



הלשכה המרכזית לסטטיסטיקה
Central Bureau of Statistics
دائرة الإحصاء المركزية

Emissions of Air pollutions and Greenhouse Gases

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11.12.13

Contents

- ◉ Air pollutants from fuel combustion
- ◉ Greenhouse Gases
- ◉ Data Sources
- ◉ Distribution of emissions by sector
- ◉ Challenges

Air emissions

fuel combustion

Industrial Processes

Waste and Wastewater

Agriculture

Land Use and Forestation

Air pollution (from fuel combustion)

- Carbon monoxide (CO)
- Sulfur dioxide (SO₂)
- Nitrogen oxides (NOX)
- Hydrocarbons (HC)
- Suspended particulate matter (SPM)
- Lead (pb)

Greenhouse Gases

- CO₂
- CH₄
- N₂O
- As of 2008: HFC's, PFC's, SF6
- (Nox, CO, NMVOC, SO2)

Air pollution (calculated by the ICBS)

fuel combustion

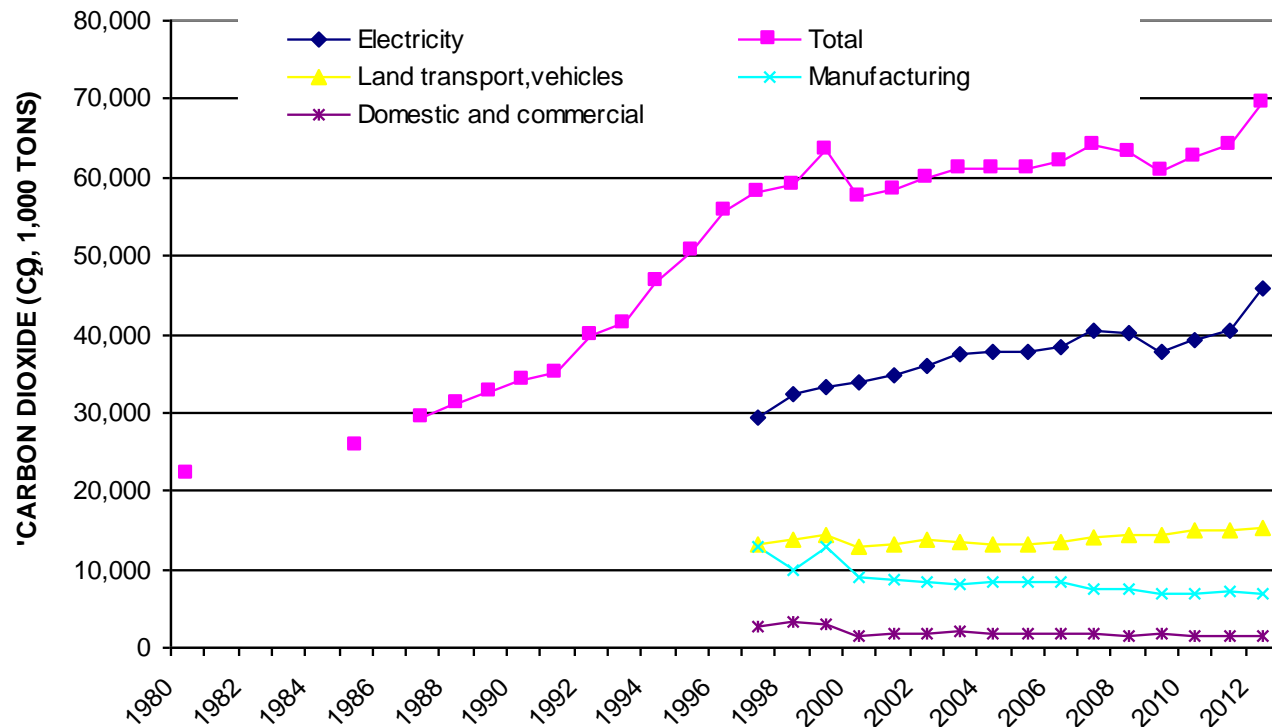
Air pollution and CO₂

- Carbon dioxide (CO₂)
- Carbon monoxide (CO)
- Sulfur dioxide (SO₂)
- Nitrogen oxides (NO_x)
- Hydrocarbons (HC)
- Suspended particulate matter (SPM)
- Lead (pb)

History:

- Time series Since 1980
- Methodology changed, 2000

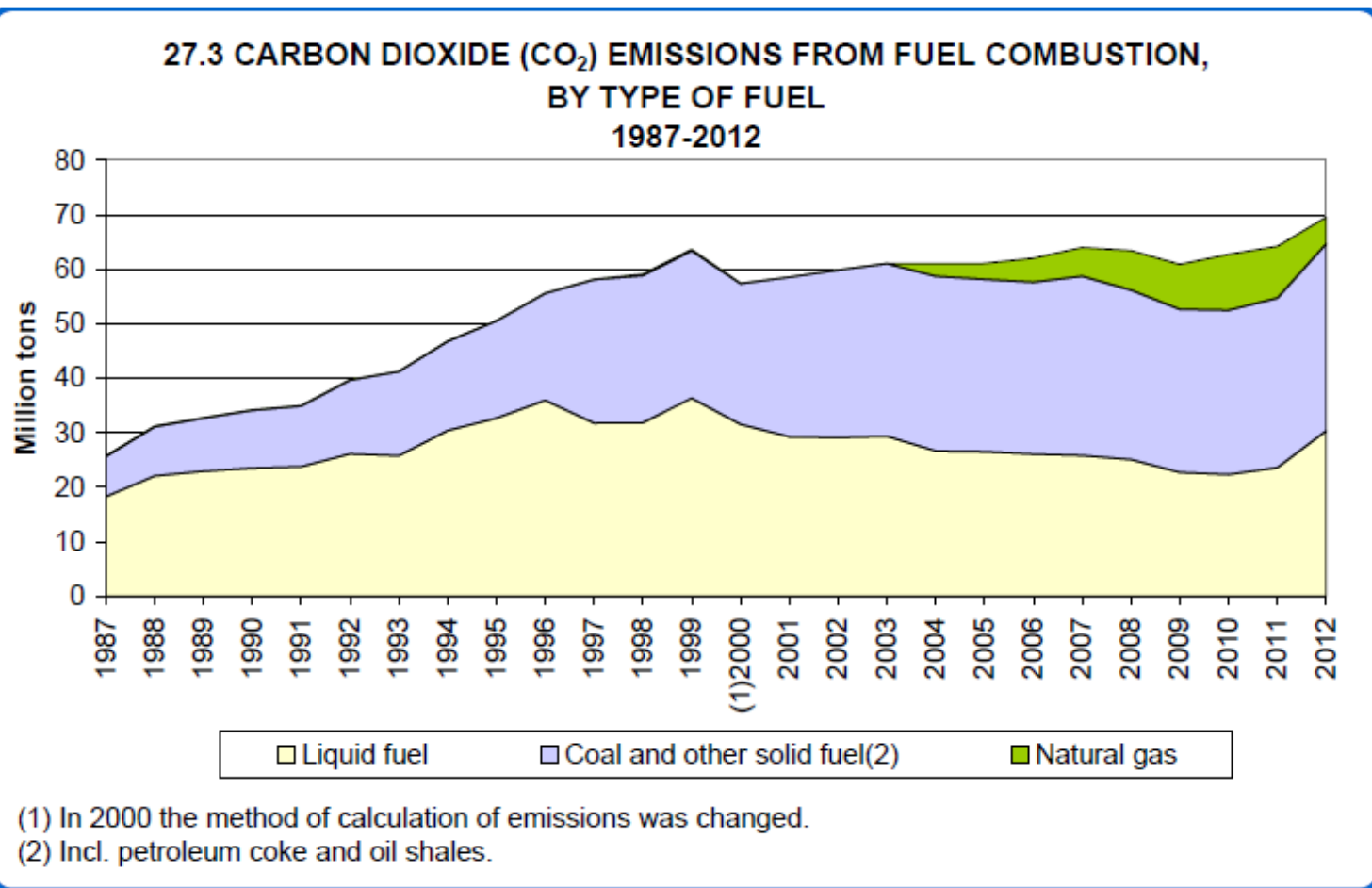
CO₂ Emissions by Sector



2012

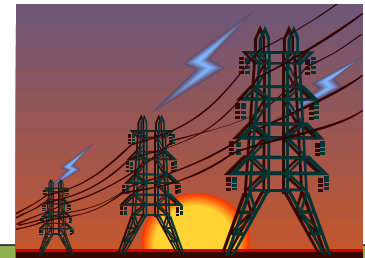
Electricity	66%
Domestic and commercial	2%
Manufacturing	10%
Land transport, vehicles	22%

CO₂ Emissions by Fuel



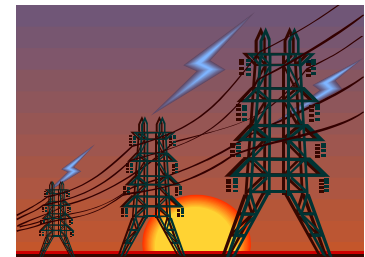
Air pollution from fuel combustion, Sectors and fuel type

- Electricity:
 - Coal, Natural gas, Residual fuel oil and Gas oil
- Industry:
 - Natural Gas ,Residual fuel oil, Naphtha, Gas oil and LPG
- Transport:
 - Residual fuel oil, Gas oil and Kerosene
- Domestic, Commercial and agriculture:
 - Residual fuel oil, Gas oil and LPG



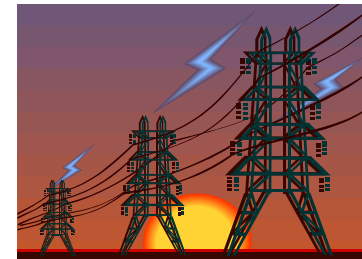
Air pollution from fuel combustion, Data sources

- Ministry of National Infrastructures Energy and Water Resources (MNIWR)
- Israel Natural Gas Lines (Ingl)
- Israel Electric Corp (IEC)
- Supplementary information from factories - specific fuel consumption (ICBS)



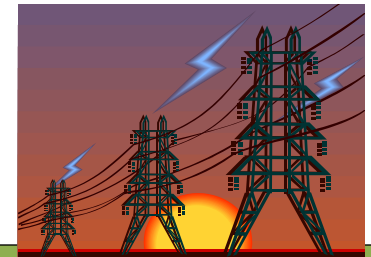
Air pollution from fuel combustion, Distribution of fuel by sector

- Total Fuel quantities received from the Fuel administration, MNIWR
- Known Distribution of energy
 - Users - Electricity, Fuel Refining, Transport (partial)
 - Fuels - Natural gas, Coal, Naphtha, Oil shales



Air pollutions from fuel combustion, Distribution of fuel by sector, cont

- An ICBS Industry Survey 2010,2012 (ISIC rev. 3):
 - Dev C – Mining and quarrying
 - Dec D - Manufacturing
 - Dev E (40) - electricity
- Estimation of the Fuel Administration MNIWR
- Estimation using the Input-Output Tables, 2006
 - Based on monetary values
 - Refers to 2006 only



Distribution of fuel by sector- Abbreviations

- AD - Administrative data
- SU - Industry Survey in the ICBS
- FA – Fuel Administration, MNIWR
- I/O - Input-Output Tables, 2006

Distribution of fuels by sector

		coal	Naphtha	Natural gas	Residual fuel oil	Gas oil	LPG	Kerosene	Gasoline
House hold						FA, I/O	FA, I/O	FA, I/O	FA, I/O
Section A Agriculture, forestry and fishing					FA, I/O	FA, I/O	FA, I/O	FA, I/O	FA, I/O
Section B Mining and quarrying				AD	SU	SU	SU	SU	SU
Section C Manufacturing			AD	AD	AD/SU	AD	AD	SU	SU
Section D Electricity, gas, steam and air conditioning supply	351-Electric power generation, transmission and distribution	AD		AD	AD	AD			SU
Section H Transportation and storage, postal and courier activities	49- Land transport *					AD			FA, I/O
	50-Water transport				AD	FA, I/O			FA, I/O
	51-Air transport							AD	FA, I/O
Other				AD	FA, I/O	FA, I/O	FA, I/O	FA, I/O	FA, I/O
	*Transport via railways is Known								
AD - Administrative data	FA – Fuel Administration, MNIWR								
SU - Industry Survey in the ICBS	I/O - Input-Output Tables, 2006								

Greenhouse Gases

fuel combustion

Industrial Processes

Waste and Wastewater

Agriculture

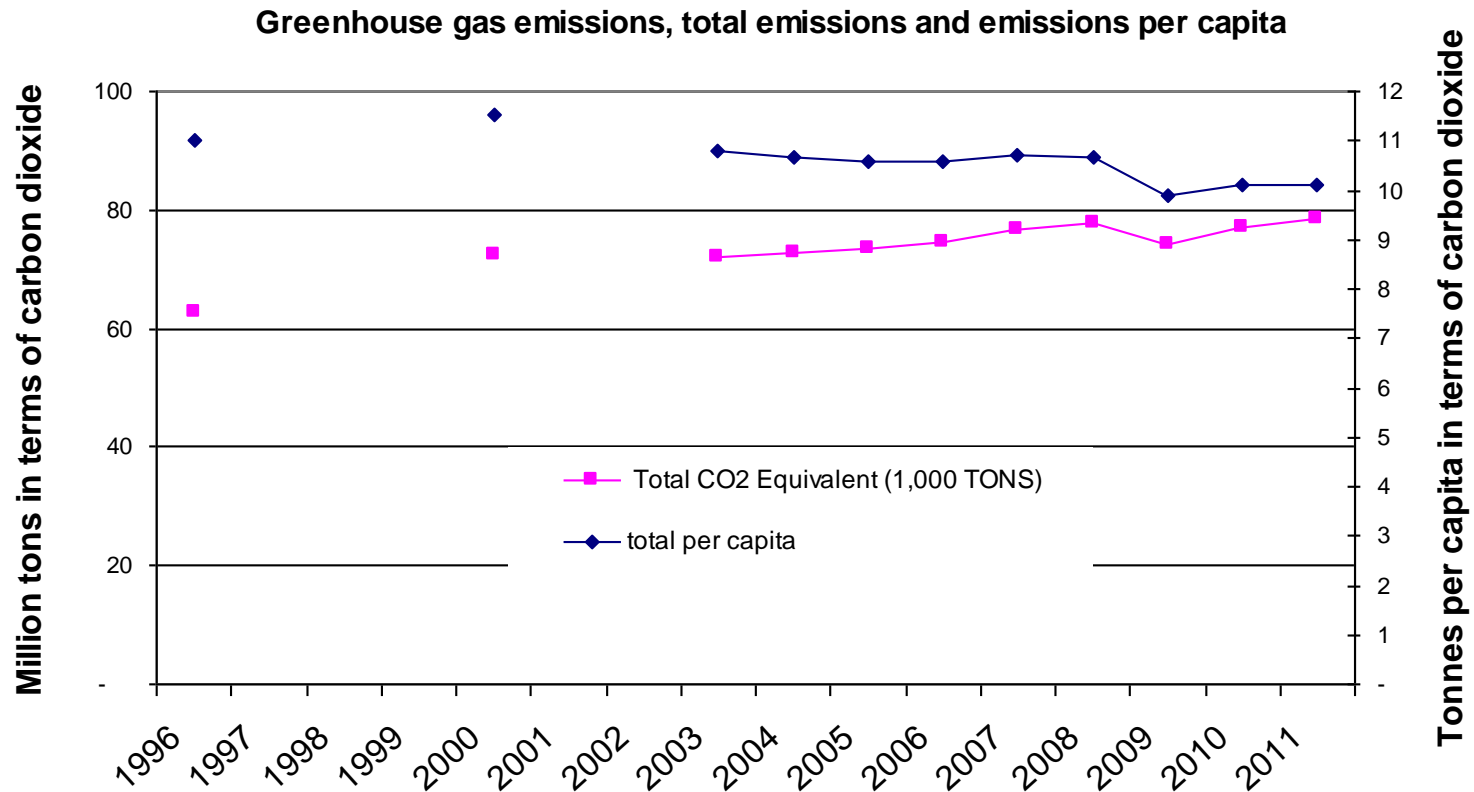
Land Use and Forestation

Greenhouse Gases

- CO₂
- CH₄
- N₂O
- As of 2008: HFC's, PFC's, SF₆
- (Nox, CO, NMVOC, SO₂)

- The 1996, 2000 GHG inventories were calculated by the MoEP
- From 2005 and on the CBS calculates the inventory annually (2003-2011 inventories)

Greenhouse Gases – data series



Greenhouse Gases, key category analysis

IPCC Source Categories	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Fuel combustion - Energy industries	56%	56%	56%	56%	56%	54%	54%	55%	55%	55%
Fuel combustion - Transport	20%	20%	19%	20%	20%	20%	21%	21%	21%	75%
Fuel combustion - Manufacturing industries and construction	8%	8%	8%	8%	8%	8%	7%	7%	7%	82%
Solid waste disposal on land	6%	6%	7%	7%	7%	7%	7%	7%	6%	89%
Industrial processes	4%	4%	4%	4%	4%	4%	4%	4%	4%	92%
Agriculture	3%	3%	3%	3%	3%	3%	3%	3%	3%	96%
Industrial processes - f gasses						2%	1%	2%	2%	98%
Waste-water handling	1%	1%	1%	1%	1%	1%	1%	1%	1%	99%
Fuel combustion - other	2%	2%	2%	2%	1%	1%	1%	1%	1%	101%
Land-use change and forestry	0%	0%	-1%	-1%	-1%	0%	0%	-1%	-1%	100%

Greenhouse Gases Emissions Industrial Processes

- Source of pollution
 - CO₂ from cement production
 - N₂O from Nitric acid production
 - Various other processes
 - F-gases
- Data sources
 - Administrative data
 - Collected by the ICBS
- Distribution by sector
 - The sources for most processes are identified
 - F-gases - The distribution by branch is unknown



Greenhouse Gases Emissions Agriculture

- Agriculture
 - N₂O from soil emissions, fertilizers and manure treatment
 - CH₄ from livestock
- Data sources
 - Administrative data
 - Collected by the ICBS
- Distribution by sector
 - All the sources are identified



Greenhouse Gases Emissions - Waste and Wastewater

- Waste and Wastewater
 - CH_4 from waste treatment
 - CH_4 and N_2O from wastewater treatment
- Data source
 - Administrative data – amount of waste disposal
 - Collected and calculated by the ICBS
- Distribution by sector
 - waste treatment – Only available for the Industry (ICBS Survey)
 - wastewater treatment- partially known



Greenhouse Gases-Emissions from Land Use and Forestation

- Land Use and Forestation
 - CO₂ sinks from forest
 - CO₂ emissions from organic soils
- Data source
 - Administrative data
- Distribution by sector
 - All the activity associated to the Agriculture sector



Challenges

- ◉ Fuel Consumption:
 - ◉ Only the distribution in the Manufacturing sector is Known
 - ◉ the other sectors distribution is unknown
- ◉ Greenhouse Gases, distribution UnKnown:
 - ◉ F-gases (HFCs, PFCs)
 - ◉ waste & wastewater treatment
- ◉ Other Emissions (not from fuel combustion)-
need further development

**Thank
you!**

