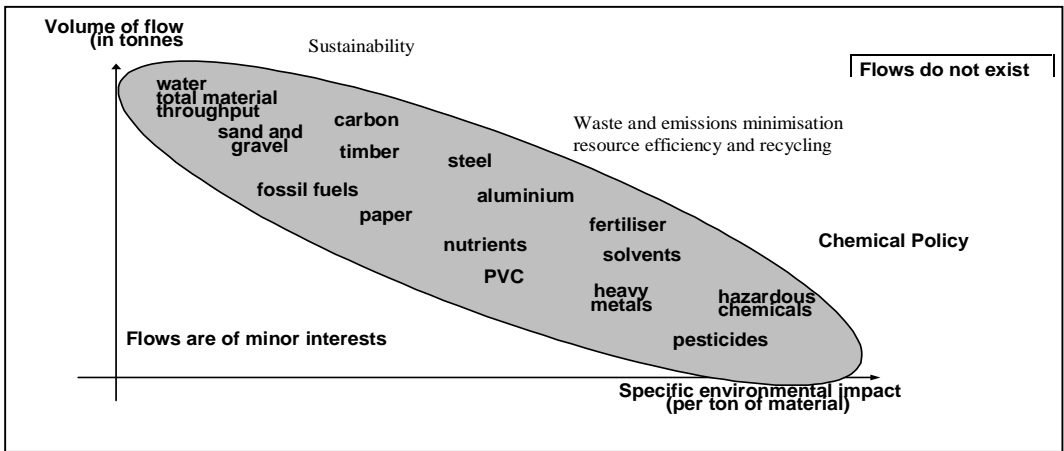


3.10MATFLOW

3.10MATFLOW

no datafile available

place the words (on the right) in the same format as in the diagram



volume of flow, tonnes  
 water material throughput  
 sand and gravel  
 carbon (???not coal?)

timber  
 steel  
 fossil fuels  
 paper  
 aluminium  
 nutrients  
 fertiliser  
 solvents  
 PVC  
 heavy metals  
 hazardous chemicals

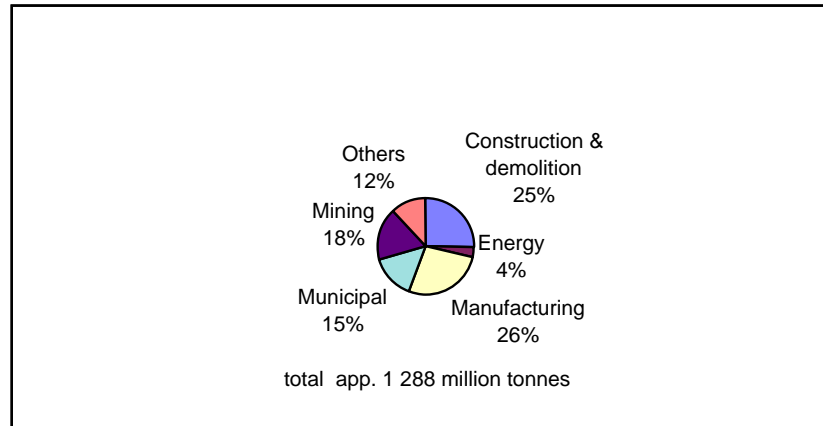
pesticides  
 flows are of minor interest  
 specific environmental impact (per ton of material)  
 Chemical Policy  
 Waste and emissions minimisation  
 Resource efficiency and recycling  
 Sustainability  
 Flows do not exist

### 3.10SECTOR

Fig. 3.10SECTOR: Waste by sector.

Sources: OECD, 1997 and NRCs, 1998.

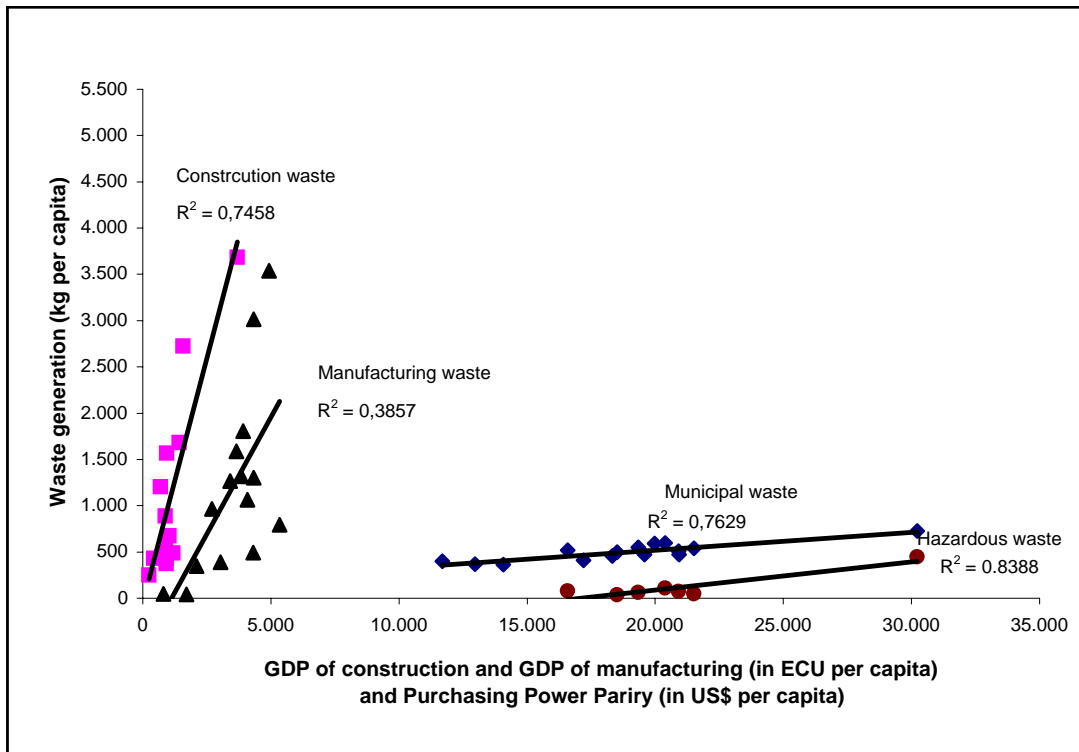
EU	1000 tonnes
Construction &	327781
Energy	45477
Manufacturing	343394
Municipal	187839
Mining	231077
Others	152354
total	1287922



3.10TOT\_GDP

Fig. 3.10TOT/GDP: Total waste/GDP

Source: OECD, 1997a; OECD, 1997b; NRCs,1998; UN, 1998



Country	GDP-Construction in ECU per capita	Construction waste in kilo per capita	Manufacturing GDP in ECU per capita	Manufacturing waste in kilo per capita	Total Purchasing Power Parity (PPP) in US\$ per capita	Municipal Waste generation in kilo per capita	Total Purchasing Power Parity (PPP) in US\$ per capita	Haz. waste 1995 in kilo per capita
Austria	1566	2723	4333	1301	20902	510	20902	72
Belgium	1021	676	3833	1320	20924	472		
Denmark	1184	490	4318	491	21501	540	21501	48
Finland	935	1566	4319	3015	17192	411		
France	909	430	3918	1807	19971	589		
Germany	1432	1681	5347	795	20379	597	20379	111
Greece	316	0	797	49	11689	402		
Ireland	582	429	4085	1066	16582	521	16582	77
Italy	725	250	3029	388	19572	472		
Luxembourg	2243	3683	4934	3538	30221	724	30221	444
Netherlands	950	885	3413	1265	19332	548	19332	62
Portugal	215	0	1707	43	12970	367		
Spain	900	555	2093	349	14069	361		
Sweden	919	376	3653	1589	18320	455		
United Kingdom	689	1205	2691	964	18506	499	18506	36
EU 15	947	882	3555	924	18666	505		

### 3.10HAZARDW

Table 3.10HAZARDW Hazardous waste development

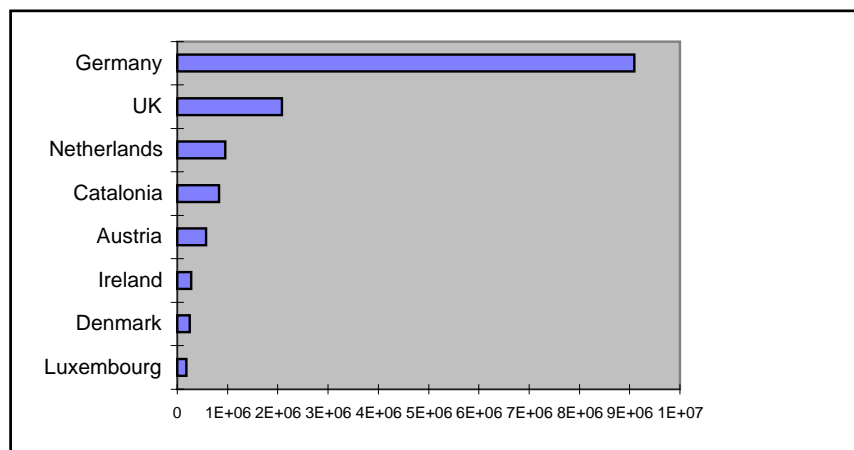
Source: OECD, 1997a, NRC's, Junta de Residuos

Country/region	Year	Tonnes
<b>Austria</b>	1990	317000
	1995	577000
<b>Denmark</b>	1990	116000
	1995	252000
<b>Germany</b>	1990	13079000
	1993	9093000
<b>Ireland</b>	1992	143600
	1995	273637
<b>Luxembourg</b>	1994	36312
	1995	180596
<b>Netherlands</b>	1994	895000
	1995	955000
<b>UK</b>	1990	2310000
	1994	2080000
<b>Catalonia</b>	1990	674400
	1995	831439

<b>Austria</b>	1995	577000
<b>Denmark</b>	1995	252000
<b>Germany</b>	1993	9093000
<b>Ireland</b>	1995	273637
<b>Luxembourg</b>	1995	180596
<b>Netherlands</b>	1995	955000
<b>UK</b>	1994	2080000
<b>Catalonia</b>	1995	831439

latest year available (see above)

<b>Luxembourg</b>	180596
<b>Denmark</b>	252000
<b>Ireland</b>	273637
<b>Austria</b>	577000
<b>Catalonia</b>	831439
<b>Netherlands</b>	955000
<b>UK</b>	2080000
<b>Germany</b>	9093000



y-axis unit= take 000 000 away and use million tonnes as unit

### 3.10PAPER

Fig. 3.10PAPER Paper composition  
Source: CEPI, 1997

year 1996

	Newsprint	Graphic Papers	Sanitary & Household	Total Packaging	Other	Total
1000 tonnes	8416	22387	3759	26326	3142	64030
%	13,1	35,0	5,9	41,1	4,9	100,0

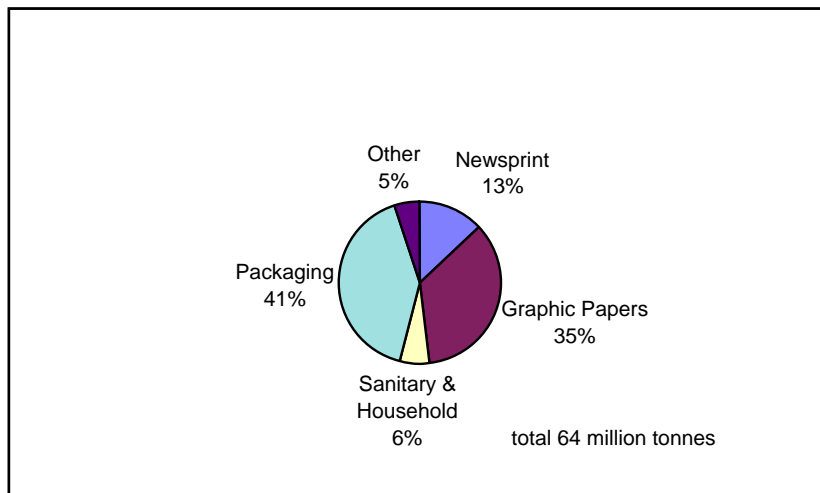
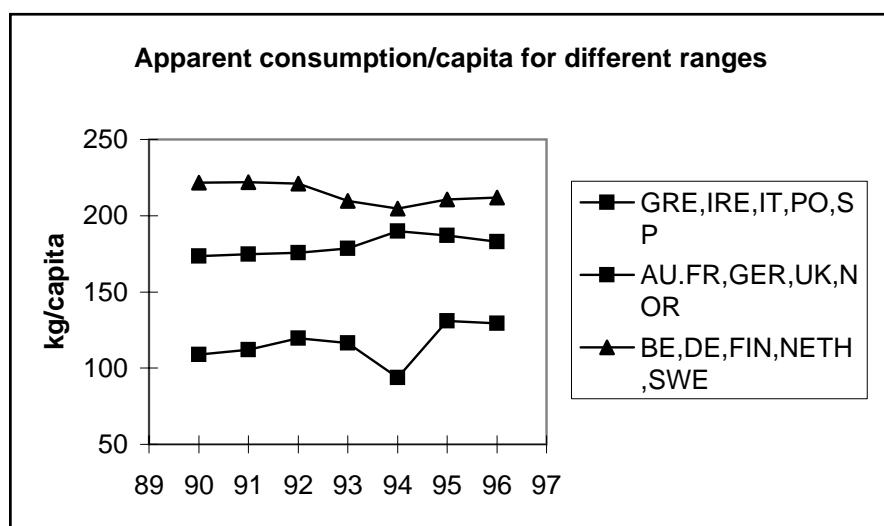


Fig. 3.10PAPER/CAP: Paper consumption/capita

Source: CEPI, 1997

data not available

country names in stead of abbreviations



Geographical coverage	Apparent consumption	Year
Greece, Ireland, Italy, Poland	77,52704	1983
Greece, Ireland, Italy, Poland	83,95708	1984
Greece, Ireland, Italy, Poland	83,20071	1985
Greece, Ireland, Italy, Poland	89,48852	1986
Greece, Ireland, Italy, Poland	96,37218	1987
Greece, Ireland, Italy, Poland	103,3861	1988
Greece, Ireland, Italy, Poland	110,2649	1989
Greece, Ireland, Italy, Poland	108,8575	1990
Greece, Ireland, Italy, Poland	112,1887	1991
Greece, Ireland, Italy, Poland	119,5902	1992
Greece, Ireland, Italy, Poland	116,5506	1993
Greece, Ireland, Italy, Poland	93,79263	1994
Greece, Ireland, Italy, Poland	130,8319	1995
Greece, Ireland, Italy, Poland	129,4617	1996
Austria, France, Germany, United Kingdom	124,5485	1983
Austria, France, Germany, United Kingdom	133,244	1984
Austria, France, Germany, United Kingdom	131,8159	1985
Austria, France, Germany, United Kingdom	138,1937	1986
Austria, France, Germany, United Kingdom	144,6521	1987
Austria, France, Germany, United Kingdom	155,6685	1988
Austria, France, Germany, United Kingdom	161,2916	1989
Austria, France, Germany, United Kingdom	173,4715	1990
Austria, France, Germany, United Kingdom	174,6314	1991
Austria, France, Germany, United Kingdom	175,7929	1992
Austria, France, Germany, United Kingdom	178,5339	1993
Austria, France, Germany, United Kingdom	189,7306	1994
Austria, France, Germany, United Kingdom	186,8582	1995
Austria, France, Germany, United Kingdom	182,8667	1996

### 3.10 PAPER\_CAP

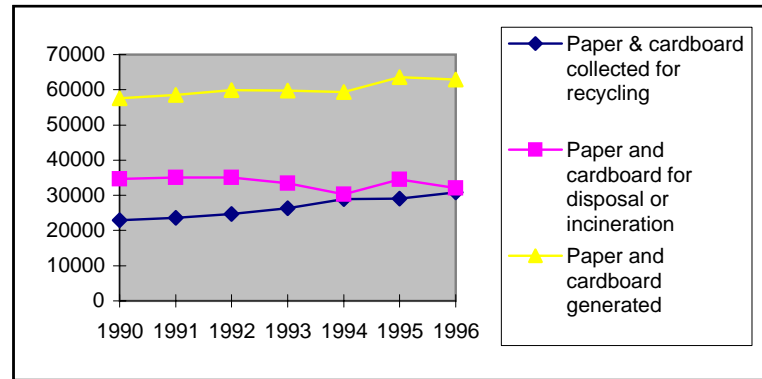
Belgium, Denmark, Finland,	180,4941	1983
Belgium, Denmark, Finland,	189,3986	1984
Belgium, Denmark, Finland,	186,3982	1985
Belgium, Denmark, Finland,	195,5989	1986
Belgium, Denmark, Finland,	196,9774	1987
Belgium, Denmark, Finland,	208,8823	1988
Belgium, Denmark, Finland,	216,1134	1989
Belgium, Denmark, Finland,	221,5518	1990
Belgium, Denmark, Finland,	223,328	1991
Belgium, Denmark, Finland,	221,1274	1992
Belgium, Denmark, Finland,	209,8133	1993
Belgium, Denmark, Finland,	204,5781	1994
Belgium, Denmark, Finland,	210,7005	1995
Belgium, Denmark, Finland,	211,7885	1996

### 3.10PAPERTREAT

Fig. 3.10PAPERTREAT Paper treatment  
Source: CEPI, 1997 and NRCs, 1998

EU  
unit 1000 tonnes (remember to add in in the Y-axis)

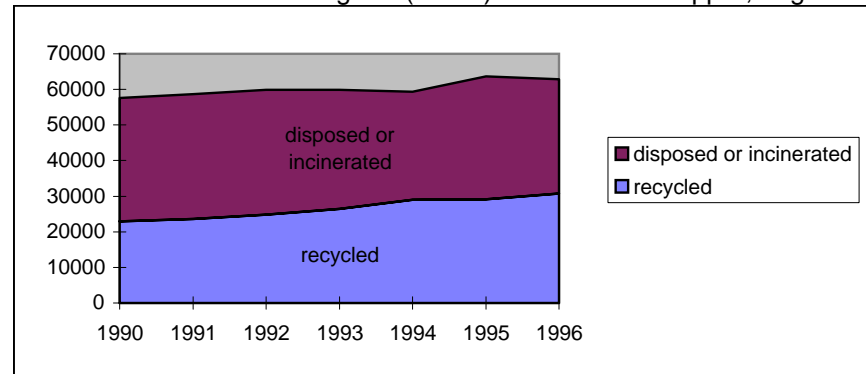
	Paper & cardboard collected for recycling	Paper and cardboard for disposal or incineration	Paper and cardboard generated
1990	22951	34696	57647
1991	23541	35064	58605
1992	24761	35126	59887
1993	26389	33438	59827
1994	28992	30313	59305
1995	29090	34552	63642
1996	30781	32087	62868



	recycled	disposed or incinerated
1990	22951	34696
1991	23541	35064
1992	24761	35126
1993	26389	33438
1994	28992	30313
1995	29090	34552
1996	30781	32087

Paper and cardboard generated
57647
58605
59887
59827
59305
63642
62868

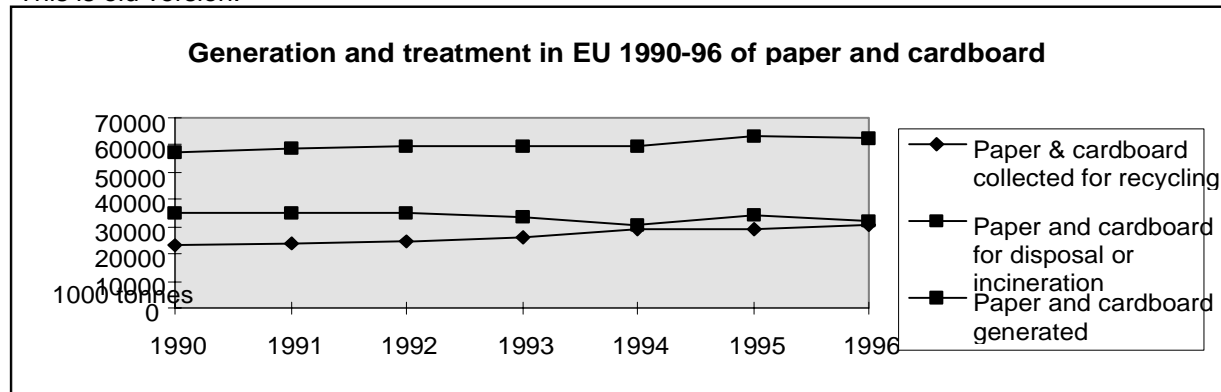
Do this kind of an area diagram (below) in stead of the upper, original version.





### 3.10PAPERTREAT

This is old version:



### 3.10EN&EM\_PAPER

Table 3.103.10EN&EM/PAPER:

Energy and emissions/paper

Source: Naturvårdsverket, 1996

Heat and electricity consumption from production of newspaper and emissions from unbleached paper pulp with use of different materials in Sweden 1994/1995.

	Energy consumption	
	Heat, GJ/ton	Electricity, kWh/ton
Raw material		
Newspaper with 100% recycled paper	5,7	890
Newspaper without recycled paper	5,5	2940

Emissions		
CO <sub>2</sub> , kg/ton	Phosphorus, g/ton	Nitrogen, g/ton
14-21	10-17	80-220
12-37	18-40	230-420

Raw material  
Unbleached paper pulp with recycled paper  
Unbleached paper pulp without recycled paper

Emissions		
CO <sub>2</sub> , kg/ton	Phosphorus, g/ton	Nitrogen, g/ton
14-21	10-17	80-220
12-37	18-40	230-420

remember subscript in CO<sub>2</sub>

### 3.10GLASS

Fig. 3.10GLASS Glass consumption

Source: Fédération Européenne de Verre d'Emballage (FEVE), 1997 and NRCs, 1998.

Countries	Average glass consumption in kilo per annum 1990-96
FI	10,41
GR	13,71
SE	16,78
PT	21,95
IE	24,85
IT	27,46
ES	29,95
DK	30,88
UK	31,04
NL	31,36
AT	32,15
BE	36,19
FR	44,17
DE	44,31

make a map in stead of a bar diagram

**four categories (unless you come up with a smarter suggestion):**

below 15 kg/year

15-25 kg/year

25-35 kg/year

over 35 kg/year

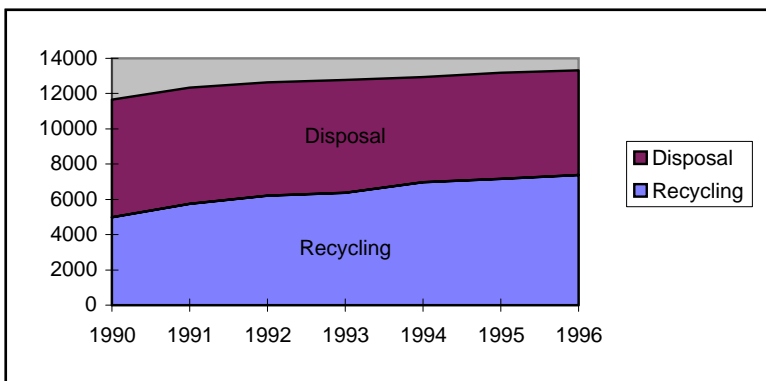
### 3.10GLASSGEN

Fig. 3.10GLASSGEN: Glass generation

Source: Fédération Européenne de Verre d'Emballage (FEVE) and NRCs.

EU-total		Recycling	Disposal	of glass waste
	1990	4995	6658	11653
	1991	5736	6603	12338
	1992	6197	6442	12639
	1993	6385	6380	12765
	1994	6978	5974	12951
	1995	7168	6022	13190
	1996	7385	5927	13311

UNIT: 1000 tonnes



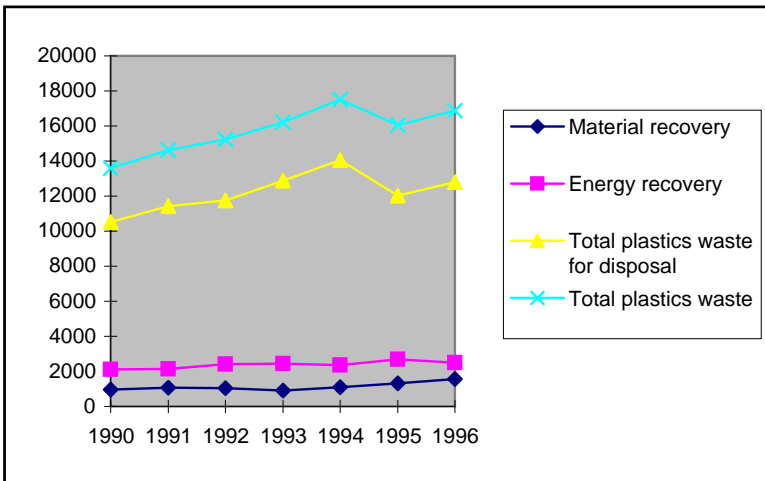
### 3.10PLASTIC

Fig. 3.10PLASTIC Total plastic

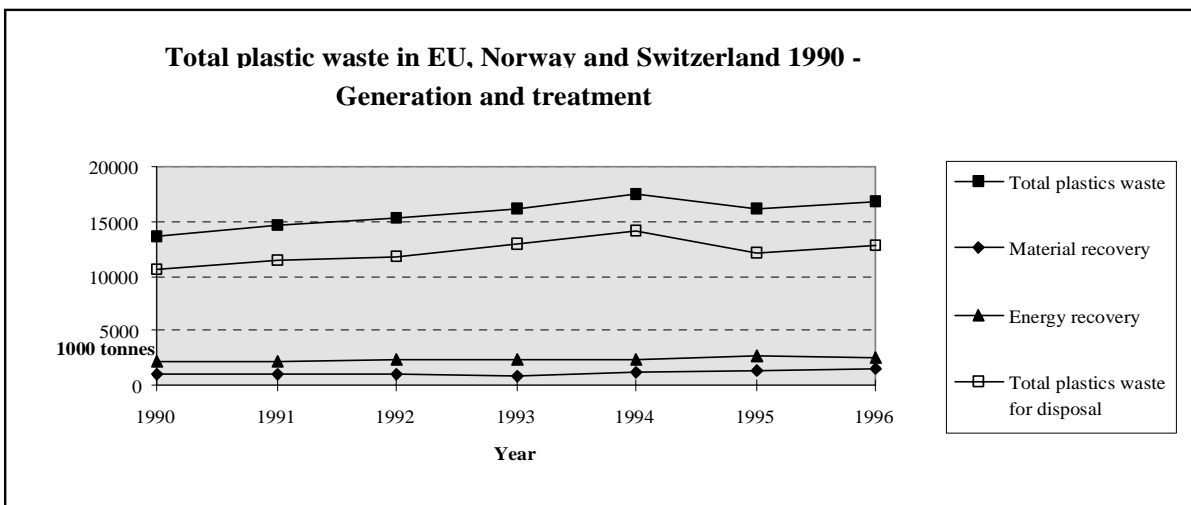
Source: APME, 1995 & APME, 1996.

Unit 1000 tonnes				
Year	Material recovery	Energy recovery	Total plastics waste for disposal	Total plastics waste
1990	958	2108	10528	13594
1991	1080	2138	11419	14637
1992	1043	2422	11765	15230
1993	915	2425	12871	16211
1994	1108	2348	14049	17505
1995	1321	2698	12037	16056
1996	1571	2496	12805	16871

remember the unit!



old file



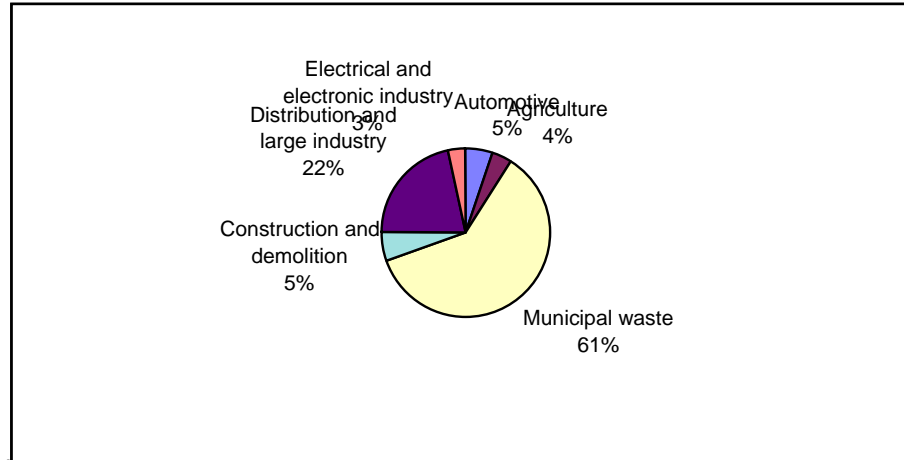
### 3.10PLASTSOURCE

Fig. 3.10PLASTSOURCE. Plastic Sources  
Source: SOFRES, 1996

unit 1000 tonnes

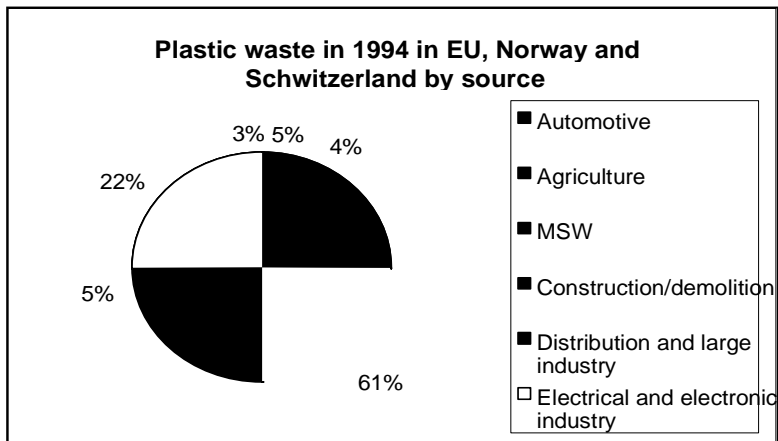
	1994
Automotive	927
Agriculture	661
Municipal waste	10581
Construction and demolition	956
Distribution and large industry	3803
Electrical and electronic industry	577
	17505

automotive=cars? (Project manager to define classes!)



add under the pie: "total of 17.5 million tonnes"

old diagram



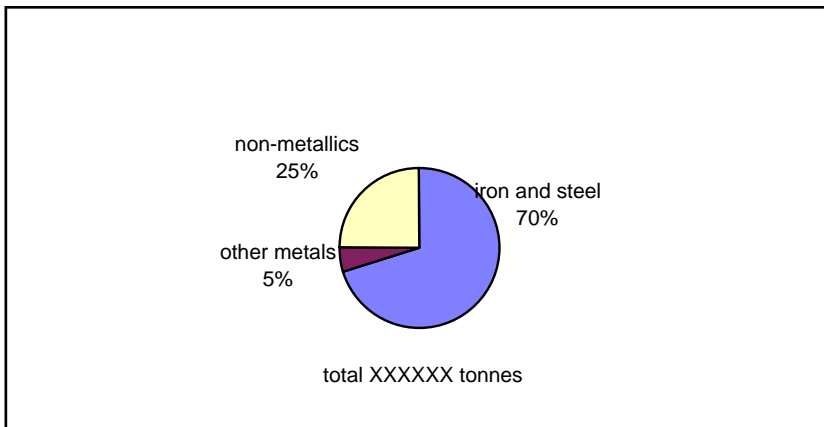
### 3.10CAR

Fig. 3.10CAR Car composition  
Source: DGXI, 1997; IPPE, 1996

Average composition of scrapped cars by weight

	%
iron and st	70
other meta	5
non-metalli	25

total will be delivered later (if it's found...)



### 3.10CARPROJECT

Fig. 3.10CARPROJECT Car projection

Source: Kilde & Larsen, 1998

Projected number of scrapped cars (in 1000) in 1995, 2000, 2005 and 2010 using the CASPER Model

Excluding former East Germany

rather than use big numbers in y-axis and a big 1000-unit (like in the draft), talk about millions:

unit: million

	1995	2000	2005	2010
EU-12	10,372	12,118	12,863	13,97

historical data missing. But as it's not sure, it will be made available, prepare the diagram based on this (so we'll have something!)

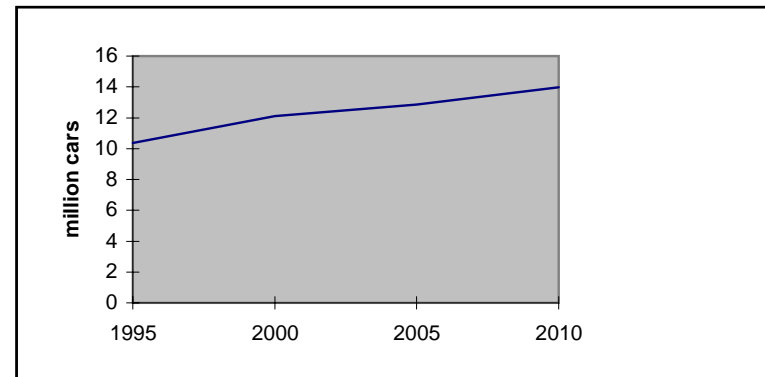
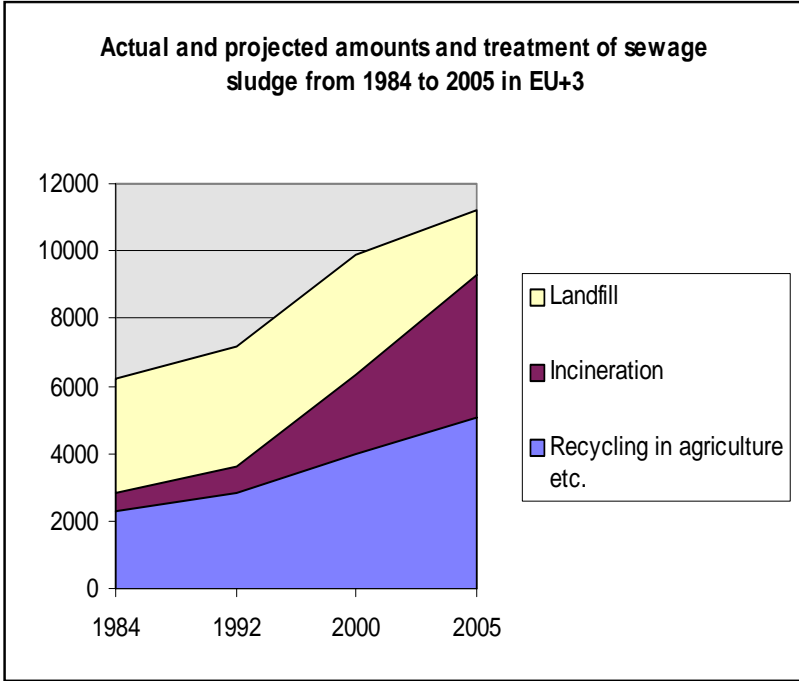




Fig. 3.10SLUDGEPRO Sludge projection

Source: Hall & Dalimier, 1994 expanded to EU+3 by ETC/IW



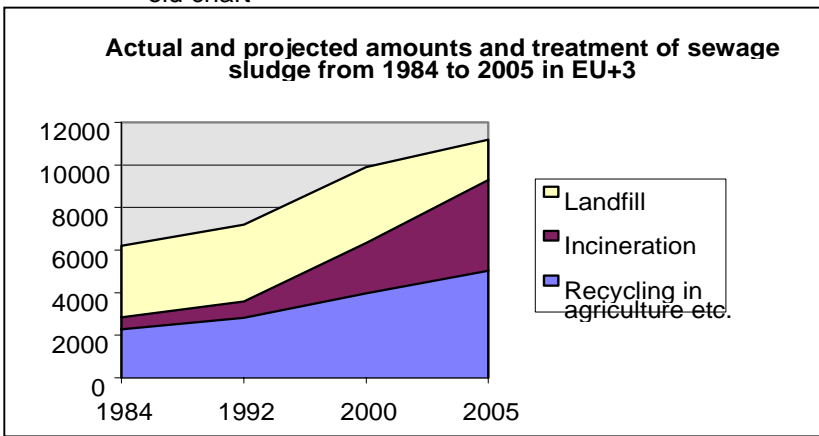
don't put such a long ti

**Historical and projec**

Geogra- phical coverage	Year
EU15	1984
EU15	1992
EU15	2000
EU15	2005

Source: Hall and Dalimier: W

old chart



### 3.10SLUDGEPRO

title in the diagram (title will be on top of the diagram, as usual)

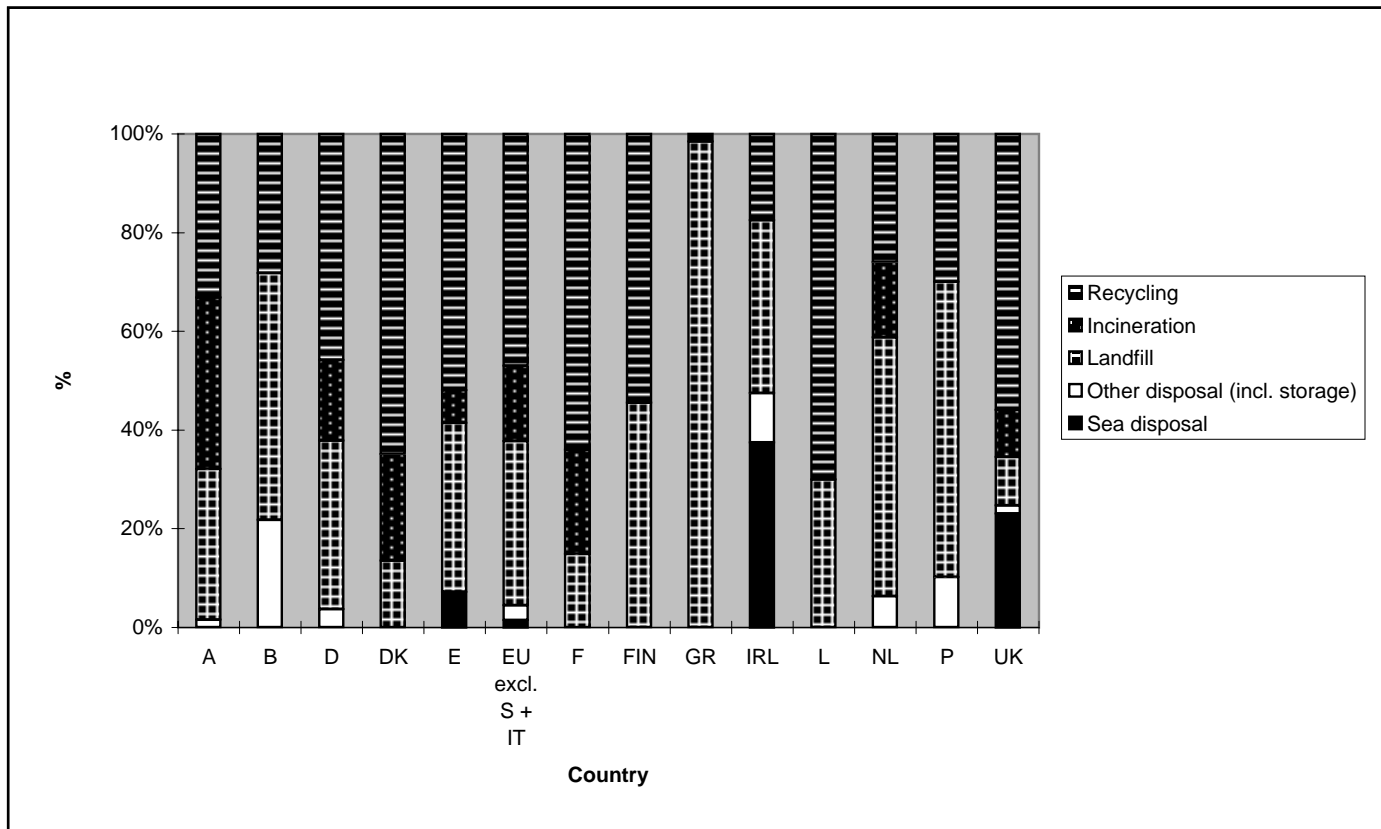
#### Estimated amounts of sewage sludge and its treatment from 1984 to 2005 in EU15

Recycling in agriculture etc.	Incineration	Landfill	Total	Unit
2294	558	3348	6200	1000 dry solid tons
2808	792	3600	7200	1000 dry solid tons
3960	2376	3564	9900	1000 dry solid tons
5040	4256	1904	11200	1000 dry solid tons

Waste Management - Sewage sludge, DGXI Study Contract B4-3040/014156/92, 1994 updated to EU15 by ETC/IW, 1998

3.10SLUDGETREAT

Fig. 3.10SLUDGETREAT Sludge treatment



## 3.10SLUDGETREAT

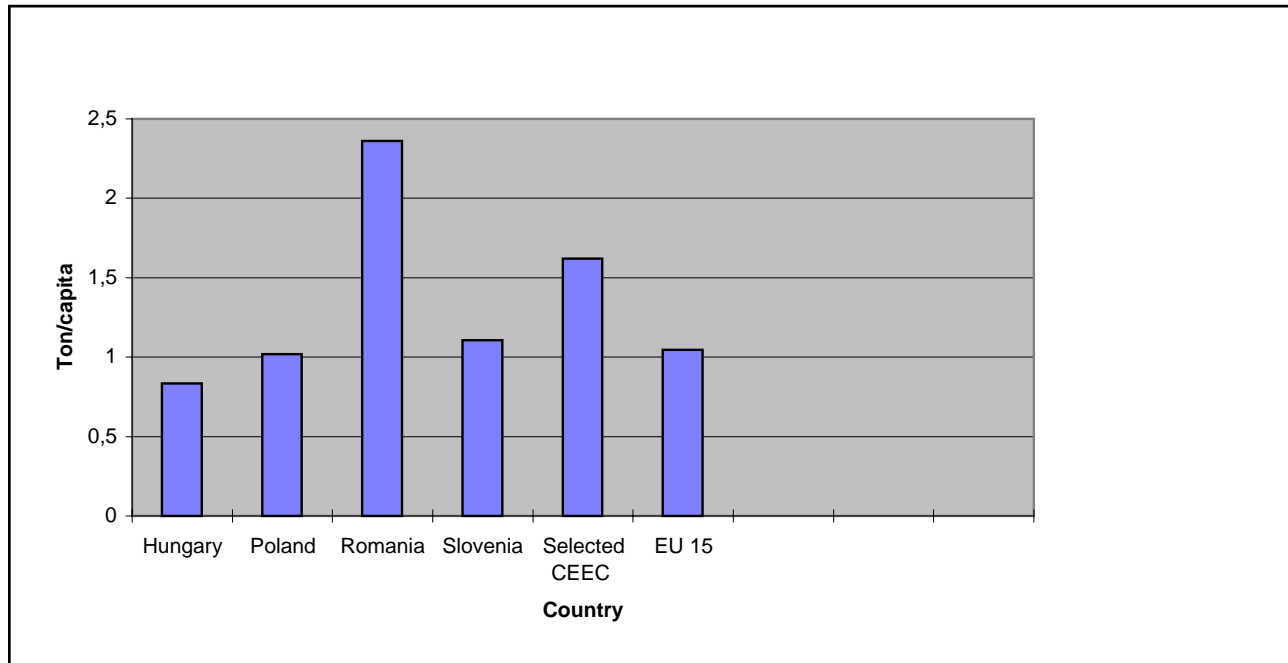
## Treatment and disposal of sewage sludge in EU-15 (ex. SE and IT), 1995

Geographical coverage	Sea disposal	Other disposal (incl. storage)	Landfill	Incineration	Recycling	Unit
Austria		3	58	66	63	1000 ton dry matter
Belgium		17	39		22	1000 ton dry matter
Germany		93	857	411	1151	1000 ton dry matter
Denmark			25	40	120	1000 ton dry matter
Spain	54		257	50	390	1000 ton dry matter
France			114	161	489	1000 ton dry matter
Finland			72		86	1000 ton dry matter
Greece			65		1	1000 ton dry matter
Ireland	15	4	14		7	1000 ton dry matter
Luxembourg			3		7	1000 ton dry matter
Netherlands		23	192	56	95	1000 ton dry matter
Portugal		15	88		44	1000 ton dry matter
United Kingdom	267	19	114	110	648	1000 ton dry matter
EU15 excl. SE	113	1236	567	1746	0	1000 ton dry matter

2512 0,163615

Fig. 3.10MAN&EN/CAP

don't leave these empty spaces in the diagram, do just a normal



Geogra- phical coverage	Man.+ Energy Waste/Cap	unit= tonnes per capita
Bulgaria	1,679045716	
Czech Rep.	2,734093345	
Estonia	5,06922043	
Hungary	0,834751633	

### 3.10MAN&EN\_CAP

Poland	1,018103068
Romania	2,360084477
Slovenia	1,106219558
Sum of above CEEC countries	1,620039386
EU 15	1,046471763

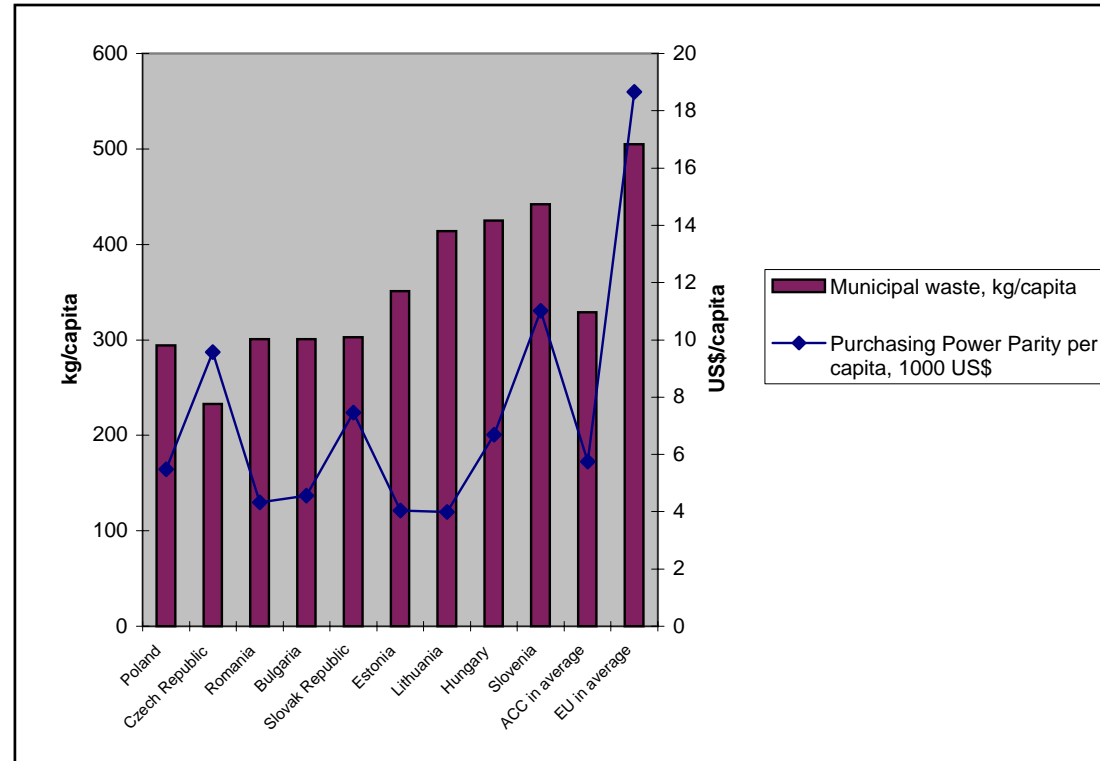
### 3.10MSW\_ACCESS

Fig. 3.10MAN&EN/CAP

Source: EEA, 1998b; OECD, 1997a

	Municipal waste, kg/capita	Purchasing Power Parity per capita, 1000 US\$
Poland	294	5,483
Czech Republic	233	9,578
Romania	301	4,321
Bulgaria	301	4,56
Slovak Republic	303	7,456
Estonia	351	4,032
Lithuania	414	3,988
Hungary	425	6,689
Slovenia	442	11,013
ACC in average	329	5,746
EU in average	505	18,666

I have changed the unit from US\$ to 1000 US\$ so that the axis scale doesn't take so much space



In stead of marking the US\$ with the line please use dots or bars.

Line cannot be used, because it's not a matter of trends here and there is no reason to link these different countries to each other.

I didn't do it already here because I couldn't quickly find such a presentation alternative in Excel (has to have two y-scales).

### 3.10MSW\_INCREASE

Fig. 3.10MSW\_INCREASE

Source: EEA, 1998

	Total Municipal waste generation today	Increase total if growth leads to EU-average	Unit	Footnote
Estonia	522	229	1000 tonnes	1
Slovenia	850	122	1000 tonnes	1
Lithuania	1546	341	1000 tonnes	1
Slovak Republic	1620	1072	1000 tonnes	1
Bulgaria	2562	1735	1000 tonnes	1
Hungary	4300	803	1000 tonnes	1
Czech Republic	2390	2793	1000 tonnes	1
Romania	6845	4633	1000 tonnes	1
Poland	11352	8119	1000 tonnes	1

**Source: Municipal waste**

Source 8

Dobris+3

**Footnote**

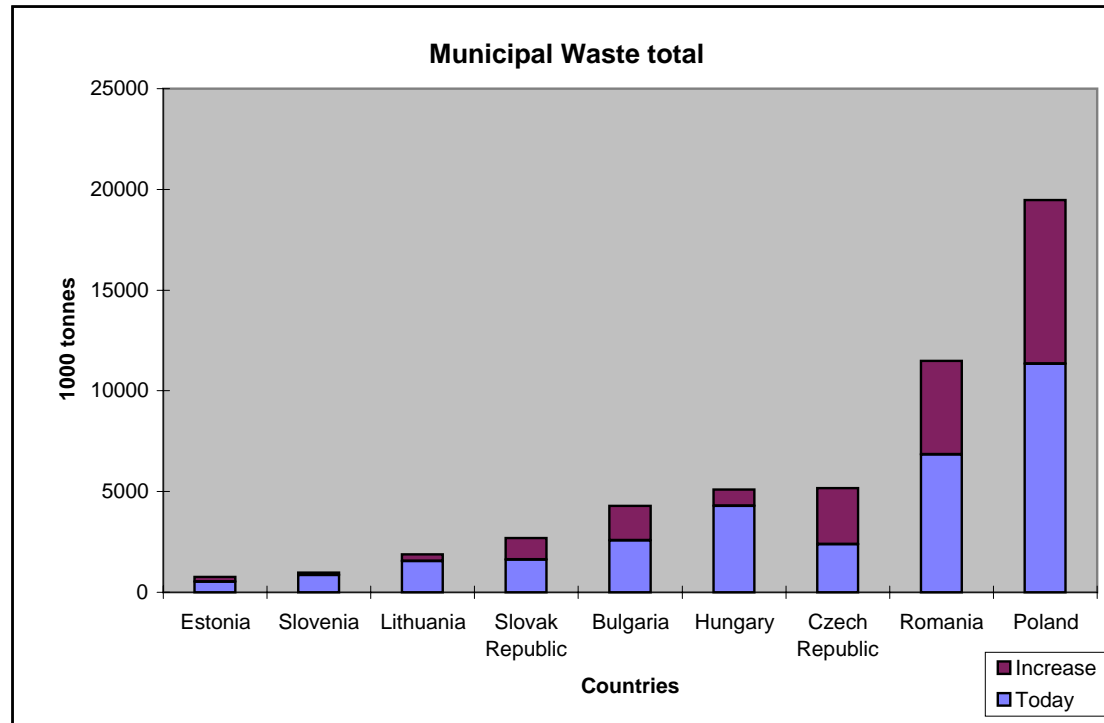
Footnote 1

The increase in MSW is calculated:  
 (EU average per capita in kilo - Accession country's average in kilo)x Accession country's population



3.10MSW\_INCREASE

footnotes not needed in the diagram



### 3.10LANDLEACH

Table 3.10LANDLEACH Landfill leaching

**Rate of leach Hazardous Municipal low organic Inorganic waste**

Medium: (2600 years 300 years 150 years 100 years

High : (400 300 years 150 years 75 years 50 years

Source: Hjelmar et al., 1994

### 3.10INCINER

Fig. 3.10INCINER: Incinerator emission

#### Percentual contribution of MSW incinerators and incineration of hospital waste to total EU emissions of dioxins and heavy metals

Compound	Year	MSW Incinerator Plants	Geographical coverage	Source	Note	Incineration of hospital waste	Source
Dioxins and furans	1990	32,00%	EU-15	2	1		
Dioxins and furans	1994	25,50%	EU-15 + CH & UK	1	2	14.2%	1
Mercury	1990	14,60%	EU-15	2	1		
Cadmium	1990	7,90%	EU-15	2	1		
Chromium	1990	3,90%	EU-15	2	1		

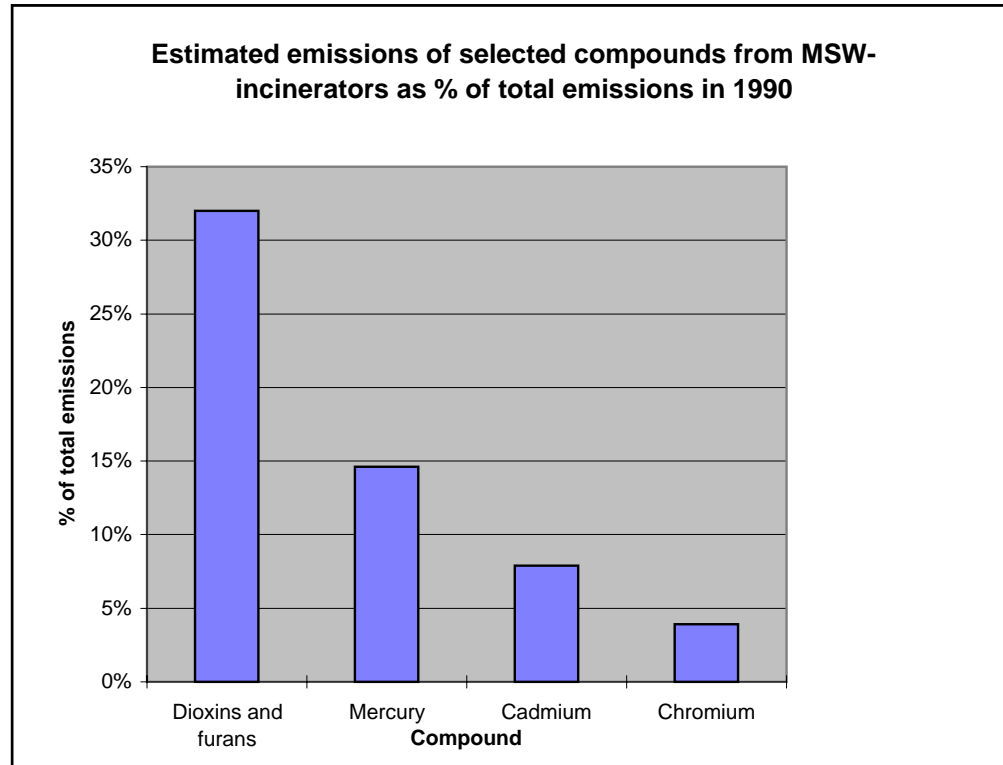
**Source:**

- 1) Landesumweltamt Nordrhein-Westfalen: Identification of relevant industrial sources of dioxins and furans in Europe, Essen 1997
- 2) Umweltbundesamt/TNO: The European Atmospheric Emission Inventory of Heavy Metals and Persistent Organic Pollutants for 1990, 1997

**Note:**

- 1) Reestimations based on national reports and emission factor estimates
- 2) Collected data cover 1990 - 1995 but most data are representing 1993-1994

Fig. 3.10: Incinerator emission



### 3.10RESIDUES

Table 3.10RESIDUES

Approximate quantities of residue in kg dry matter per ton of waste incinerated

Residue type	Used technology		
	Dry	Semi-dry	Wet
Fly ash	(10-30)	(10-30)	10-30
Dry residue, including fly	20-50	15-40	:
Sludge from wastewater			1-3

unit=  
kg/ton of waste incinerated

don't use brackets in the final diagram, leave missing data places empty

Table 3.10HM/SLAG

Source: International Ash Working Group, 1997; Lamé and Leenaer, 1998

	Range in s	Range in n	Dutch target value
As	0.12 - 189	Jan-50	29
Hg	0.02 - 7.75	0.01 - 0.3	0,3
Cd	0.3 - 70.5	0.01 - 0.70	0,8
Cr	23 - 3.170	1 - 1000	100
Cu	190 - 8.240	2 - 100	36
Ni	5 - 500	7 - 4.280	35
Pb	98 - 13.700	2 - 200	85
Zn	613 - 7.770	10 - 300	140
PAH	13 - 19.000		1

### 3.10RISK\_SLAG

Table 3.10RISK/SLAG

Environmental risk factors from leaching from slag

Compound Drinking w: Harbour construction

Cadmium	128	13	clarify harbour construction
Copper	21	1586	
Mercury	60	12	
Lead	420	344	
Chloride	160	0	
Sulphate	126	0	

Source: Thygesen et al. 1992

Table 3. 10EUREGU

Strategy	Legal Action In Force	Considered Legal Action at Community Level
Prevent waste generation and reduce its hazardous content. Hierarchy of principles: prevention, material recovery, energy recovery, safe disposal	Treaty, Art. 130R Member States required to encourage firstly, the prevention or reduction of waste, secondly the recovery of waste by means of recycling and re-use or the use of waste as a source of energy (Framework Directive, Art. 3); ensure that waste is	Possible proposals to set quantitative targets for reducing and recovering waste (COM (96) 399)
Prevention of waste generation	Community Regulations on eco-audit and eco-labels (Regulation 1836/93 and 880/92). Member States required to take measures to: prevent generation of packaging waste, limit the heavy metal content of packaging, and inform consumers (Directive 94/62, Art. 4,	In particular cases EC-wide rules to limit the presence of heavy metals in products or ban specific substances in order to prevent hazardous waste to generate. (COM (96) 399) Integrate the principle of producer responsibility in all future measures on a ca
Prevention of impact on environment Prevent the negative impact on the environment	Member States required to take measures: reduce the heavy-metal content of batteries and accumulators, ensure separate collection of spent batteries and accumulators containing dangerous substances, inform consumers, and prohibit marketing of certain batte	Proposed specific requirements for Member States to ensure that measures aiming at reducing the negative impact on the environment from end-of-life vehicles are implemented (COM (97) 358) Proposed directive on landfills setting minimum technical and admini
Recovery Where generation of waste cannot be avoided, waste shall be reused or recovered for its material or energy. Where environmentally sound, reuse shall be further encouraged in order to avoid generation. Preference to be given to recovery of material	Specific requirements for Member States to: encourage reuse systems of packaging, to take the necessary measures in order to attain certain targets of recovery and recycling of packaging, and to ensure that systems are set up to provide for the return and/	Consider EC quality requirements to define when a given incineration operation is a recovery or a disposal operation. (COM (96) 399) Proposed specific targets of re-use, recycling and recovery for end-of-life vehicles, and demands for establishing systems



### 3.10 EUREGU

Final disposal Incineration without energy recovery and landfilling. Incineration with energy recovery to be promoted for all incineration installations, leaving landfilling in principle as the last solution. In the mid-term, only non-recoverable	Avoidance of	The cost of disposing of waste must be borne by the producer of the waste (Framework Directive, Art. 15). Member States required to take appropriate measures to: establish an integrated and adequate network of disposal installations (Framework Directive, Art	Proposed requirement for Member States to ensure that all of the costs involved in the setting up and operation of a landfill site are covered by the price to be charged by the operator for the disposal of any type of waste in that site and to set up a na
--	--------------	--	---

Shipment of waste The principle of self-sufficiency aims at avoiding shipments for disposal between Member States, while shipments for recovery are mainly submitted to the principles of the internal market.		Requirements on notifications procedures (Regulation 259/93)	Increase approximations of environmental standards in order to establish common environmental standards for recovery operations. (COM (96) 399)
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Source: the authors??

Considered Political  
Action

Continue to promote  
the hierarchy by  
establishing legal,  
economic and  
administrative  
instruments.

Continue to promote  
the use of clean  
technologies,  
economic  
instruments and  
consumer  
information and  
education. Improve  
the environmental  
dimensions of  
technical standards.

Development of a  
recycling industry  
based on modern  
technologies and  
methods and  
promote recyclability  
of materials and  
products.

Encourage Member States to make serious efforts to prevent and to minimise quantities of waste that goes to landfills, and in the long run to ensure that the price of disposal is made more transparent.

Share the concern of the Member States at large-scale movements within the Community of waste for incineration with or without energy recovery

3.10WASTE\_TREAT

Table 3.10WASTE/TREAT

Total waste generation by treatment method in selected EU-countries and regions. Stated in percentage

data from the December's delivery from Sheila

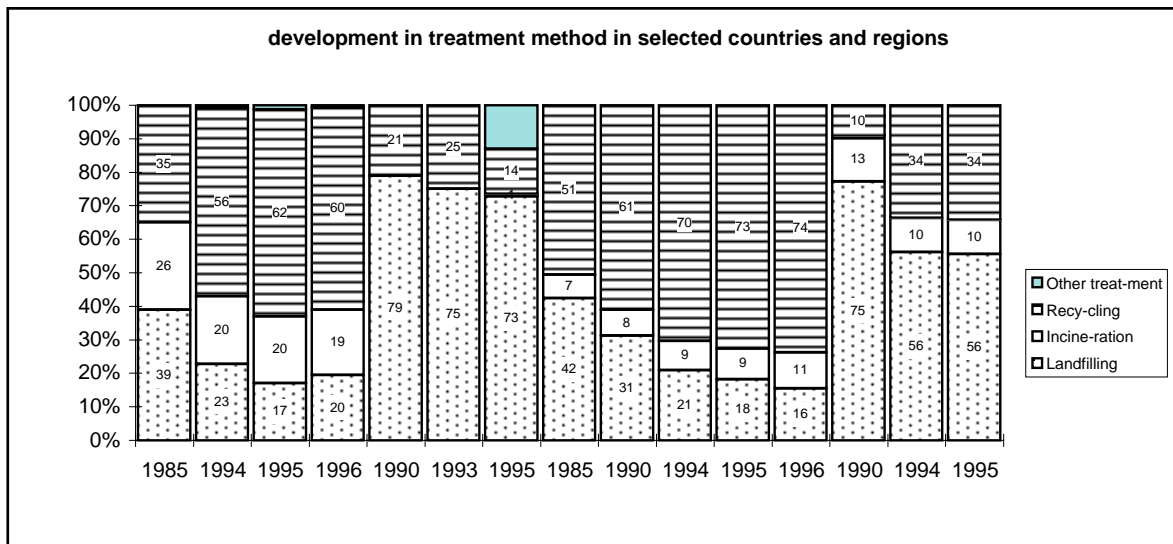
<b>Tabel xxx. Total waste generation by treatment method in selected EU-countries and regions</b>					
Country/region	Year	Landfilling	Incineration	Recycling	Other treatment
<b>Denmark</b>	1985	39	26	35	0
Denmark	1994	23	20	56	1
Denmark	1995	17	20	62	1
Denmark	1996	20	19	60	1
<b>Germany</b>	1990	68	3	21	8
Germany	1993	55	4	25	21
<b>Ireland</b>	1995	73	1	14	13
<b>Netherland</b>	1985	42	7	51	0
Netherland	1994	31	8	61	0
Netherland	1995	21	9	70	0
Netherland	1996	18	9	73	0
Netherland	1990	16	11	74	0
<b>Sweden</b>	1990	75	13	10	0
<b>Catalonia</b>	1994	56	10	34	0
Catalonia	1995	56	10	34	0

100  
 sum!!!!  
 100  
**99 not = 100!!!**  
**101 not = 100!!!**  
 100  
 100  
 100  
**105 not = 100!!!**  
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**97 not = 100!!!**  
 100  
 100

rememebr to put NL bars in chronological order (1990 begore 1994)

### 3.10WASTE\_TREAT

example of the type of diagram, use newer data to produce a similar one



make such a diagram but

- 1) put more space between countries, so it's easier to see where one country ends and one starts
- 2) add names of the countries on top of the bars (write 'Denmark' once on top of its bars, only once, not on top of each bar)

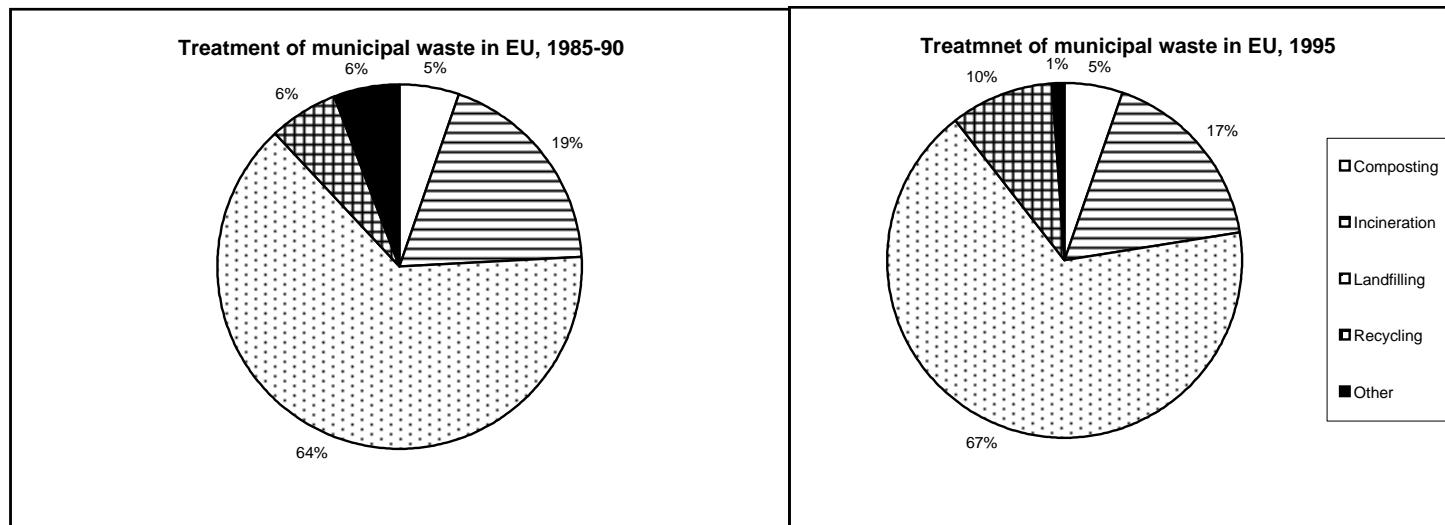
3.10DEV\_MSW

Fig. 3.10DEV\_MSW

The figure shows that despite increased recycling no progress has been made in reducing landfilling.

Source: Dobris+3 and NRCs

	Composting	Incineration	Landfilling	Recycling	Other
1995	5	17	67	10	1
1985-1995	5	19	64	6	6



3.10TREAT\_CONSTR

Table 3.10TREAT/CONSTR

Source: NRCs and Junta de Residus, Catalonia

Construction & demolition					Year
	Landfilling in %	Incineration in %	Recycling in %	Other in %	
Denmark	82	6	12	0	1985
Denmark	10	1	89	0	1996
Germany	32		10	58	1990
Germany	32		12	57	1993
Ireland	57	0	35	8	1995
Luxembourg	93	0	7	0	1994
Luxembourg	93	0	7	0	1997
Netherlands	50	1	49	0	1985
Netherlands	8	1	91	0	1996
Sweden					1996
Catalonia					1995
Catalonia					1996

Manufacturing					Year
	Landfilling and other disposal in %	Incineration in %	Recycling in %	Other in %	
1985	35	26	39	0	
1996	31	14	53	2	
1990	38	8	49	4	
1993	28	9	60	3	
1995	73		27	0	
1994					
1997					
1985	34	2	64	0	
1996	14	5	81	0	
1996	17	32	41	9	
1995	37	1	52	10	
1996	33	1	53	13	

make bar diagrams: e.g. Denmark: one pair of bars (year 1985 & 1996) on manufacturing and one pair on construction and demolition

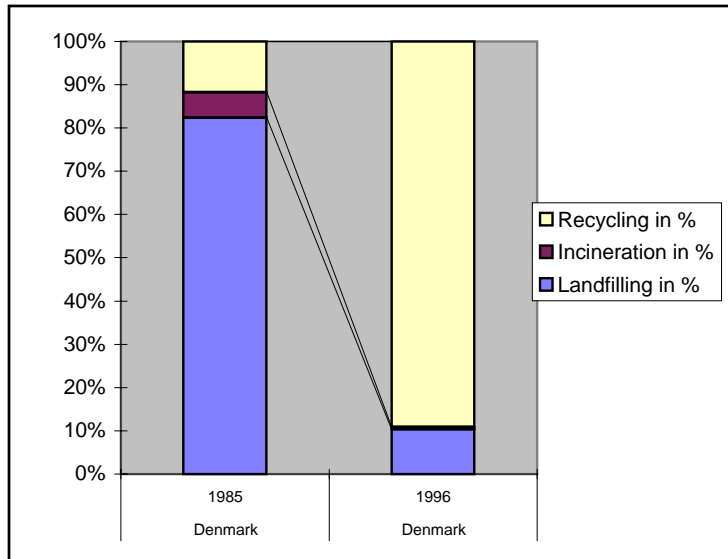
here is an example on a pair of the construction data of Denmark

Year	Landfilling in %	Incineration in %	Recycling in %	Other in %
Denmark 1985	82	6	12	0
Denmark 1996	10	1	89	0

use same legends for all the bars

If you can't figure out this advise, please ask that you get my scribbles from the grey draft book faxed to you, there is a sketch available

### 3.10TREAT\_CONSTR





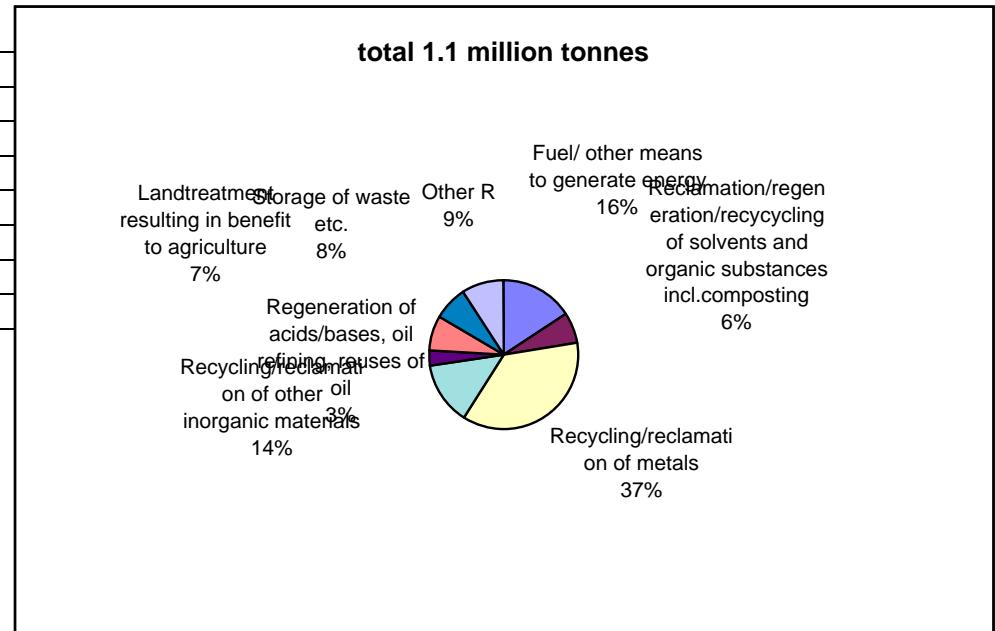
### 3.10RECOVERY

Fig. 3.10RECOVERY

Source: European Commission, 1998b and Norsas. The table does not include figures from Greece and Ireland. The figures for Sweden and France are 1994-figures.

Fuel/ other means to generate energy	178178
Reclamation/regeneration/recycling of solvents and organic substances incl.compost	72330
Recycling/reclamation of metals	409052
Recycling/reclamation of other inorganic materials	152360
Regeneration of acids/bases, oil refining, reuses of oil	36159
Landtreatment resulting in benefit to agriculture	82544
Storage of waste etc.	85621
Other R	101924
	<b>1118167</b>

wording has to be clarified and improved by the author/PJM!!!



### 3.10INCINER\_CAPAC

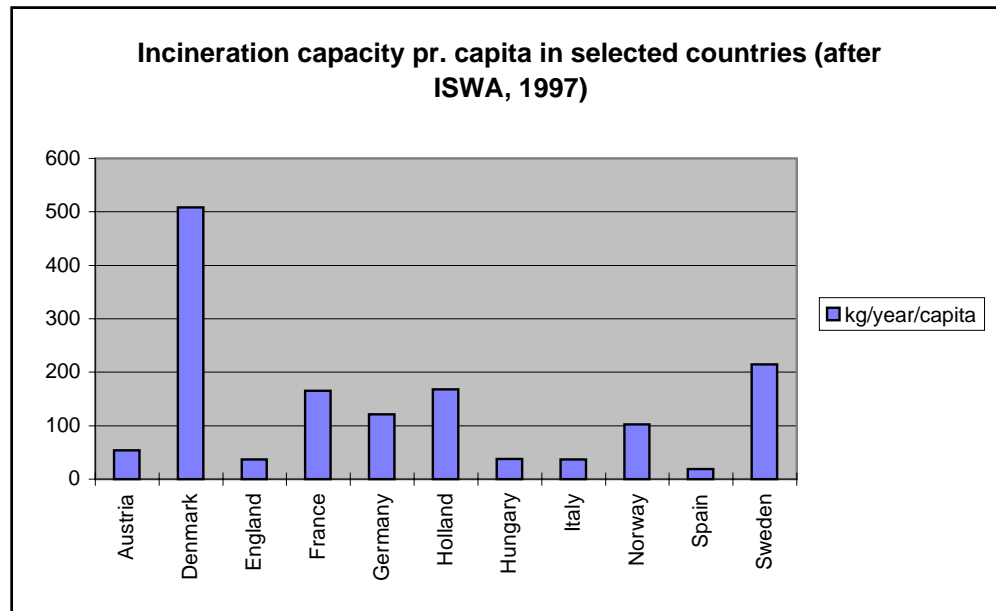
Fig. 3.10INCINER\_CAPAC

The figure illustrates a large variation in available incineration capacity

Source: ISWA, 1997

**Incineration capacities per capita in selected countries**

**Fig. 3.10INCINER\_CAPAC**



Geographical coverage	Incineration capacity	Unit
Austria	54	kg/cap/year
Denmark	508	kg/cap/year
England	37	kg/cap/year
France	165	kg/cap/year
Germany	121	kg/cap/year
Netherlands	168	kg/cap/year
Hungary	38	kg/cap/year
Italy	37	kg/cap/year
Norway	102	kg/cap/year
Spain	19	kg/cap/year
Sweden	215	kg/cap/year

### 3.10EN\_INCINER

Fig. 3.10EN/INCINER

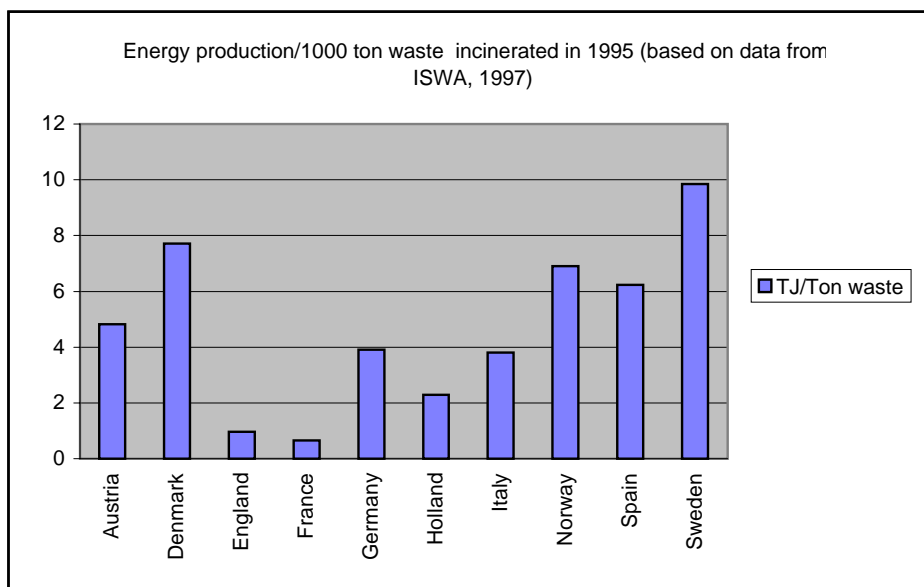
Source: ISWA, 1997

Geographical coverage	Energy production/waste amount	Unit
Austria	4,8	TJ/1000 tonnes
Denmark	7,7	TJ/1000 tonnes
England	1,0	TJ/1000 tonnes
France	0,7	TJ/1000 tonnes
Germany	3,9	TJ/1000 tonnes
Netherlands	2,3	TJ/1000 tonnes
Italy	3,8	TJ/1000 tonnes
Norway	6,9	TJ/1000 tonnes
Spain	6,2	TJ/1000 tonnes
Sweden	9,8	TJ/1000 tonnes

**Source 1:** ISWA: Energy from Waste. State-of-the-Art Report, 1997

**Note 1:** Data are based on questionnaires to the individual incinerator plants

Fig. 3.10EN/INCINER



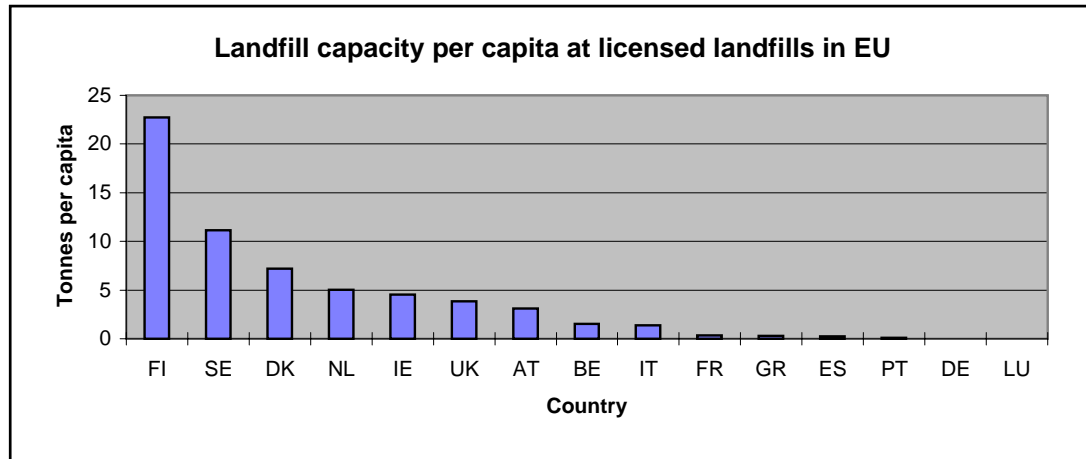
rank in order of magnitude  
twist the whole diagram so that country names are horizontally

### 3.10LANDF\_CAPAC

Fig. 3.10LANDF\_CAPAC

The figure shows a very large variation between EU countries in the reported capacity at established, licensed landfills

Source: NRCs, 1998b



	Landfill capacity per capita at licensed landfills in EU
Finland	23
Sweden	11
Denmark	7
Netherlands	5
Ireland	5

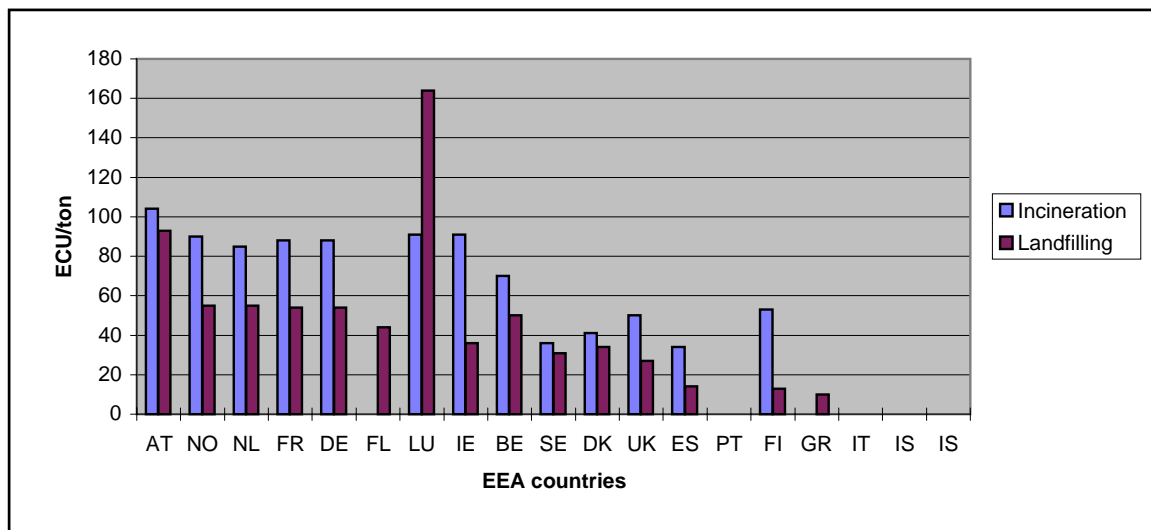
### 3.10LANDF\_CAPAC

United Kingdom	4
Austria	3
Belgium	2
Italy	1
France	0
Greece	0
Spain	0
Portugal	0
Germany	0
Luxembourg	0

Fig. 3.10TR\_PRICES

Average treatment prices for landfilling and incineration of non-hazardous waste in selected EEA member countries (excl. waste tax and VAT). It should be noted that all prices are averages of observed prices and cover large variations between plants.

Source: NRCs, 1998b



## 3.10TR PRICES

	Incineration	Landfilling
Austria	104	93
Norway	90	55
Netherlands	85	55
France	88	54
Germany	88	54
Liechtenstein	0	44
Luxemburg	91	164
Ireland	91	36
Belgium	70	50
Sweden	36	31
Denmark	41	34
United Kingdom	50	27
Spain	34	14
Portugal	0	0
Finland	53	13
Greece	0	10
Italy	0	0
Iceland	0	0

use country names

### 3.10DEN\_PRICE

Table 3.10DEN\_PRICE

SOURCE?  
UNIT= ECU

	Landfilling	Incineration
Disposal fee before tax	20-34	14-40
Waste tax		45 28-35
Total	65-79	42-75