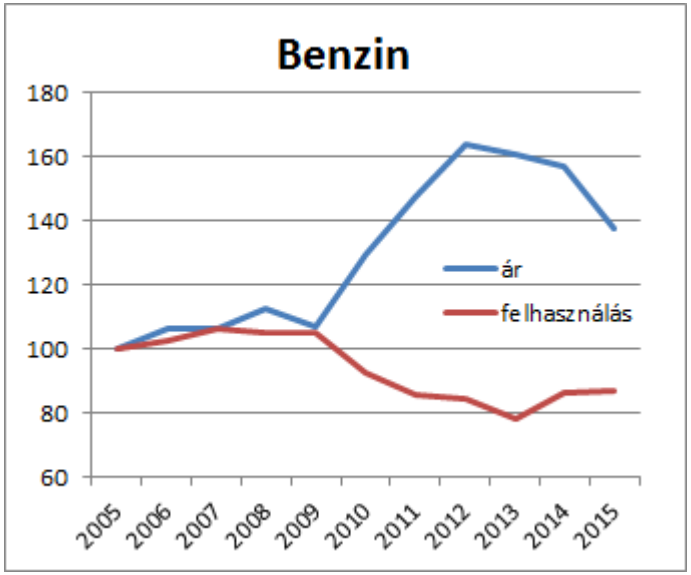
Áramtermelés: -10.3%

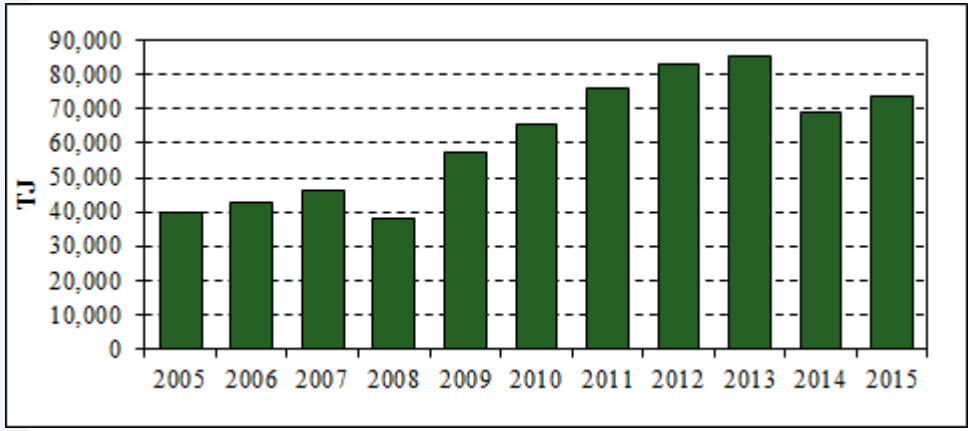
Cementgyártás: -21% (**-59%** 2012-ig)

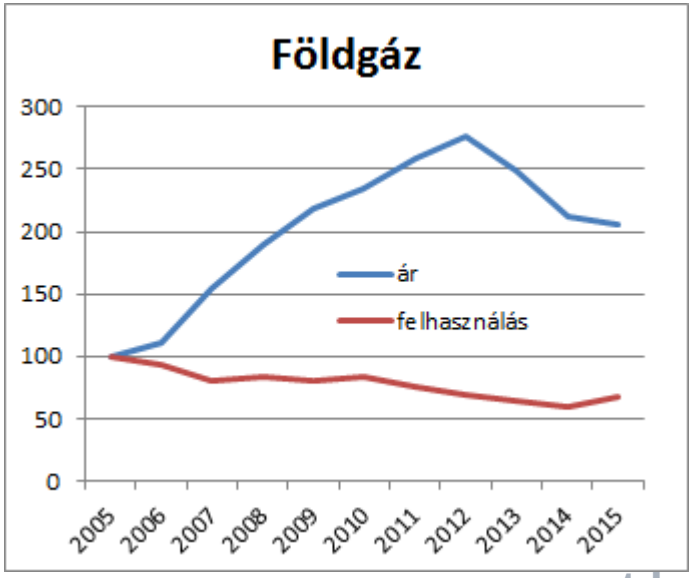
Acélgyártás: -33%

ÁRAK ÉS KIBOCSÁTÁSOK

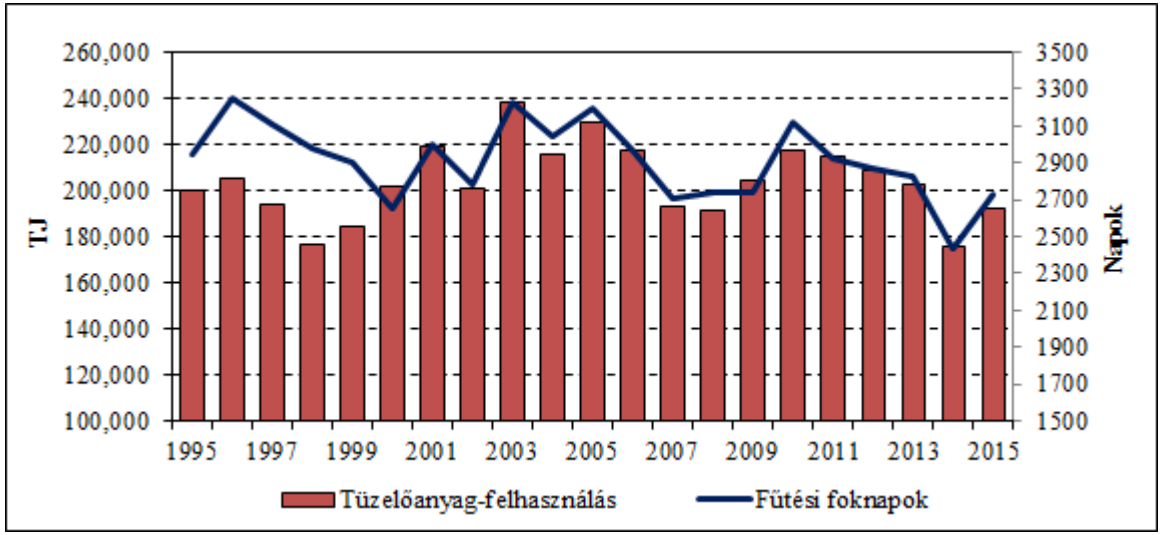


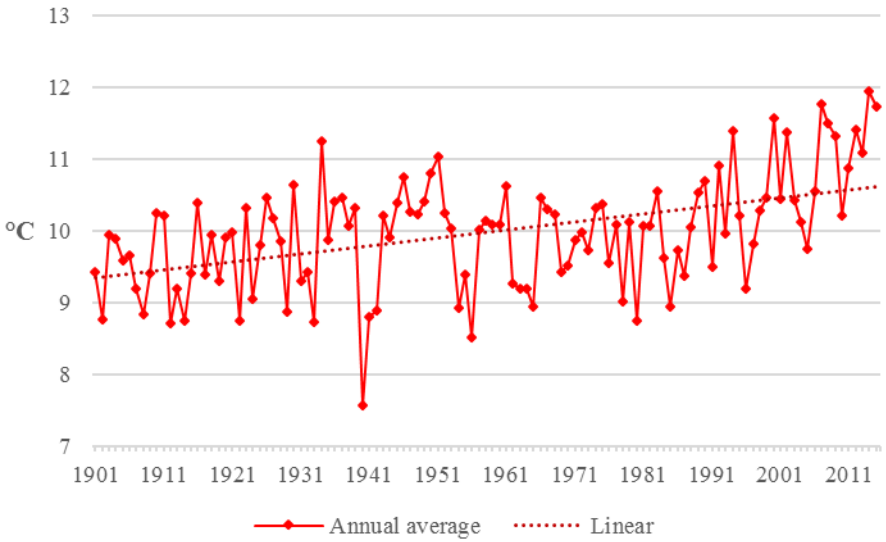




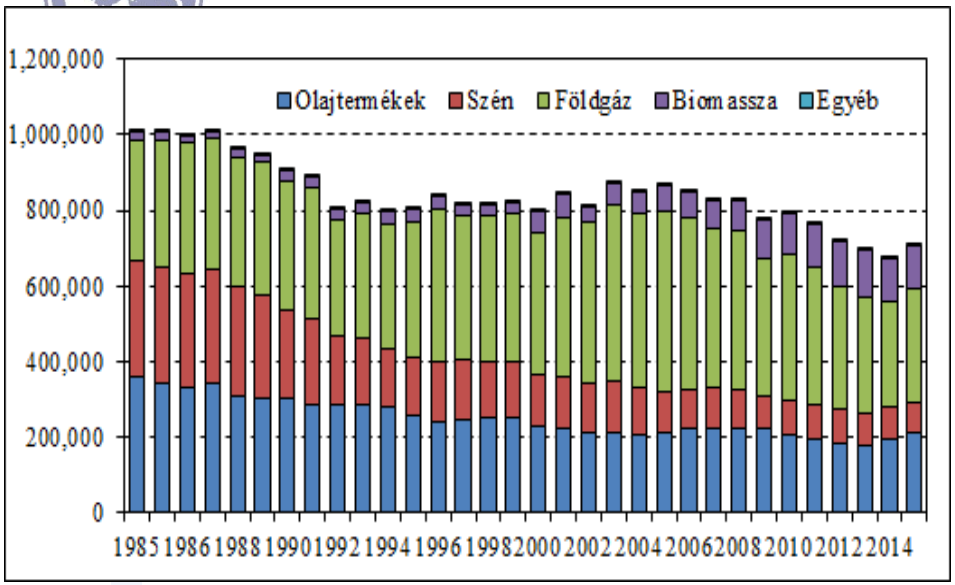


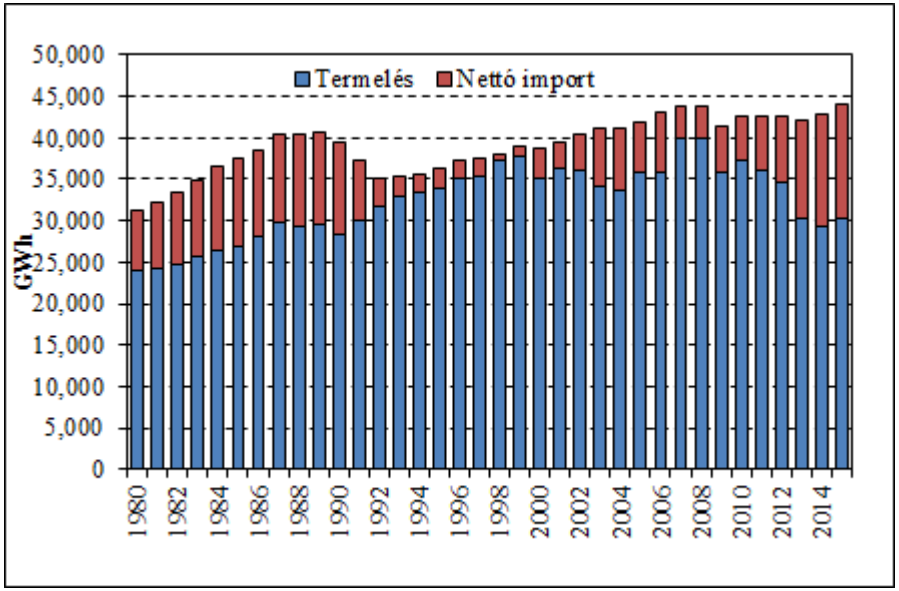
IDŐJÁRÁS/ÉGHAJLAT HATÁSA

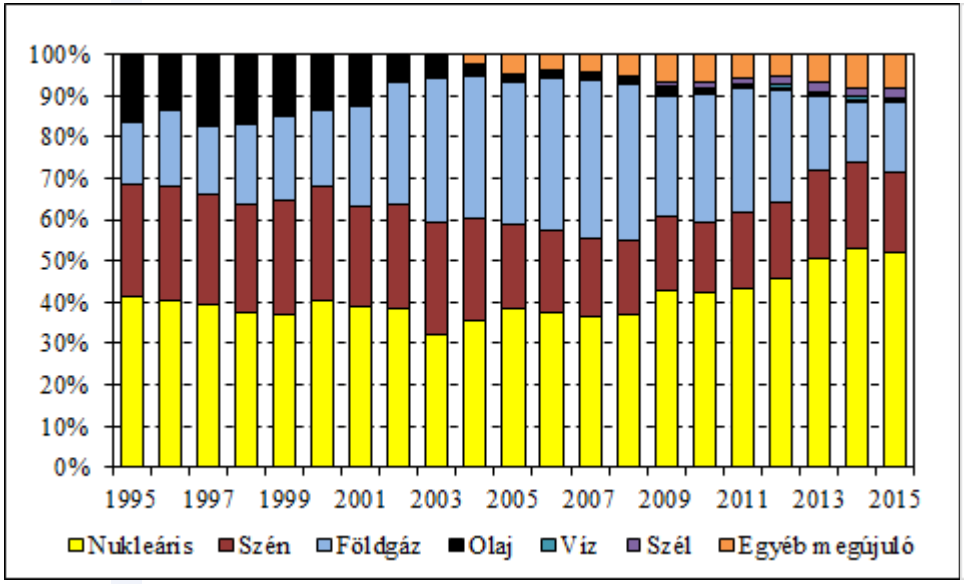


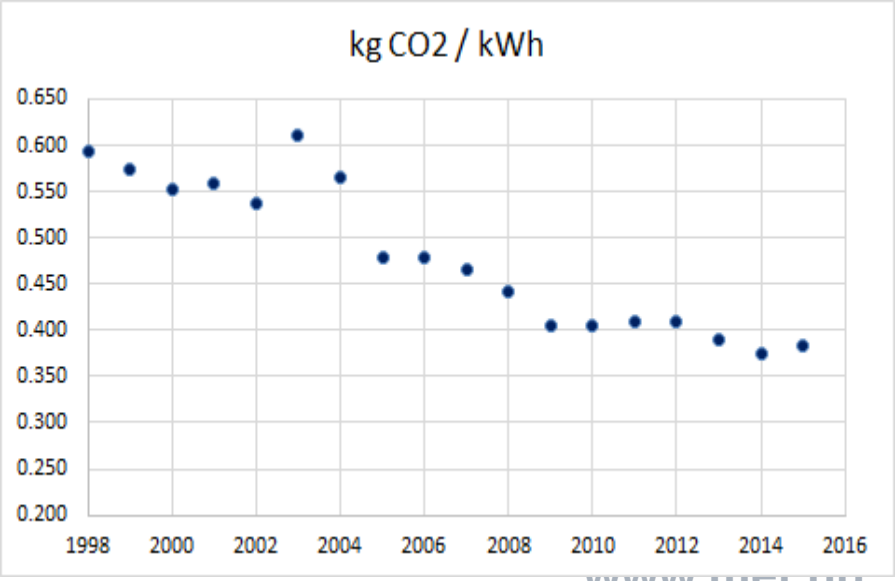


Főbb trendek az energiaszektorban

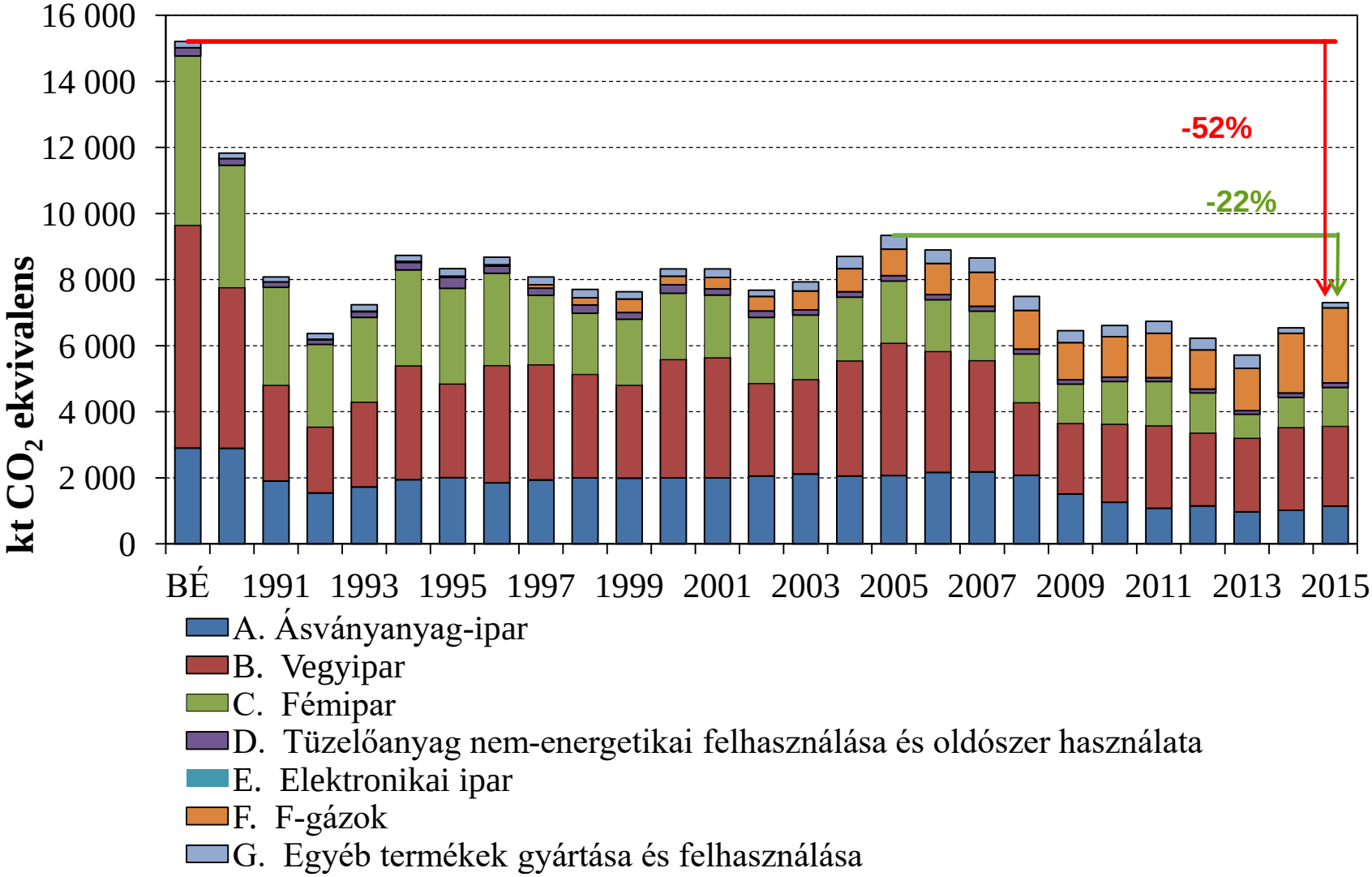








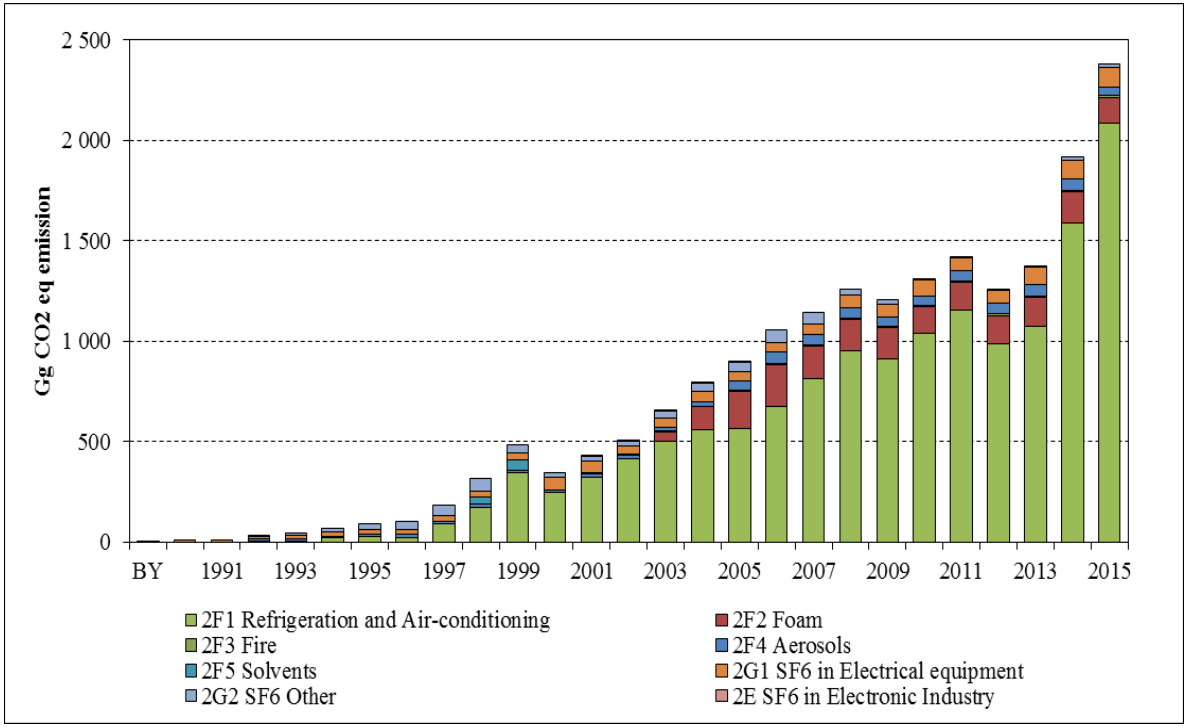
Az ipari kibocsátások trendje



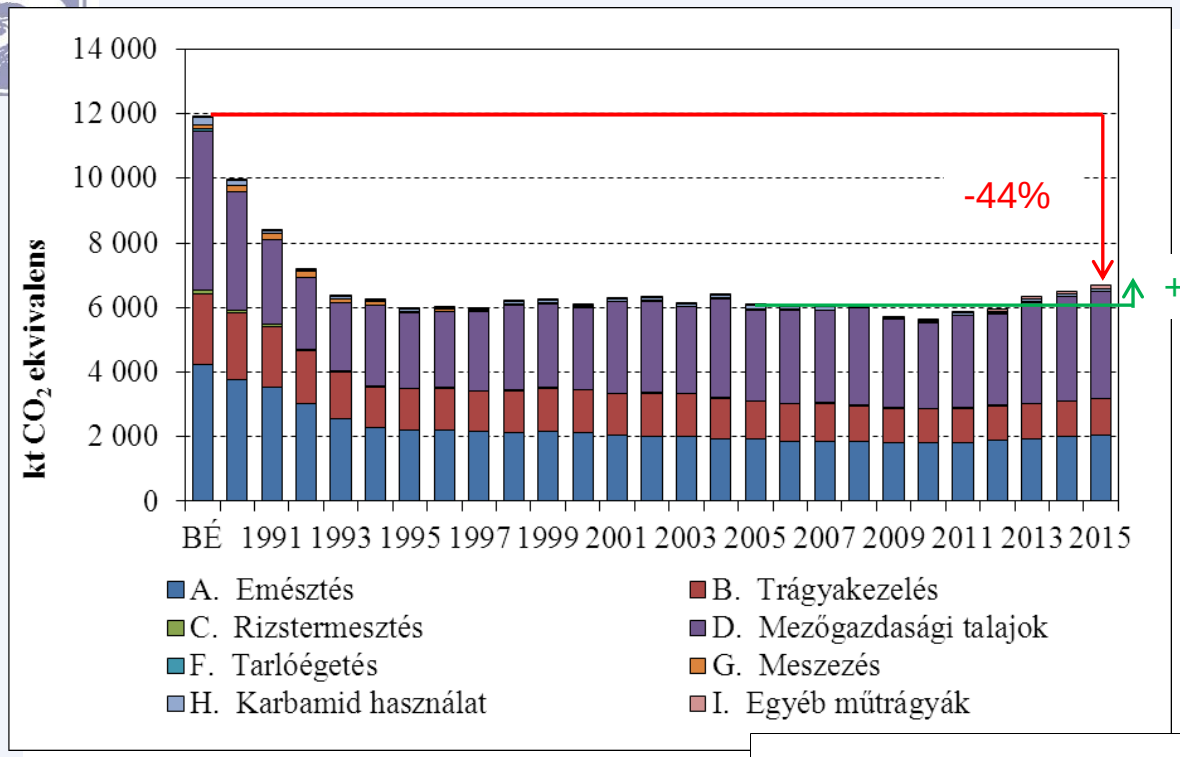
F-gáz emisszió forrásaik szerint

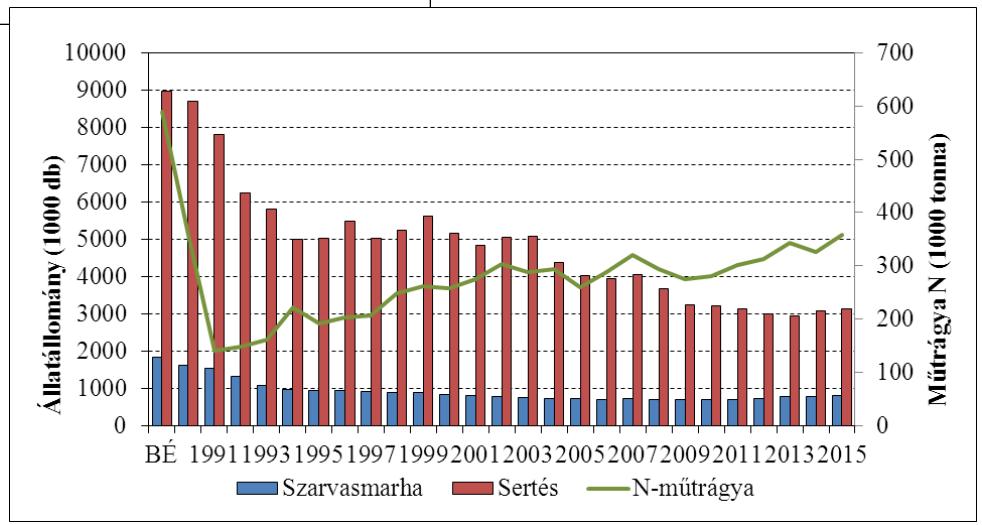
Kibocsátások eredete:

- 2.F.1. Hűtő- és légkondicionáló berendezések használata
- 2.F.2. Habosított polisztirol és poliuretán termékek
- 2.F.3. Tűzoltó berendezések használata
- 2.F.4. Aeroszolos termékek használata
- 2.G. SF_6 gáz használata (elektromos készülékekben + egyéb felhasználás)

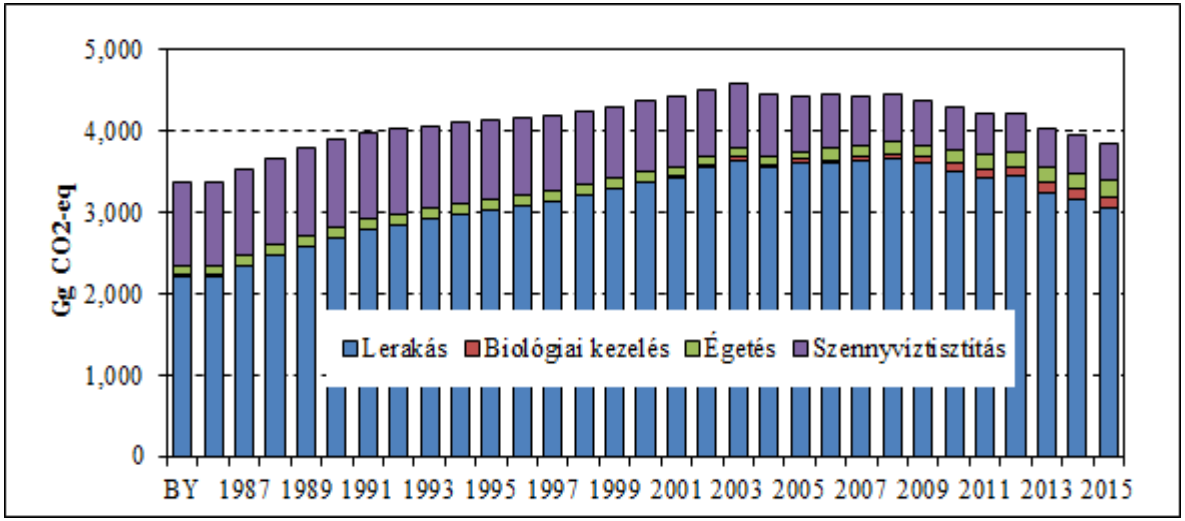


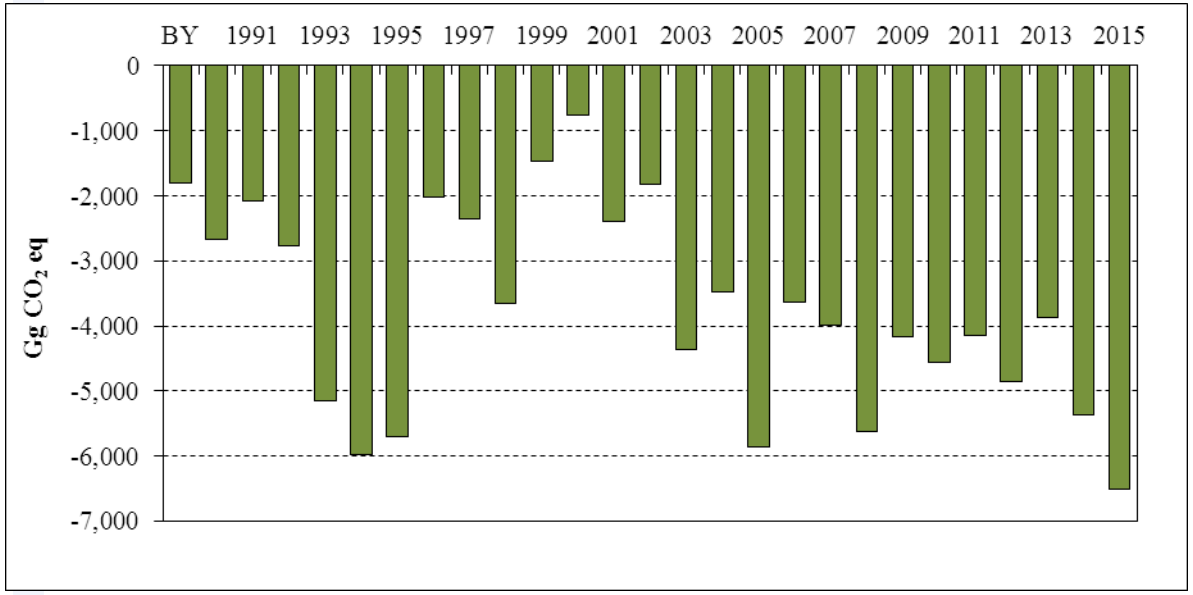
Trendek a mezőgazdaságban

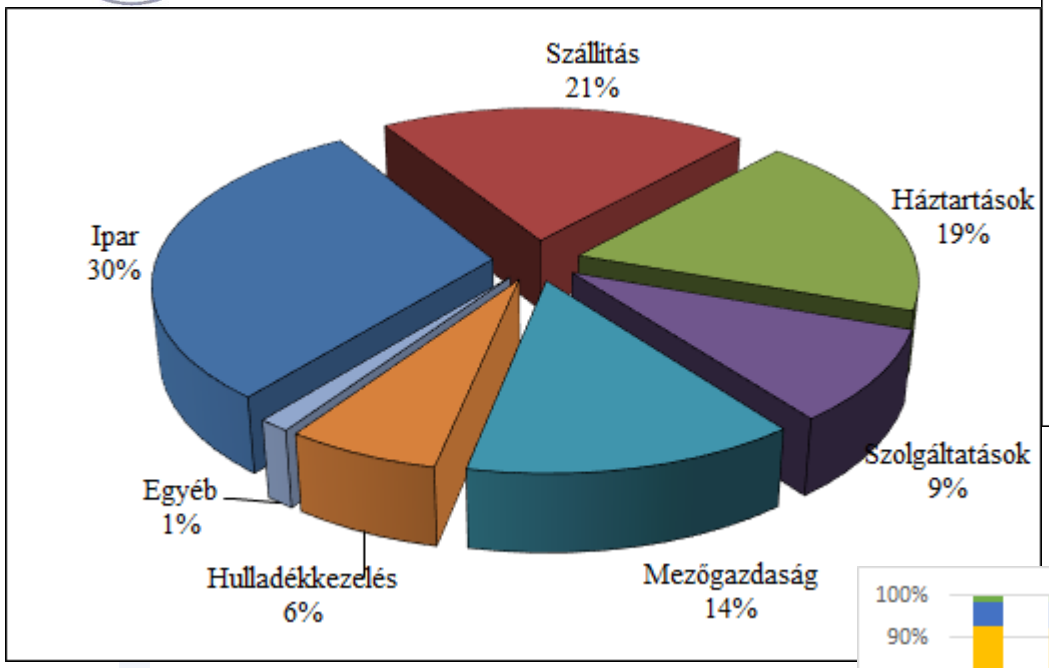


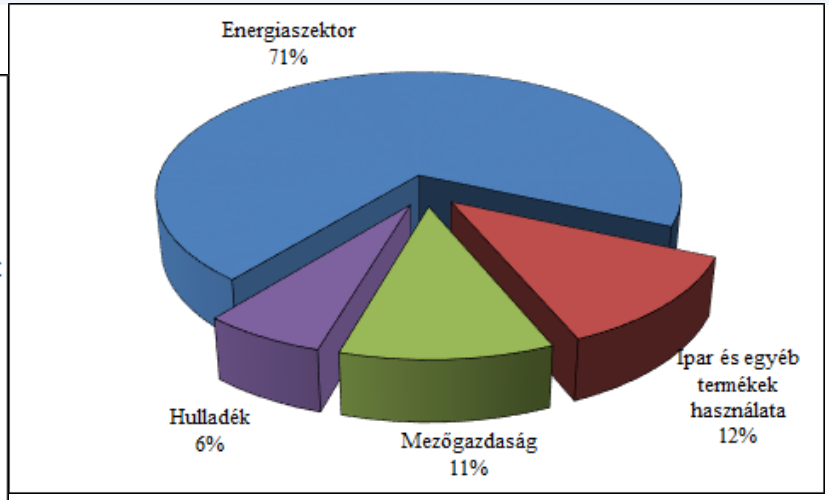


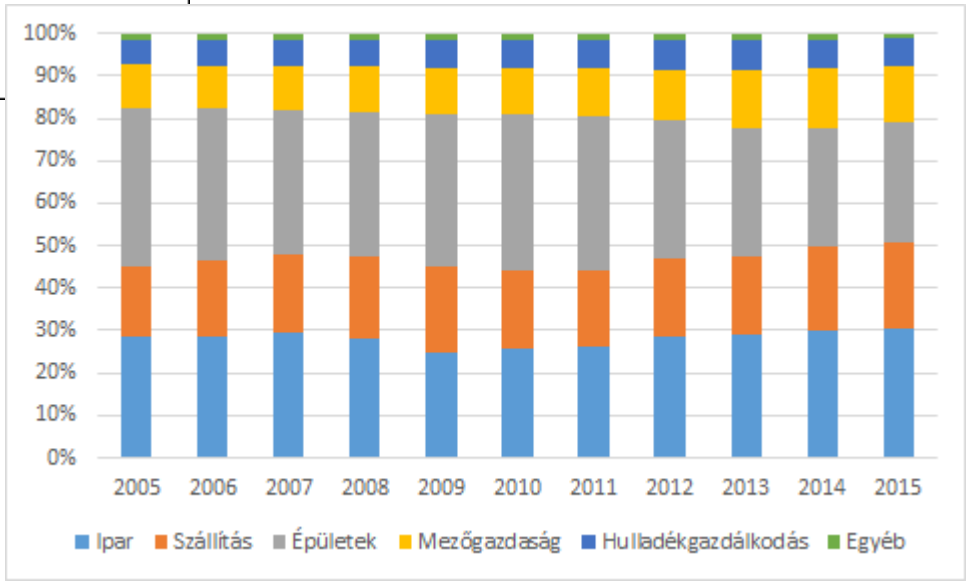
Hulladékkezelés / Földhasználat

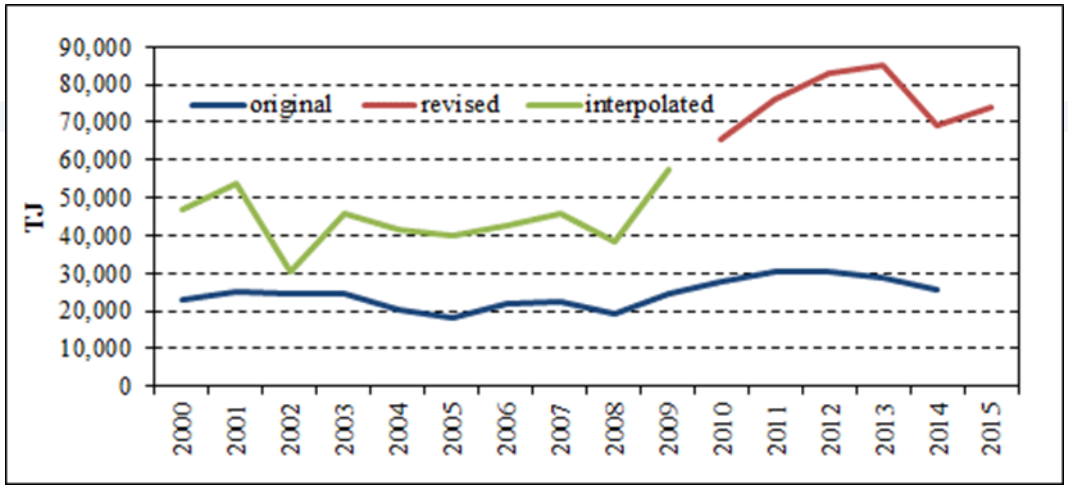


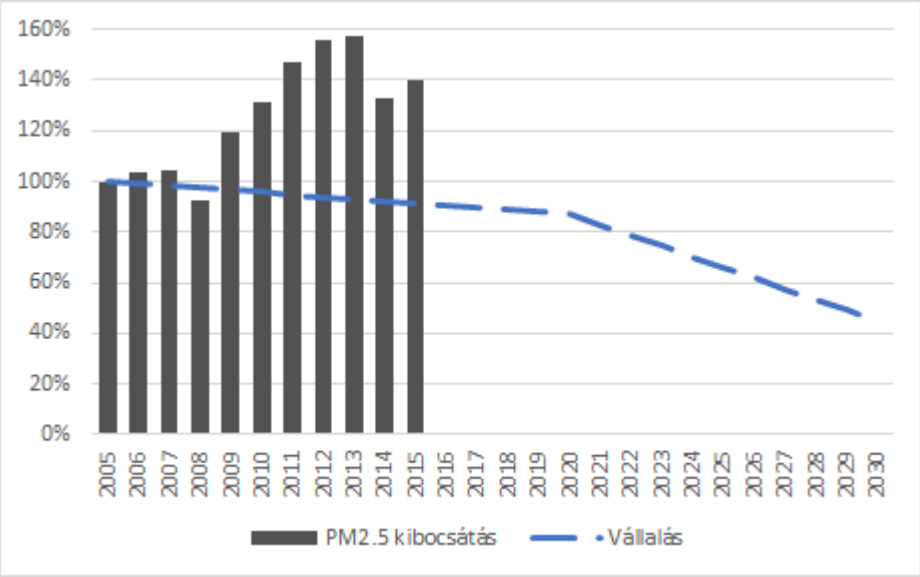


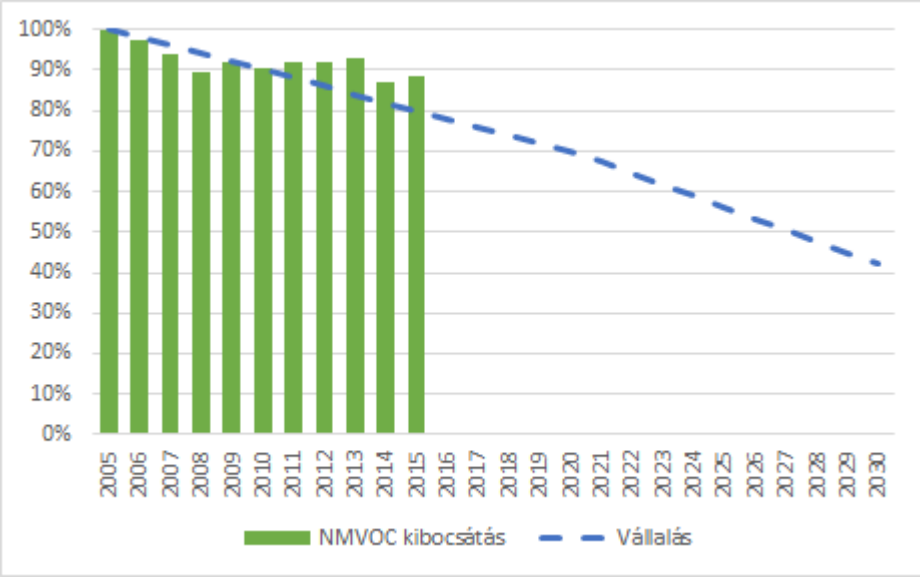

Szállítás
21%
Háztartások
19%
Szolgáltatások
9%
Mezőgazdaság
14%
Hulladékkezelés
6%
Egyéb
1%
Ipar
30%


Energiaszektor
71%
Ipar és egyéb termékek használata
12%
Mezőgazdaság
11%
Hulladék
6%

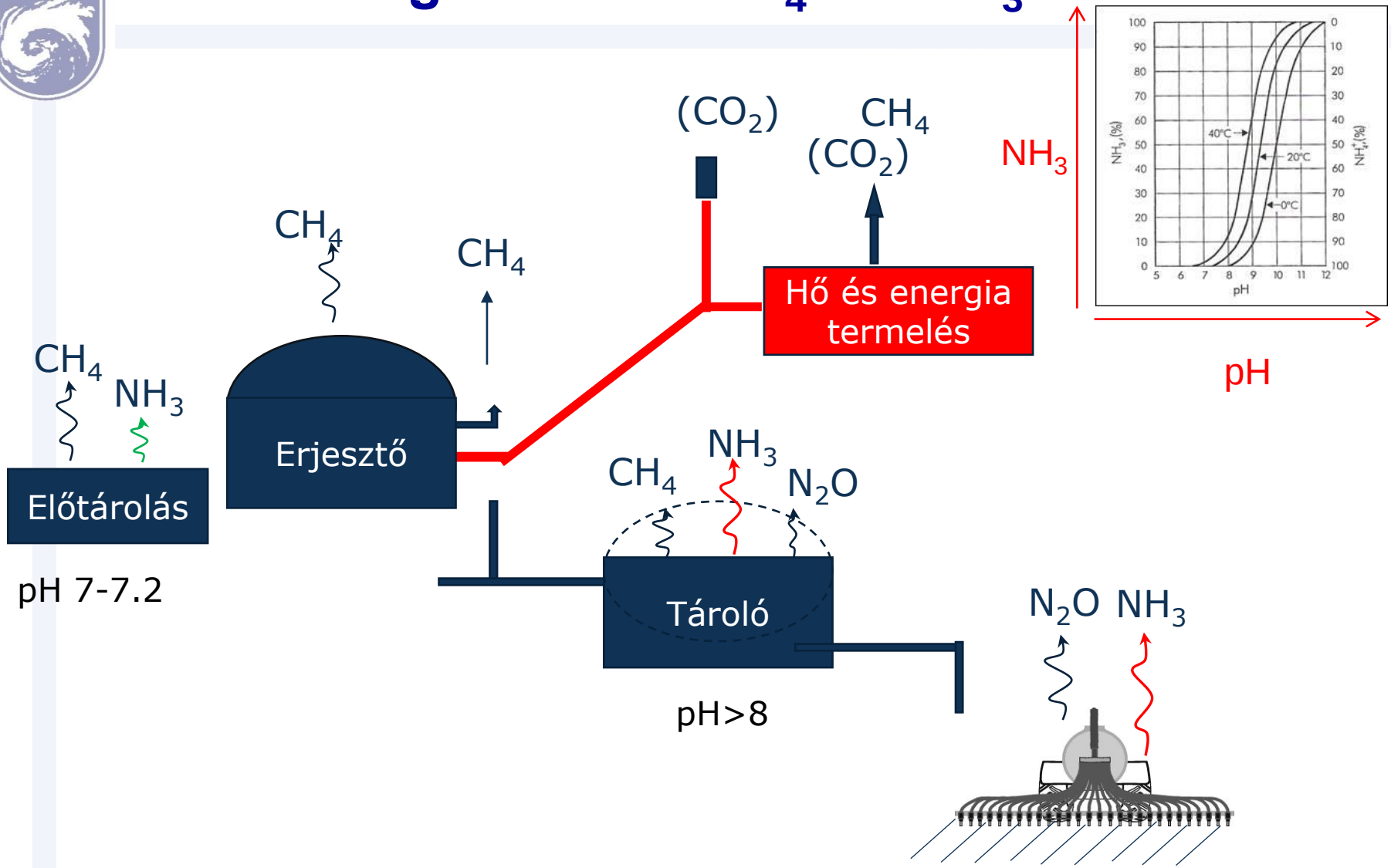

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Ipar
Szállítás
Épületek
Mezőgazdaság
Hulladékgazdálkodás
Egyéb


90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
TJ
original
revised
interpolated
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015


160%
140%
120%
100%
80%
60%
40%
20%
0%
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030
PM2.5 kibocsátás
Vállalás


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030
NMVOC kibocsátás
Vállalás

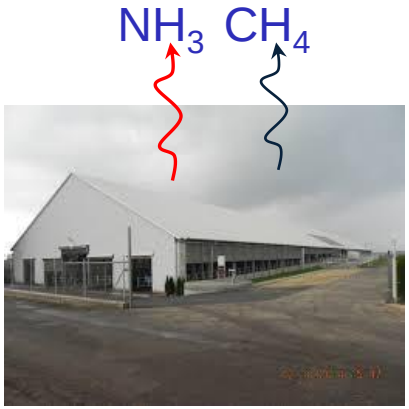
Biogáz üzem: CH_4 vs. NH_3



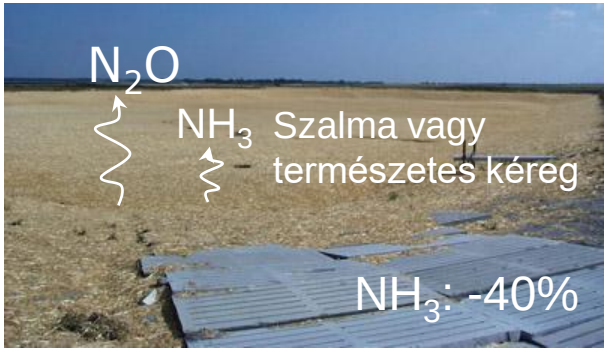
Forrás: Wulf et al., TFEIP meeting, Krakow, 2017

NEC irányelv intézkedései vs. ÜHG kibocsátás

Legeltetés:



Trágyatároló fedése (áteresztő vs. nem áteresztő):



Hígtrágya talajba injektálása:

NH_3: -80%

Forrás:
Options for Ammonia Mitigation: Guidance from the UNECE Task Force on. Reactive Nitrogen, Centre for Ecology and Hydrology, Edinburgh, UK.
Montes et al, 2013: Mitigation of methane and nitrous oxide emissions from animal operations: II. A review of manure management mitigation options1

Köszönöm a figyelmet!

Alapítva: 1870