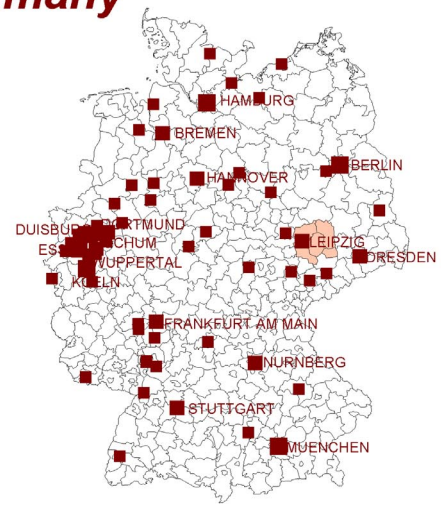
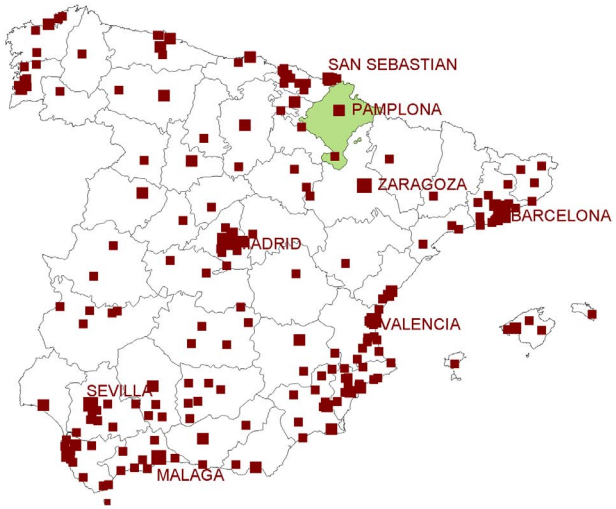
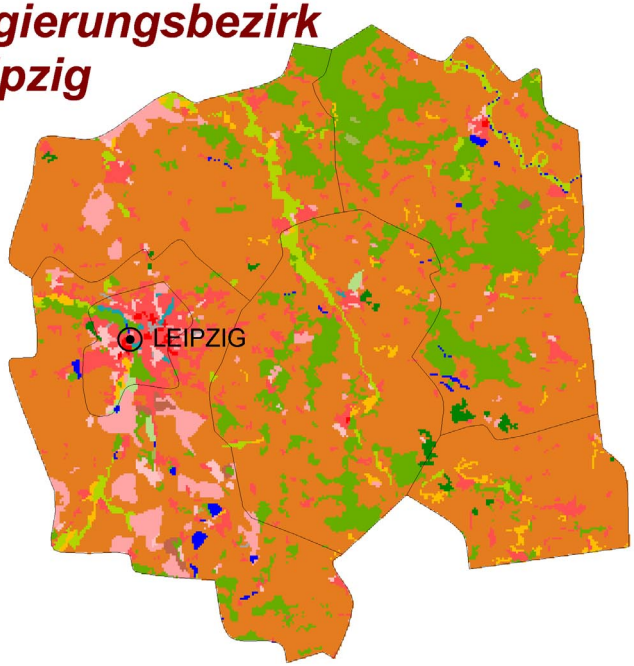
Germany



Spain



Regierungsbezirk Leipzig



Navarra

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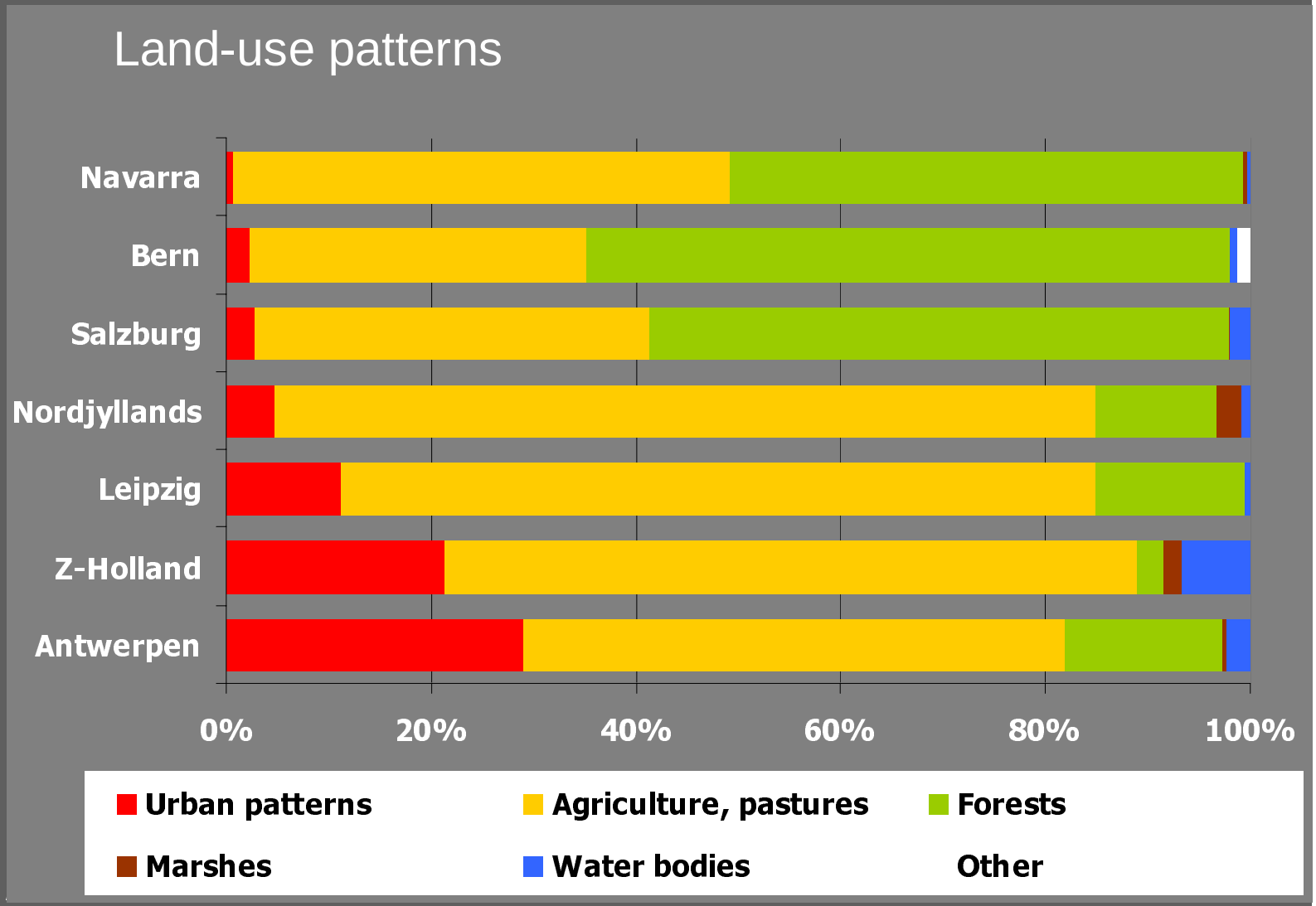
Corine land-use patterns

- Simplified presentation of Corine land-use patterns (version Jul.97) no data from Turin available.
- Navarra has the lowest share of urban land-use patterns (1 %), the Prov. of Antwerpen the highest (21 %).



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Groundwater use

	A	B	CH	D	DK	ES	I	NL
	NW Salzb.	P. Antw.	Kanton Bern	R. Leipzig	N-Jyllan.	Navarra	P. Torino	Zuid-Holland
Groundwater, including river filtrate	~100%	Partly	80 %	100 %	100 %	80 %	72 %	Major source
Surface water		Partly	<20 %				21 %	
Spring water			Minor			20 %	7 %	

- Groundwater and river bank filtrate are major drinking water resources

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Regions receiving support from the EU Structural Funds between 1994 and 1999

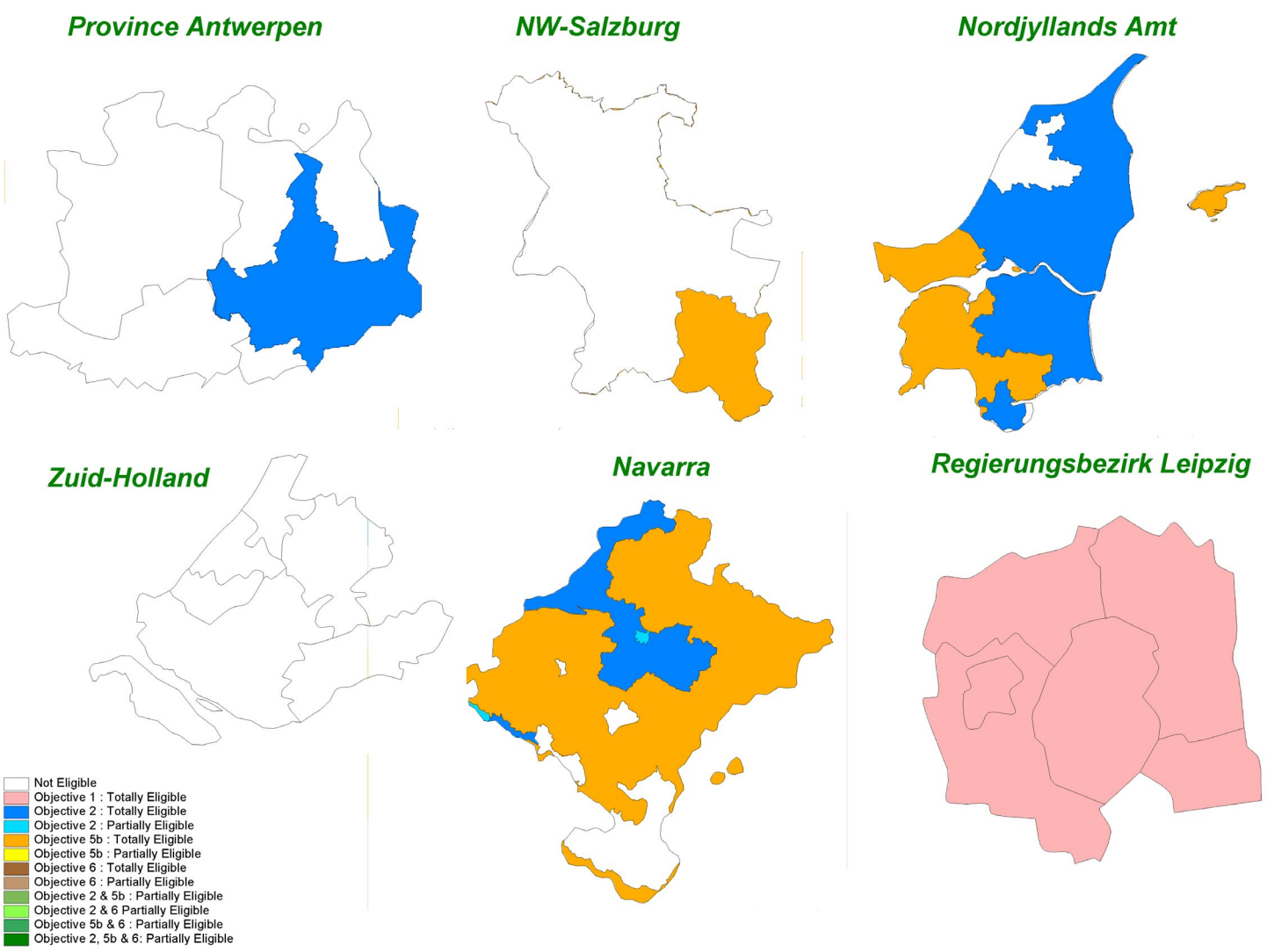
Objective 1 = areas lagging behind

Totally eligible **Partly eligible**

Objective 2 = declining industrial areas

Objective 5b = rural areas to be developed

Source: **GISCO, May 1998.**

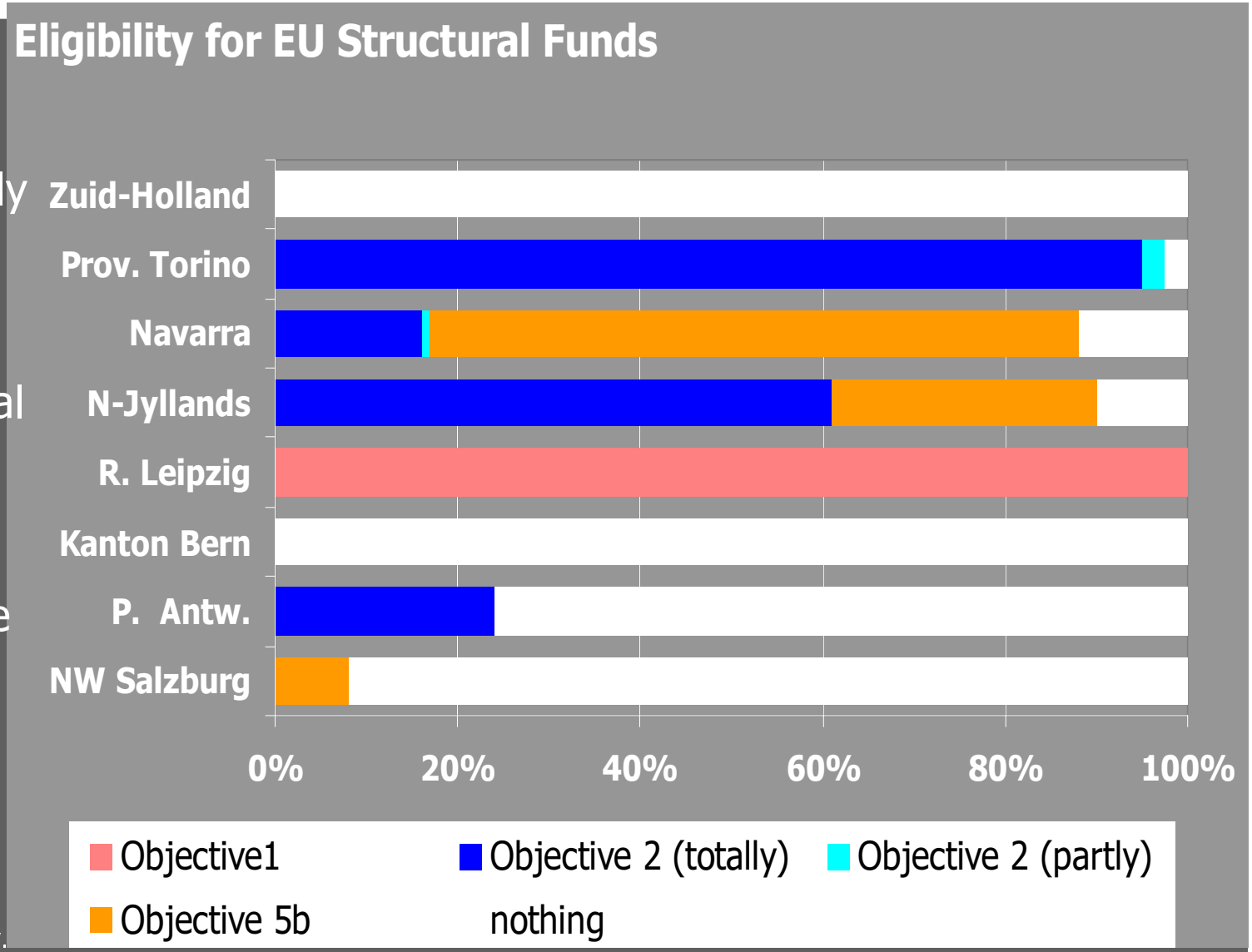


Summary: EU Structural Funds

Only one region is defined as economically lagging behind (D).

Four test regions have areas in heavy industrial decline (I, DK, E, B).

Three test regions have agricultural areas to be developed.



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Type of sites included

	A	CH	B	DK	D	E	I	NL
Type of sites	**NW Salzb.**	**K. Bern**	**P. Antw.**	**N-Jyll.**	**R. Leipzig**	**Nav.**	**P. Torino**	**Zuid-Holl.**
Abandoned waste	●	●	●	●	●	●	●	●
Operating waste	●		●	●	●	●		
Abandoned industrial	●	●	●	●	●	●	●	●
Operating industrial	●	●	●	●		●	●	
Nuclear waste								
Diffuse contamination						●		●
Accidents		●				●	●	
Natural contamination					●		(●)	
Abandoned military	●				●			
Operating military	●							●
Other			●			●		

Test regions have in common: inclusion of abandoned waste sites and abandoned industrial sites, and exclusion of nuclear waste sites.

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Geographical reference and sub-regions

- For all test regions, corresponding NUTS 3 regions could be identified (other nomenclature for CH).
- In six countries, specification of data to a lower level was possible (i.e. municipalities, counties).

	A	B	CH	D	DK	E	I	NL
Test region	**NW Salzb.**	**P. Antw.**	**K. Bern**	**R. Leipzig**	**N-Jyll.**	**Nav.**	**P. Torino**	**Z-Holl.**
Corresponds to NUTS 3 level	Y	Y	N (ARRG)	Y	Y	Y	Y	Y
No of NUTS 3 units	1	4	1	6	1	1	1	6
Sub-regions	'Counties' (cluster of municipal-ities)	Munici-palities	?	'Coun-ties' (cluster of municipal-ities)	Munici-palities	Munici-palities	Urban, extra urban area	?

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Estimated completion of surveys and site investigations

	A	B	CH	DK	D	E	I	NL
	NW Salzburg	P. Antw.	Kanton Bern	N-Jyllands	R. Leipzig	Navarra	P. Torino	Zuid-Holland
'Regional screening'	Y	Y	Y	Y	Y	N	Y	Y
Preliminary surveys	95 %	90 %	> 90 %	90 %	95 %	100 %	100 %	70–90 %
Preliminary investigations	20 %	35 %	7.5 %	66 %	25 %	29 %	80 %	30 %
Main site investigations	< 5 %	10 %	< 5 %	5 %	< 5 %	1 %	40 %	20 %

- On average, preliminary surveys are 90 % completed.
- Main site investigations in most regions are less than 20 % completed.

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Potentially contaminated sites (PCS)

	A	B	CH	D	DK	E	I	NL
	NW Salzburg	P. Antw.	Kanton Bern	R. Leipzig	N-Jyllands	Navarra	P. Torino	Zuid-Holland
Total test region								
PCS	4 170	1 494	2 452	4 354	6 265	58	73	115 000
Inhab./PCS	75	1 098	384	252	78	9 187	30 442	29
Largest city								
PCS	1 960	50	402	1 243	1 435	6	48	16 000
Inhab./PCS	73	8 953	336	395	84	30 411	19 302	37

- The density of identified potentially contaminated sites varies between 29 and 9 187 inhabitants per site.
- In five test regions, the inhabitant per site ratio is comparable between the largest city and the total region.

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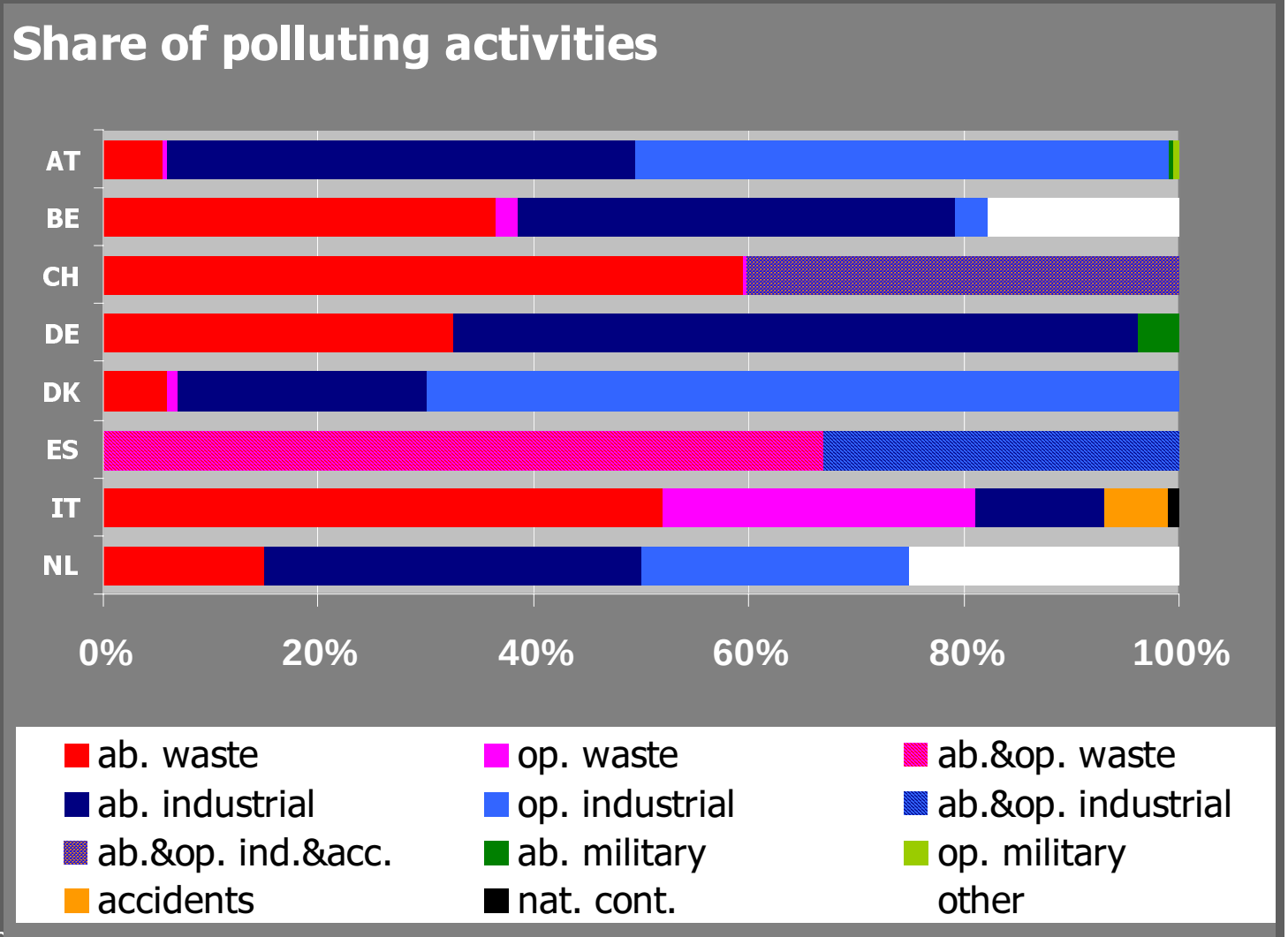
Potentially contaminated sites per type

In two test regions, a distinction between abandoned and operational activities is not possible (E, CH).

Waste sites dominate in E, CH, I.

Industrial sites dominate in A, D, DK, and NL.



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Specification of impact levels

	A	B	CH	D	DK	E	I	NL
	NW Salzburg	P. Antw.	Kanton Bern	R. Leipzig	N-Jyllan.	Navarra	P. Torino	Zuid-Holland
Impact level 3	●	●	●	●	●	●	●	●
Impact level 2	●	●		●	●	●	●	●
Impact level 1	●	●	●	●	●	●	●	●

All test regions specify the three different impact levels, except Switzerland for impact level 2. Most countries can provide corresponding national definitions.

Special cases:

Italy: Impact level 2 = sites put under safety measures

Impact level 1 = remediated sites

Netherlands: Impact level 2 = also after remediation made fit for limited use

Impact level 3 = also after remediation (defined as multifunctional remediated)

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Sites at different impact levels

	A	B	CH	D	DK	E	I	NL
	NW Salzburg	**P. Antw.**	**Kanton Bern**	**R. Leipzig**	**N-Jyllan.**	**Navarra**	**P. Torino**	**Zuid-Holland**
PCS	4 170	1 494	2 452	4 354	6 265	58	73	115 000
Impact level 3	0	1 100	—	327	322	28	15	702
Impact level 2	4	1 167	—	361	153	26	9	836
Impact level 1	3	515	671	72	223	3	—	1 565
Completion of main site investigations	**< 5 %**	**10 %**	**< 5 %**	**< 5 %**	**5 %**	**1 %**	**40 %**	**20 %**

- The density of identified sites at impact level 1, 2 or 3 varies strongly among the eight test regions.

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Number of remediated sites type of remediation

	A	B		CH	D	DK	E	I	NL	
	NW Salzb.	P. Antw.		Kanton Bern	R. Leipzig	N-Jyllan.	Navarra	P. Torino	Zuid-Holland	
Impact level 3→2	—	X	5–22		X	20	—	1	x	1 452
Impact level 3→1	—	X			—	67	—	13	x	
Impact level 3→0	—	X			—	—	—	—		—
Impact level 2→1	1	—			X	—	1	10		—
Impact level 2→0	—	—			—	—	—			—

- Six test regions can specify the number of remediated sites.
- The most common remediation types are 3 2, 3 1, 2 1.
- Zuid Holland has as an outstanding high remediation rate.

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Frequently applied remediation technologies

Test regions were asked to refer to the most frequently applied remediation technologies for different types of remediation:

From impact level 3 --->2

From impact level 3 --->1

From impact level 3 --->0

From impact level 2 --->1

From impact level 2 --->0

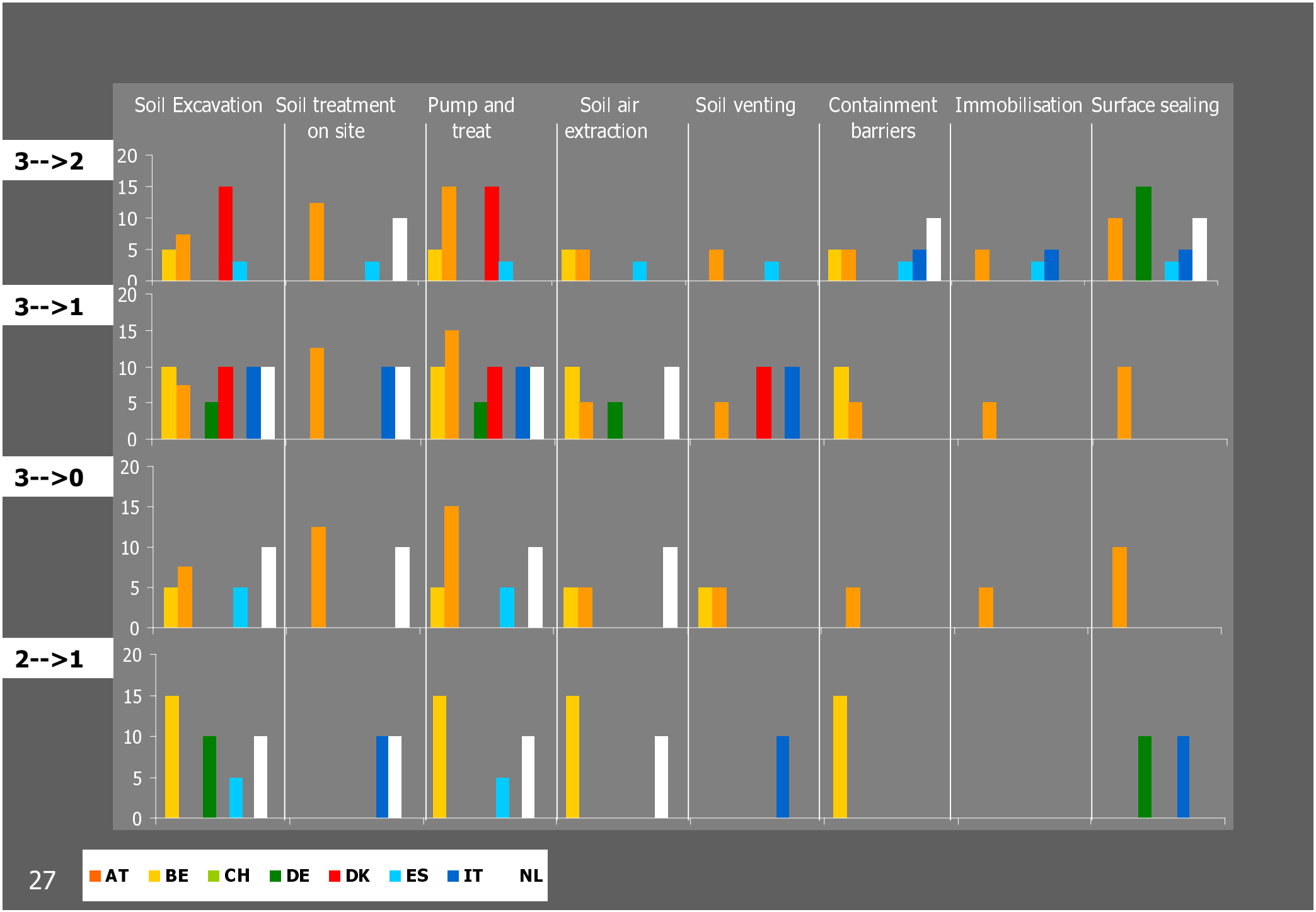
A scoring system was used to assess the frequency of different technologies for different types of remediation:

Never.....0 points

Rarely.....5 points

Often.....10 points

Mostly applied.....15 points


Soil Excavation
Soil treatment on site
Pump and treat
Soil air extraction
Soil venting
Containment barriers
Immobilisation
Surface sealing
3-->2
3-->1
3-->0
2-->1
20
15
10
5
0
AT
BE
CH
DE
DK
ES
IT
NL

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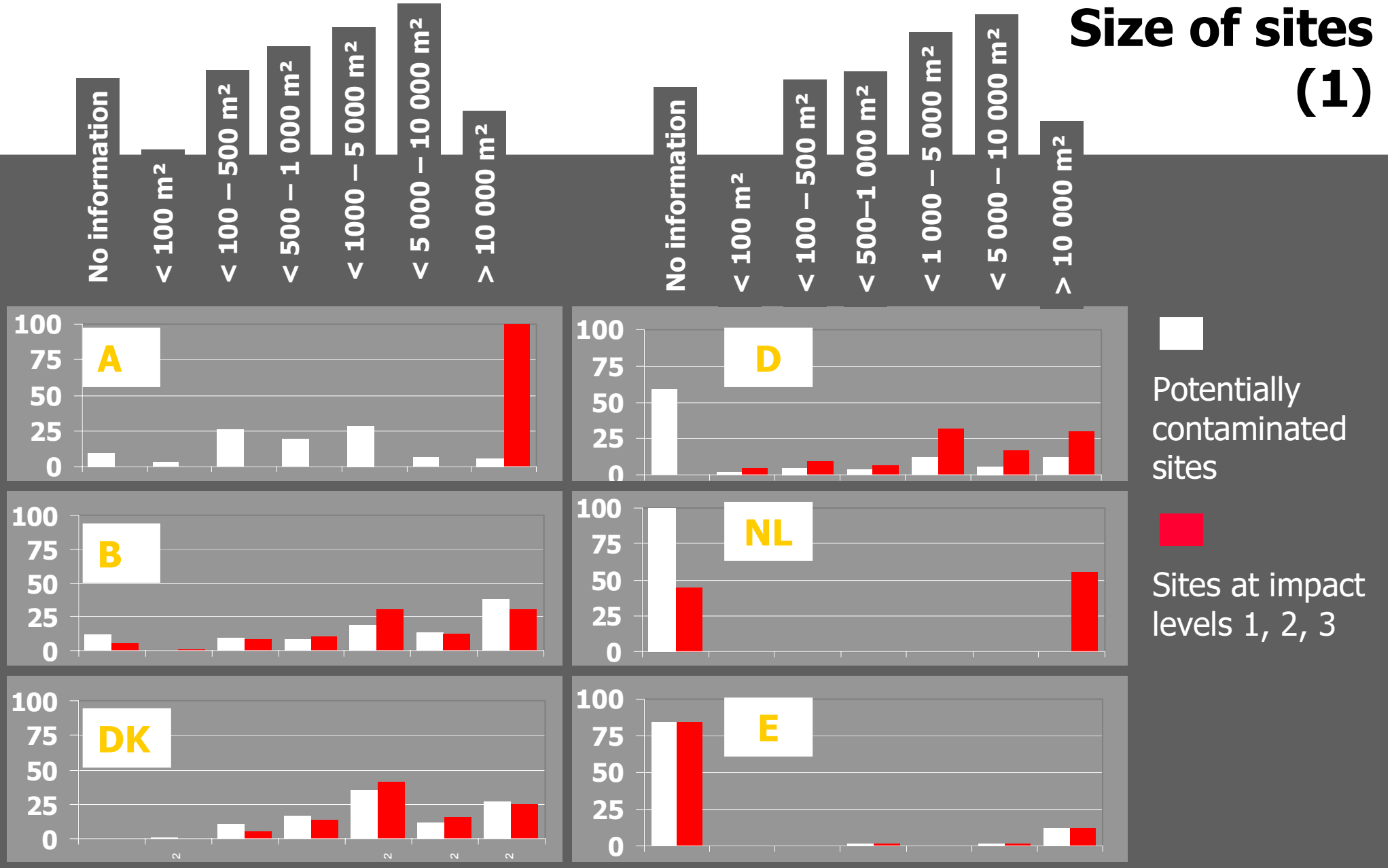
Remediation technologies results

- The remediation types 3-->0, 2-->0, and 1-->0 occur rarely.

- The remediation type 3-->1 occurs most frequently, soil excavation and groundwater pump and treat technologies are most frequently applied.

Size of sites (1)



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Size of sites (2)

- Four regions can specify different size categories (A, D, DK, B) for potentially contaminated sites and sites at impact level 1, 2 or 3.

<u>Sites with an impact level of 1, 2, or 3:</u>

- small sites are dominating in B, DK, and D;
- large sites are dominating in A and NL.

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Size of sites (3)

	A	B	CH	D	DK	E	I	NL
	NW Salzburg	P. Antw.	Kanton Bern	R. Leipzig	N-Jyllan.	Navarra	P. Torino	Zuid-Holland
Potentially contaminated sites								
Size of property	●			●	●	●	●	●
Site of cont.		●	●			●		(●)
Sites with an impact level of 1, 2 or 3								
Size of property	●			●	●	●	●	●
Site of cont.		●	●		●	●	●	●

- In most regions, the size of the site is considered.
- Belgium (Flanders) and Switzerland refer to the size of the presumable contamination.

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Investigation costs

	A	B	CH	D	DK	E	I	NL
	NW Salzburg	P. Antw.	Kanton Bern	R. Leipzig	N-Jyllan.	Navarra	P. Torino	Zuid-Holland
Preliminary survey	0.73	0.25	—	2.57	0.20	0.30	—	0.03
Preliminary investigation	37–110	3–8	—	10	3	3	—	3–4
Main site investigation	37–365	3–25	13–63*	26	38	90–240	—	10
Remediation investigation	73–730	8–12	—	15		90–240	—	8–10

- Costs per site for different types of investigations vary strongly.

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'Normalisation' of investigation costs

For four test regions, the sizes of potentially contaminated sites and sites at impact level 1, 2 or 3 are available.

In order to better compare data, investigation costs have been related to the total investigated (surveyed) area.

- Derivation of the total area under preliminary surveys/main site investigations in m² per test region.
- Derivation of total costs of preliminary surveys/main site investigations per test region.

Output: survey/investigation cost per m².

		A	B	D	DK
PCS survey	[EUR/m²]	0.36	0.05	0.54	0.4
Main site investigation	[EUR/m²]	3-30	0.5-1.5	5.24	8.46

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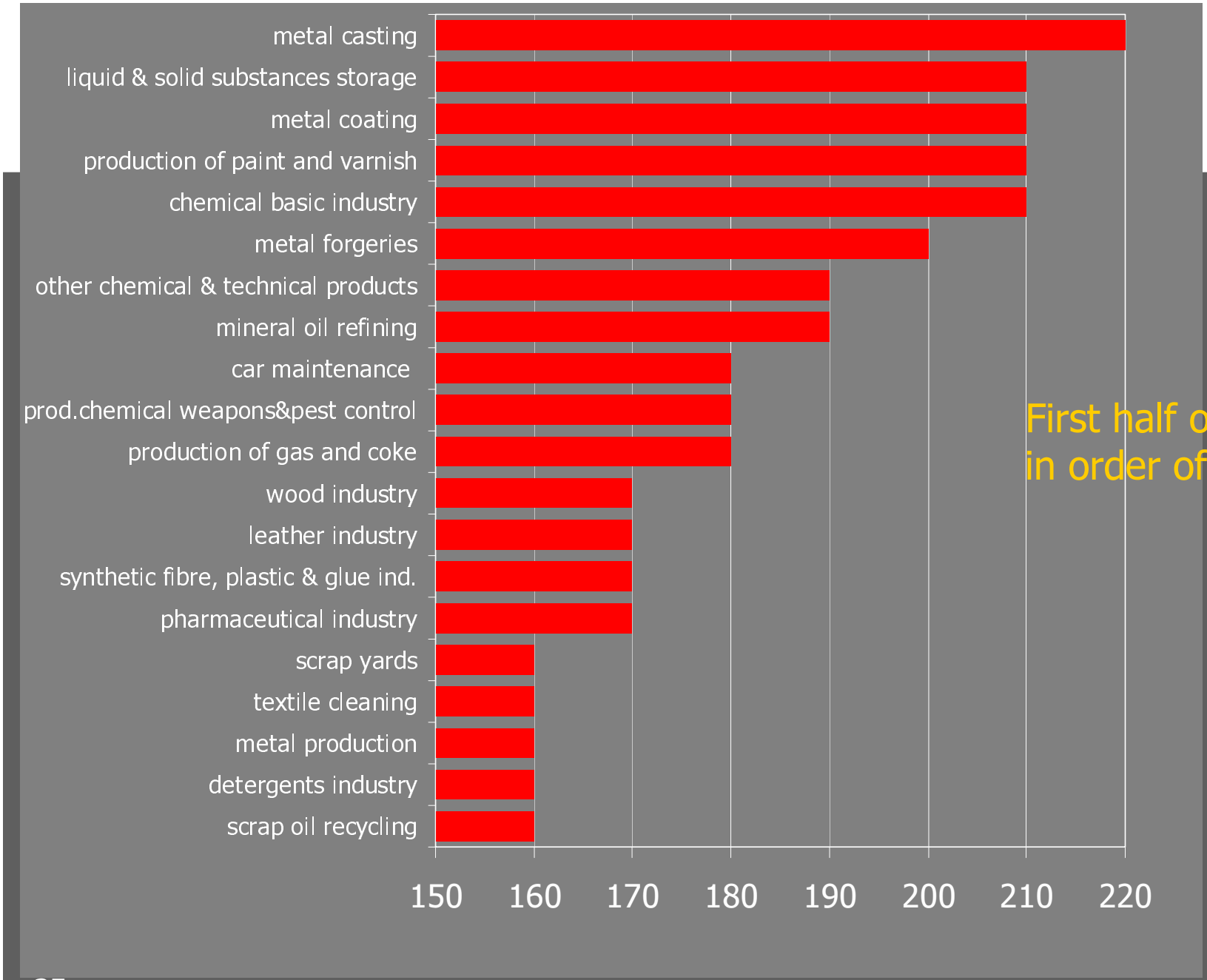
Relevant branches (1)

- Test regions were asked to assess 42 different branches in 9 different groups:
  - — energy production & mining
  - — oil industry
  - — chemical industry
  - — metal working industry
  - — glass, ceramics industry
  - — textile & leather industry
  - — electronic industry
  - — food industry
  - — trade & traffic
- A scoring system has been used to assess their relevance

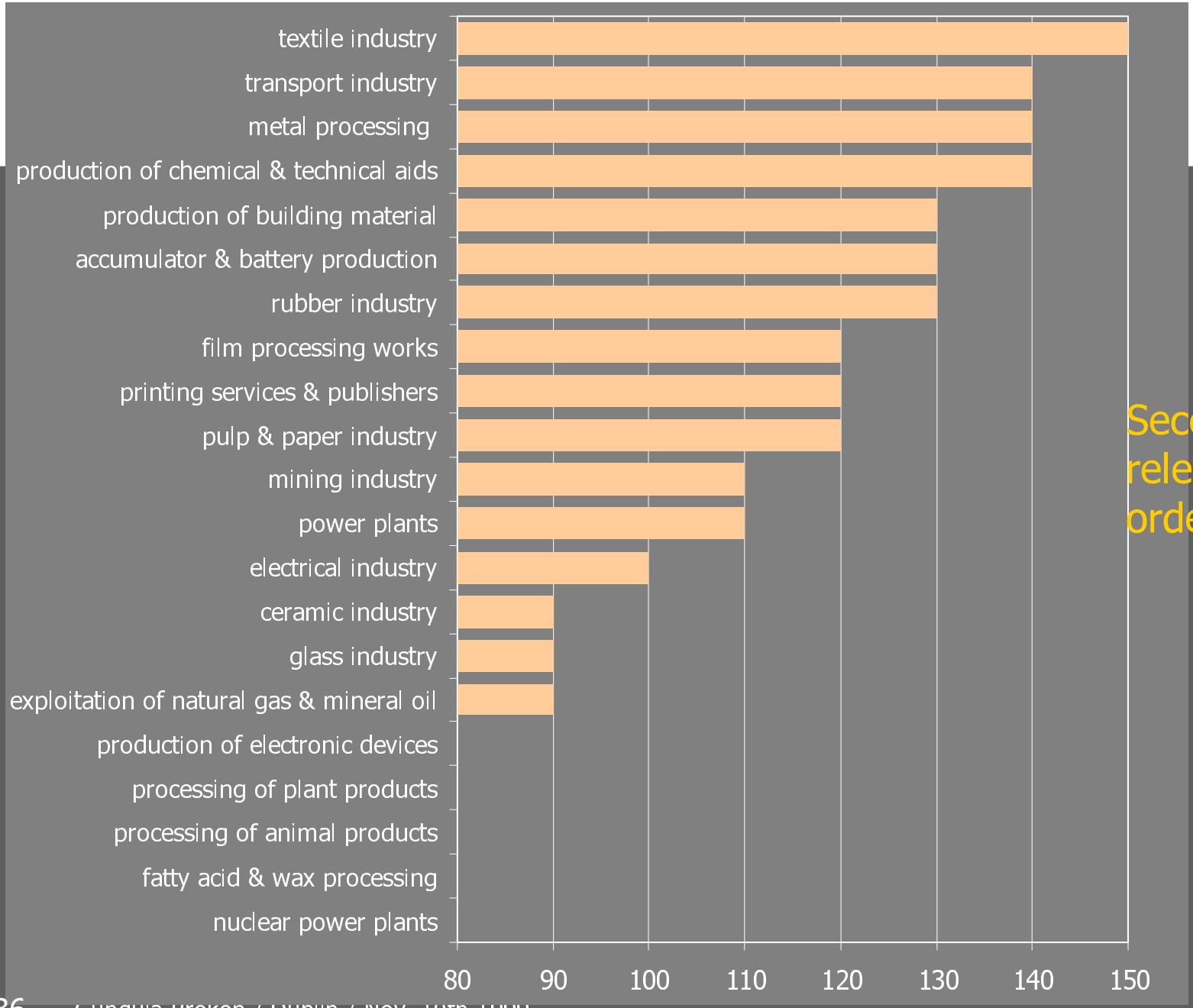
  Not relevant.....– 10 points
  No information.....0 points
  Of minor importance .....10 points
  Relevant.....20 points
  Very relevant.....30 points

Relevant branches (2)



First half of relevant branches in order of importance

Relevant branches (3)



Second half of relevant branches in order of importance

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Relevant branches (4)

Summarising the top relevant branches:

- production of gas and coke;
- storage of liquids and solid substances;
- various branches of the metal working industry;
- various branches of the chemical industry.

Of minor importance:

- glass, ceramics, stone and soil industry;
- textile, leather, wood & paper industry;
- food industry, processing of agricultural products.

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General data availability (1)

- General information

	A	CH	B	D	DK	E	I	NL
1. General information	●	●	●	●	●	●	●	●
1.1. Population density/municipality level	●		●	●	●	●	●	●
1.2. Type of sites	●	●	●	●	●	●	●	●
1.3. Geographical ref./def. of sub-regions	●	~?	●	●	●	●	●	~?
1.4. Progress in cont. sites management	●	●	●	●	●	●	●	●
1.5. Identification of PCS	●	●	●	●	●	●	●	●

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General data availability (2)

- Number of sites

	A	CH	B	D	DK	E	I	NL
2.1 (a) No of PCS per sub-region	●	~?	●	●	●	●	●	~?
2.1 (b) Share of the type of sites	●	●	●	●	●	●	●	●
2.2 (a) Nat. classification of impact levels	●	●	●	●	●	●	●	●
2.2 (b) IL 1, 2, 3 per sub-region	●		●	●	●	●	●	~?
2.2 (c) IL 1, 2, 3 share of type of sites	●			●	●	●	●	
2.3 (a) No RS/remediation type	●		~	~	●	●	●	●
2.3 (b) Technologies/remediation type	●		●	●	●	●	●	●
2.3 (c) Size/contamination	●	●	●	●	●	●	●	●
2.4 (a) Size categories/PCS, IL 1, 2, 3	●	●	●	●	●	~		

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General data availability (3)

- Costs

	A	CH	B	D	DK	E	I	NL
3.1. Investigation costs	●	●	●	●	●	●		●
3.2. Remediation costs	●		●		●	●		●

- Branches

	A	CH	B	D	DK	E	I	NL
4. Industrial branches	●	●	●	●	●	●	●	●

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Data comparability (1)

The approach to work with impact levels has been well received:

- all test regions can go along with the impact level approach;
- seven test regions can specify corresponding national definitions;
- six test regions can specify the number of sites per impact level.

The density of ‘sites per region’ varies strongly from region to region (next slide).

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Data comparability (2)

	A	B	CH	D	DK	E	I	NL
	NW Salzb.	P. Antw.	Kanton Bern	R. Leipzig	N-Jyllan.	Navar.	P. Torino	Zuid-Hollan.
PCS	4 170	1 494	2 452	4 354	6 265	58	73	115 000
Impact level 3	0	1 100	—	327	322	28	15	702
Impact level 2	4	1 167	—	361	153	26	9	836
Impact level 1	3	515	671	72	223	3	—	1 565
Completion main site inv.	< 5 %	10 %	< 5 %	< 5 %	5 %	1 %	40 %	20 %
Estimated total of sites at impact level 1, 2, or 3	175	27 820	16 775	19 000	13 960	5 700	60	15 515
Related to population:								
Inhab./PCS	75	1 098	384	252	78	9 187	30 442	29
Inhab./impact level 3	0	1 492	0	3 360	1 522	19 030	148 151	4 772
Inhab./impact level 2	78 125	1 406	0	3 043	3 203	20 494	246 918	4 007
Inhab./impact level 1	104 167	3 186	1 404	15 259	2 197	177 612	0	2 141
Inhabitants per estimated total of sites at impact level 1, 2 or 3	1 786	59	56	58	35	93	37 038	216

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Proposal (1)

- Data harmonisation

_Regarding future data collection: are the variations among the countries acceptable?

Is the definition of national targets and the level of completion sufficient?

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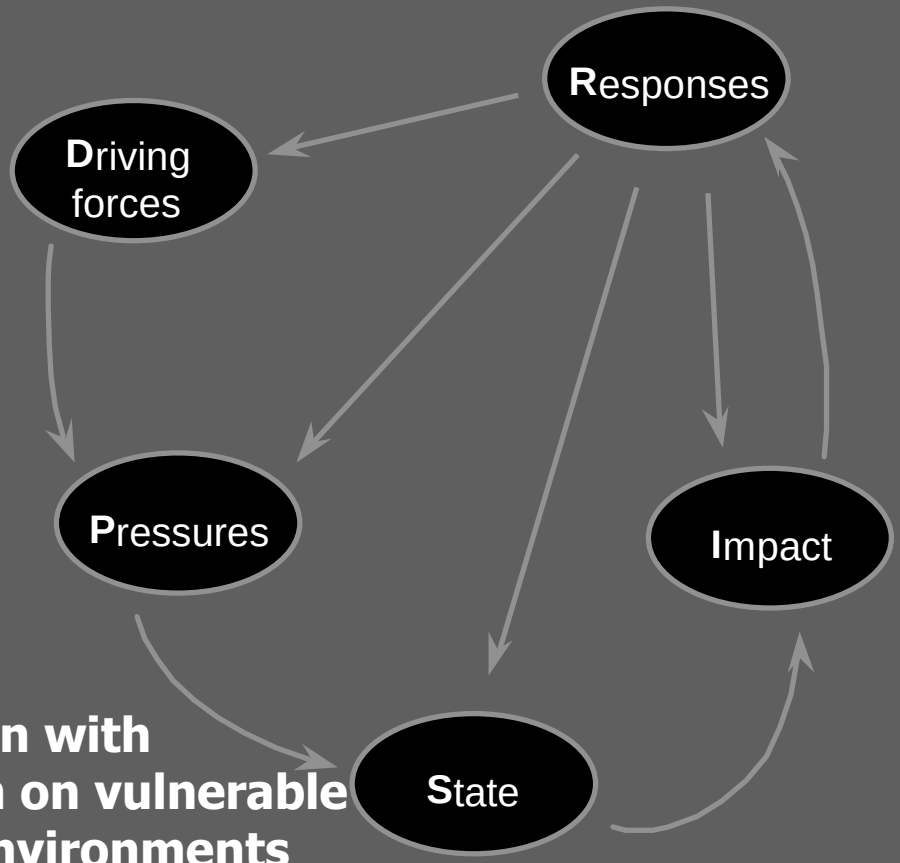
Proposal (2)

Collection of data to key branches at regional level



Contaminated sites management: collection of aggregated data at regional level (national targets, relevant key data)

Combination with information on vulnerable receiving environments (groundwater/drinking water areas)

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Feasibility (1)

Driving forces

Is the collection of data to key branches feasible at the regional level?

i.e. number of sites, production volume, production time.

Key commercial activities:

- production of gas and coke;
- storage of liquids and solid substances;
- various branches of the metal working industry;
- various branches of the chemical industry.

Waste disposal

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Feasibility (2)

Responses

Is the collection of data to the number of

- potentially contaminated sites
- sites at impact level 1, 2, or 3
- remediated sites

feasible at the regional level for all European regions?