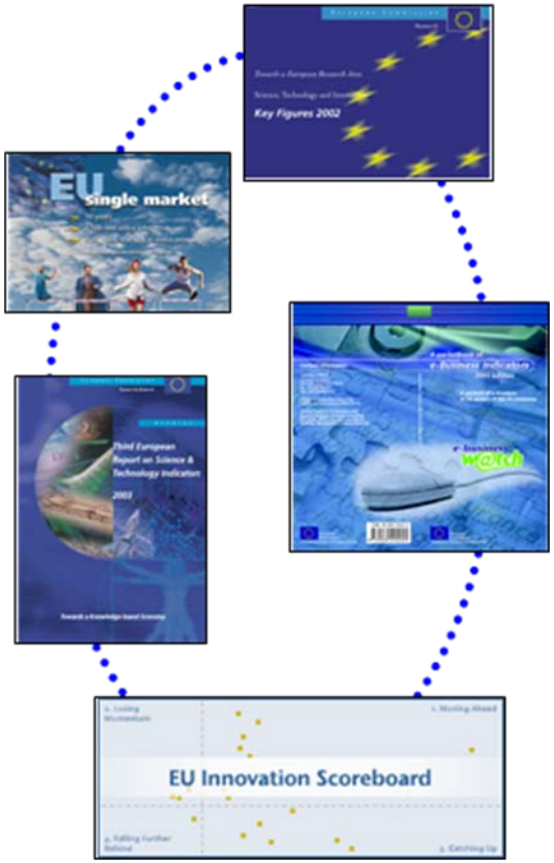

Scoreboards and Indices - An overview of the benchmarking exercises of the European Commission

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ESPON Workshop on Territorial indicators and indices
Luxembourg, 2 April 2008

Benchmarking exercises of the EC

JRC contribution

✓	2008 Handbook on constructing Composite Indicators-revised (DG JRC & OECD, comments from Eurostat and national statistical offices of OECD countries)
✓	2008 Civic Competence Composite Indicator (CRELL & DG EAC)
✓	2006-7 Active Citizenship Index (CRELL & DG EAC)
✓	2005 Handbook on constructing Composite Indicators (DG JRC & OECD)
	2005 EU sectoral competitiveness indicators (DG ENTR)
✓	2003-2004 Key figures in R&D & Knowledge-based Economy Indices (DG RTD)
✓	2003 e-business Scoreboard & Index (DG ENTR)
✓	2003 Headline Indicators for Lisbon 2010 (DG ECFIN)
✓	2002 State-of-the art report on Composite Indicators (DG JRC)
	2001 State Aid Scoreboard (DG COMP)
✓	2001 European Innovation Scoreboard & Summary Innovation Index (DG ENTR)
	2001 Science & Technology Indicators for the ERA (DG RTD)
✓*	2001 Structural Indicators (DG Eurostat)
	2000 Enterprise Policy Scoreboard (DG ENTR)
	2000 Lisbon Council
✓*	1997 Internal Market Scoreboard & Index (DG MARKT)
	1987 First EC attempt of a composite indicator (unemployment, 3 indicators)

* Subsequent versions of the Index/Scoreboard

A list of new "**Structural Indicators**" to be developed by the EC (Information Note to the College of ECFIN October 2005)

1. Price convergence between EU Members States
2. Healthy Life Years
3. Biodiversity
4. Urban population exposure to air pollution by ozone and
5. Urban population exposure to air pollution by particles (PM_{10})
6. Consumption of toxic chemicals
7. Generation of hazardous waste
8. Recycling rate of selected materials
9. Resource productivity
10. E-business indicator

Can you guess how many of these are composite indicators?

ALL OF THEM! (One is a ratio of composites)

1. Price convergence between EU Members States
2. Healthy Life Years
3. Biodiversity
4. Urban population exposure to air pollution by ozone and
5. Urban population exposure to air pollution by particles (PM10)
6. Consumption of toxic chemicals
7. Generation of hazardous waste
8. Recycling rate of selected materials
9. Resource productivity: The definition of this indicator has now been established as the ratio of Gross Domestic Product (GDP, at constant prices) over Domestic Material Consumption (DMC).
10. E-business indicator

… and yet their use within and outside the EC is controversial.

Composite indicators' controversy

<< […] it is hard to imagine that debate on the use of composite indicators will ever be settled […] official statisticians may tend to resent composite indicators, whereby a lot of work in data collection and editing is "wasted" or "hidden" behind a single number of dubious significance.

On the other hand, the temptation of stakeholders and practitioners to summarise complex and sometime elusive processes (e.g. sustainability, single market policy, etc.) into a single figure to benchmark country performance for policy consumption seems likewise irresistible. >> [*]

[*] Saisana M., Saltelli A., Tarantola S. (2005) Uncertainty and Sensitivity analysis techniques as tools for the quality assessment of composite indicators, Journal of the Royal Statistical Society - A, 168(2), 307-323.

Main Goals of the EC benchmarking exercises

- Benchmark countries performance with respect to targets (Lisbon) & to each other
- Compare the different complex dimensions to each other e.g. Innovation with GDP
- Compare EU status with respect to the US, Japan
- Identify trends

The composite indicators are revised (fortunately!)
but
this could prevent their use for trend identification (unfortunately!)

and other examples of collaboration between the JRC and the academia

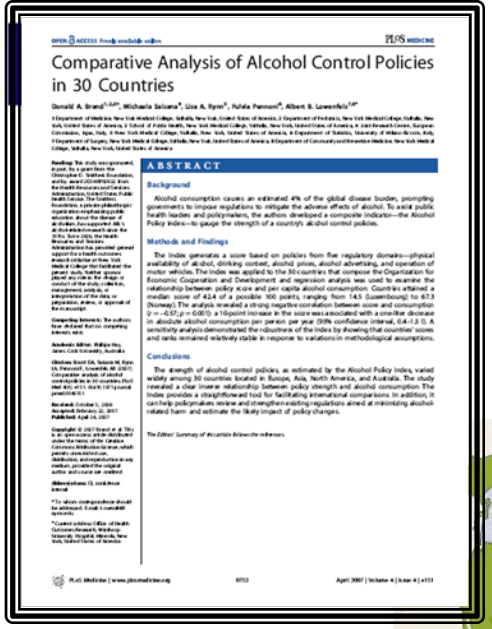
2008 **European Lifelong Learning Index** (Bertelsmann Foundation, CCL)

2008/2006 **Environmental Performance Index** (Yale & Columbia University)

2007 **Alcohol Policy Index** (New York Medical College)

2006 **Composite Learning Index** (Canadian Council on Learning)

2002/2005 **Environmental Sustainability Index** (Yale & Columbia University)



Comparative Analysis of Alcohol Control Policies in 30 Countries

ABSTRACT

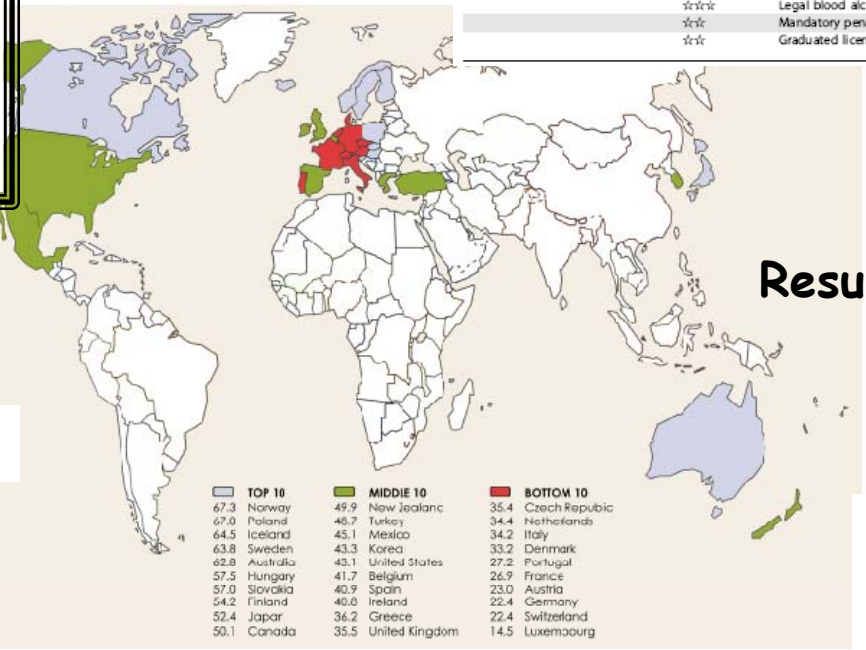
Background

Methods and Findings

Conclusions

Domains	Ratings	Topics	Policies
Physical availability (32 points)	☆☆☆	Legal alcohol purchase age (y)	16, 17, 18, 19, 20+
	☆☆☆	Alcohol server liability for damages caused by actions of patrons	No, Yes
	☆☆	Restrictions on types of alcoholic beverages sold in retail stores	None; Partial government monopoly; Full government monopoly
	☆☆	Restrictions on density of stores selling alcoholic beverages in a given locale	None; On wine only; On wine and spirits; On wine, spirits, and beer
	☆☆	Restrictions on business hours for selling alcohol	None; On hours or days; On both hours and days
Drinking context (8 points)	☆☆	Community mobilization programs to increase public awareness of, and prevent alcohol problems	No, Yes
	☆	Mandatory training of alcohol servers to prevent and manage aggression	No, Yes
Alcohol prices[a] (24 points)	☆☆☆	Beer price index	0–0.29, 0.30–0.59, 0.60–0.89, 0.90+
	☆☆☆	Wine price index	0–0.9, 1.0–1.9, 2.0–2.9, 3.0+
	☆☆☆	Spirit price index	0–2.9, 3.0–5.9, 6.0–8.9, 9.0+
Alcohol advertising (3 points)	☆	Number of different media (print, broadcast, billboards) with advertising restrictions	0, 1, 2, 3
Motor vehicles (34 points)	☆☆☆	Random breath testing	None,[b] Rare, Occasional, Often, Very often
	☆☆☆	Legal blood alcohol limit—adult (mg/dl)	0.08+, 0.03–0.07, 0–0.02
	☆☆☆	Legal blood alcohol limit—youth (mg/dl)	0.04+, 0.02–0.03, 0–0.01
	☆☆	Mandatory penalty for exceeding legal limit	Fine, License suspension
	☆☆	Graduated licensing for young drivers	No, Yes

Framework (WHO report)

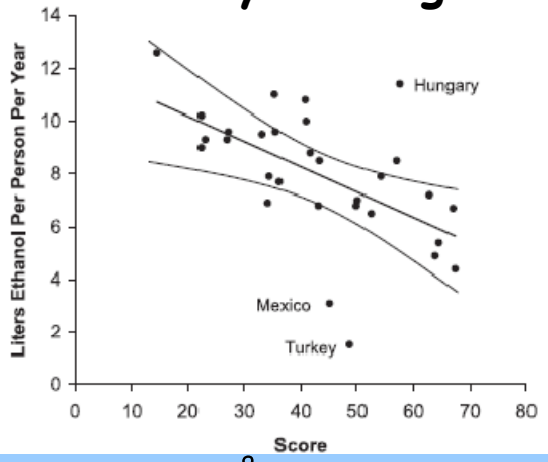


Results

Sensitivity analysis

Country	Ranks			Scores		
	Baseline	Median	Range	Baseline	Median	Range
Norway	1	1	1–2	67.3	71.1	63–77
Poland	2	2	1–4	67.0	70.6	67–76
Iceland	3	4	2–6	64.5	63.4	56–74
Sweden	4	4	2–5	63.8	64.3	60–73
Australia	5	5	3–7	62.8	62.9	56–65
Hungary	6	8.5	6–12	57.5	51.4	46–62
Slovakia	7	7.5	6–12	57.0	54.9	46–63
Finland	8	7	4–10	54.2	57.3	50–65
Japan	9	10.5	6–17	52.4	50.1	38–55
Canada	10	10	7–14	50.1	50.1	46–52
New Zealand	11	10	6–12	49.9	50.1	47–59
Turkey	12	12	6–16	48.7	48.8	41–57
Mexico	13	13	11–17	45.1	43.8	39–49
Korea	14	13	8–18	43.3	47.0	39–53
United States	15	16.5	13–27	43.1	40.2	19–47
Belgium	16	16	14–20	41.7	39.8	36–43
Spain	17	18	14–21	40.9	38.4	32–47
Ireland	18	17.5	15–19	40.8	38.7	36–45
Greece	19	18.5	15–23	36.2	37.6	32–42
United Kingdom	20	21.5	20–23	35.5	33.9	28–36
Czech Republic	21	23	19–26	35.4	31.8	25–36
Netherlands	22	21	17–24	34.4	35.0	29–40
Italy	23	22	16–24	34.2	33.6	30–39
Denmark	24	22	18–24	33.2	32.1	28–37
Portugal	25	25.5	23–27	27.2	25.1	21–28
France	26	26	24–27	26.9	24.3	20–28
Austria	27	27.5	27–28	23.0	19.4	15–23
Germany	28	29	28–29	22.4	17.3	11–22
Switzerland	29	27	24–29	22.4	21.7	14–30
Luxembourg	30	30	30–30	14.5	12.1	6–16

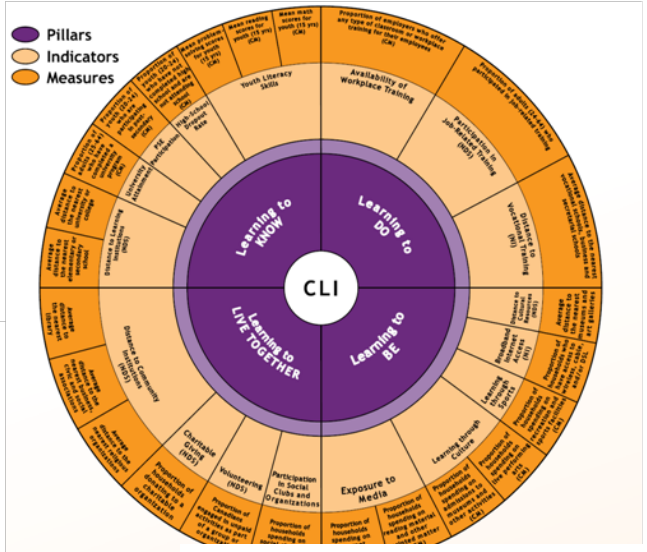
Policy message



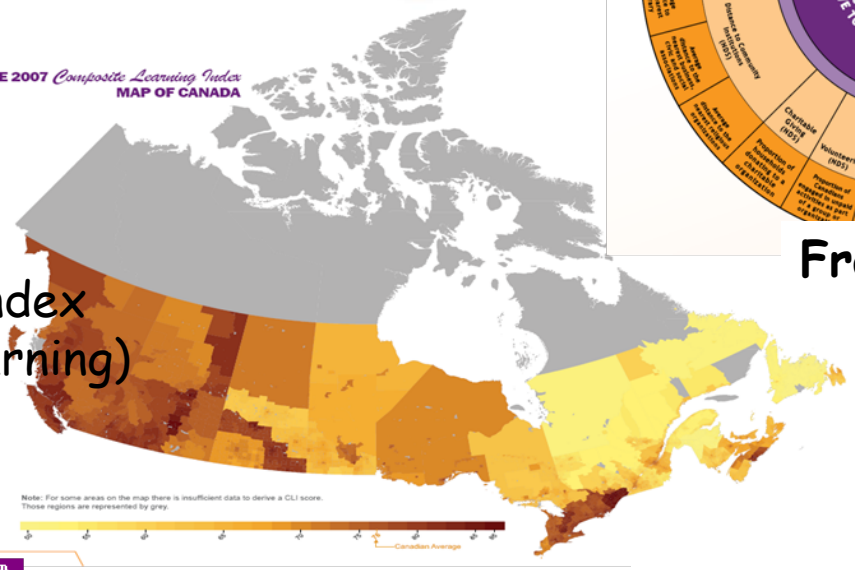
The Alcohol Policy Index (New York Medical College)

http://composite-indicators.jrc.ec.europa.eu/

Composite Learning Index (Canadian Council on Learning)



Framework

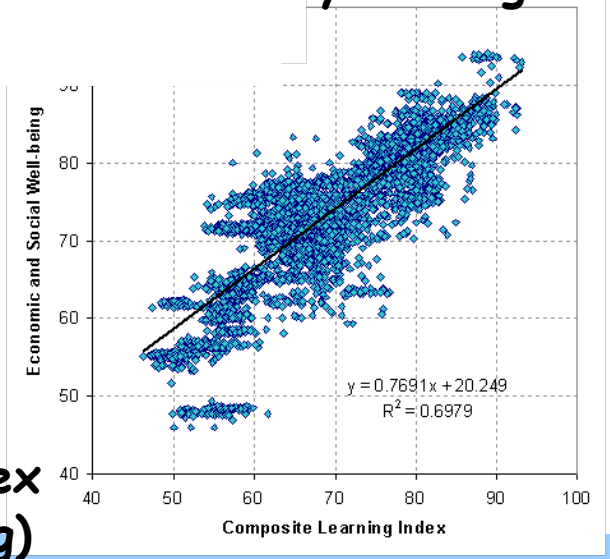


Sensitivity analysis

Scenario	Pillar Structure	Normalisation	Weighting	Aggregation
CLI	Preserved	z-scores	FA within pillar, Regression weights to Factors, FA pillars, Regression weights to pillars	Linear
S1	Preserved	z-scores	FA within pillar, FA pillars	Linear
S2	Preserved	Min-max	FA within pillar, FA pillars	Linear
S3	Not preserved	z-scores	FA all indicators	Linear
S4	Not preserved	Min-max	FA all indicators	Linear
S5	Preserved	z-scores	FA within pillar, EW pillars	Linear
S6	Preserved	Min-max	FA within pillar, EW pillars	Linear
S7	Not preserved	z-scores	EW all indicators	Linear
S8	Not preserved	Min-max	EW all indicators	Linear
S9	Preserved	z-scores	EW within pillar, EW pillars	Linear
S10	Preserved	Min-max	EW within pillar, EW pillars	Linear
S11	Preserved	z-scores	FA within pillar, FA pillars	Geometric
S12	Preserved	Min-max	FA within pillar, FA pillars	Geometric
S13	Not preserved	z-scores	FA all indicators	Geometric
S14	Not preserved	Min-max	FA all indicators	Geometric
S15	Preserved	z-scores	FA within pillar, EW pillars	Geometric
S16	Preserved	Min-max	FA within pillar, EW pillars	Geometric
S17	Not preserved	z-scores	EW all indicators	Geometric
S18	Not preserved	Min-max	EW all indicators	Geometric
S19	Preserved	z-scores	EW within pillar, EW pillars	Geometric
S20	Preserved	Min-max	EW within pillar, EW pillars	Geometric
S21	Preserved	Raw data	FA within pillar, FA pillars	Multi-criteria
S22	Not preserved	Raw data	FA all indicators	Multi-criteria
S23	Preserved	Raw data	FA within pillar, EW pillars	Multi-criteria
S24	Not preserved	Raw data	EW all indicators	Multi-criteria
S25	Preserved	Raw data	EW within pillar, EW pillars	Multi-criteria

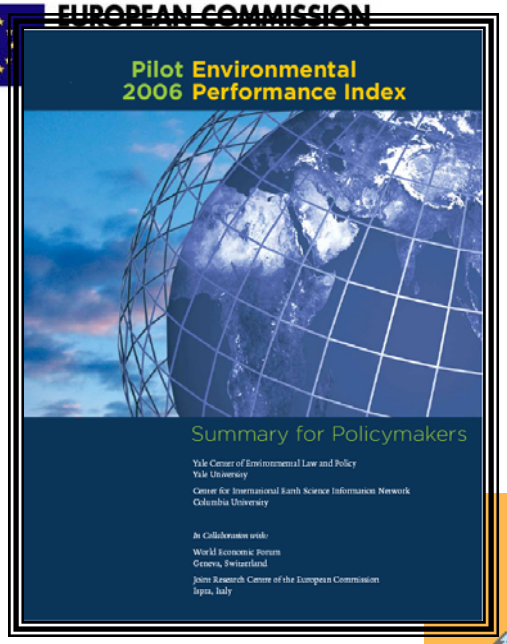
Results

Policy message

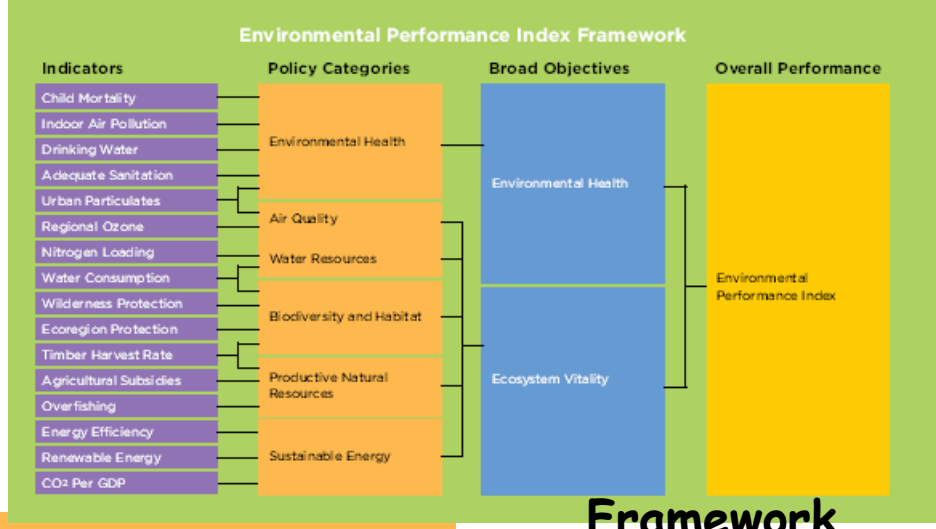


The Composite Learning Index (Canadian Council on Learning)

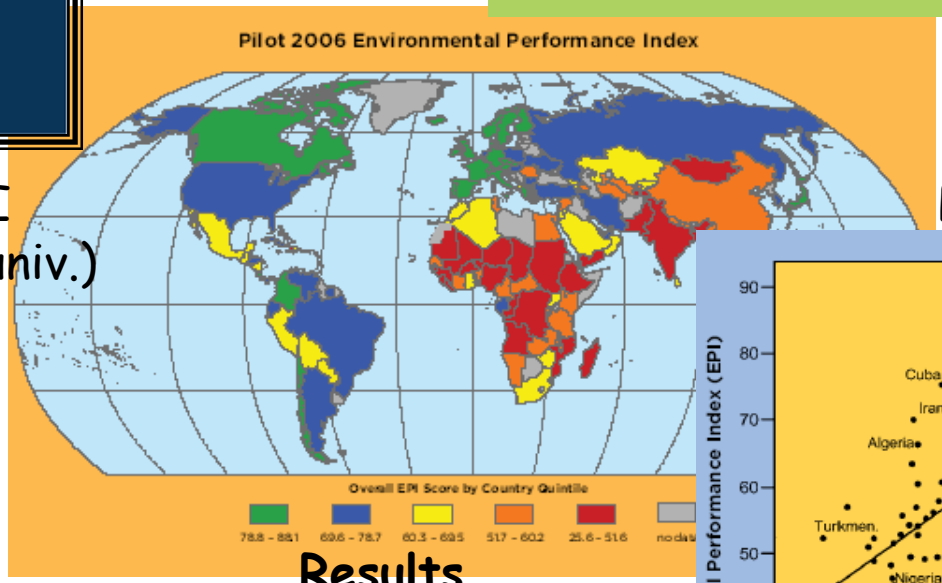
EUROPEAN COMMISSION



Pilot 2006 EPI
(Yale & Columbia univ.)

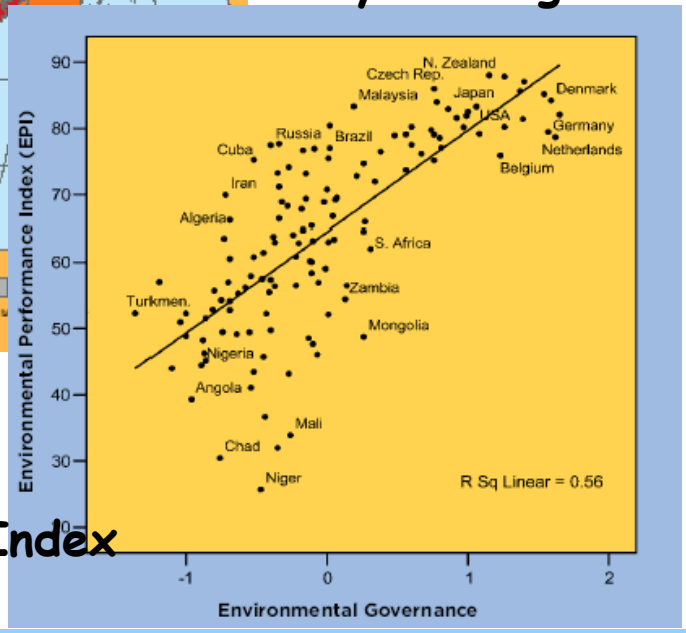


Framework

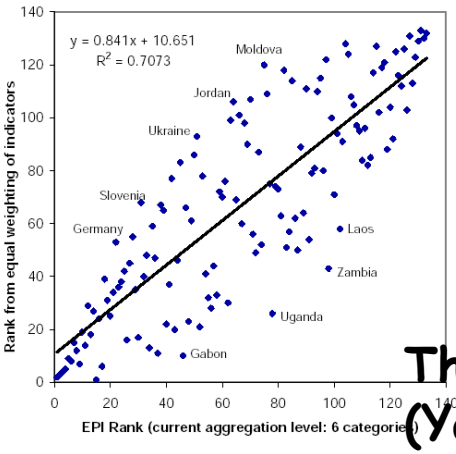


Results

Policy message



Sensitivity analysis



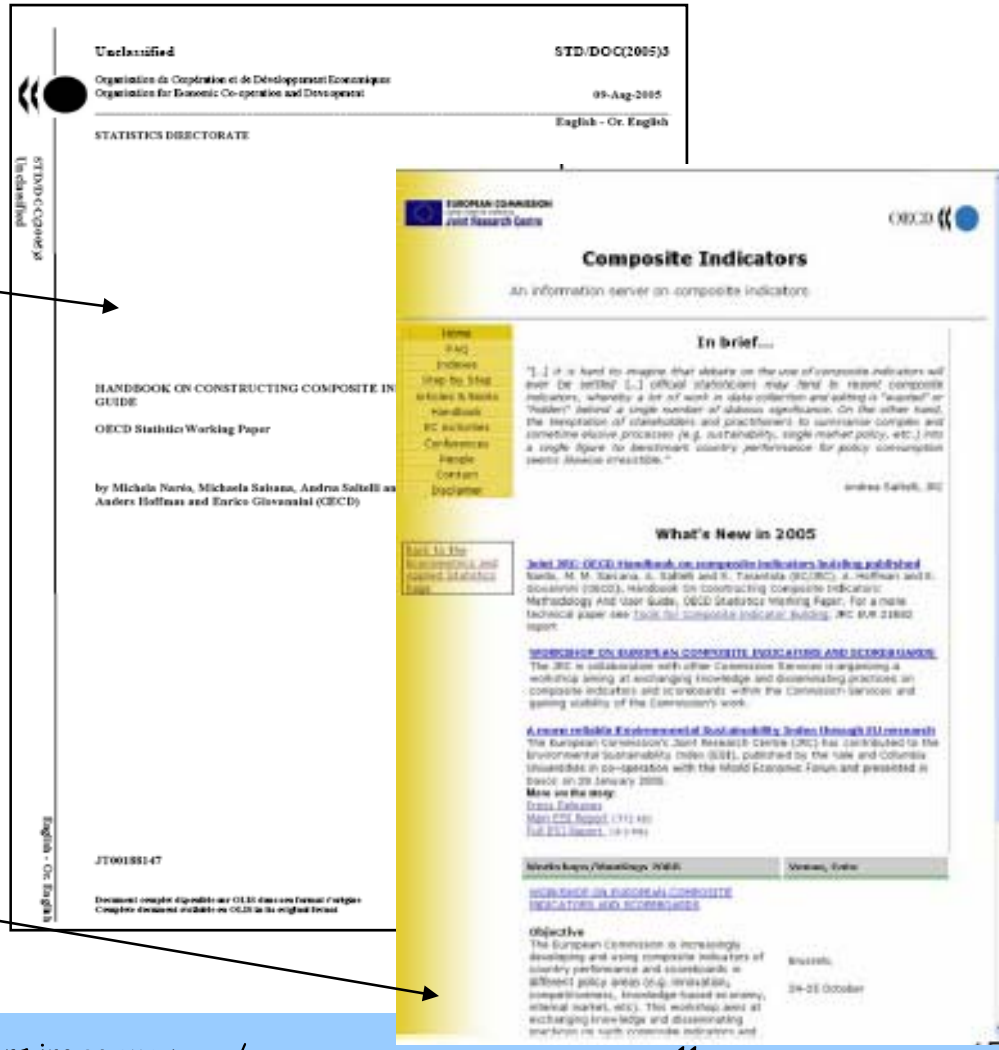
The Environmental Performance Index
(Yale and Columbia University)

JRC-OECD Handbook

Handbook on Constructing Composite Indicators:
Methodology & User Guide

**Nardo, Saisana, Saltelli and Tarantola (EC/JRC),
Hoffman and Giovannini (OECD),
OECD Statistics Working Paper**

JT00188147, STD/DOC(2005)3.



http://composite-indicators.jrc.ec.europa.eu/

Steps in the Development of an Index

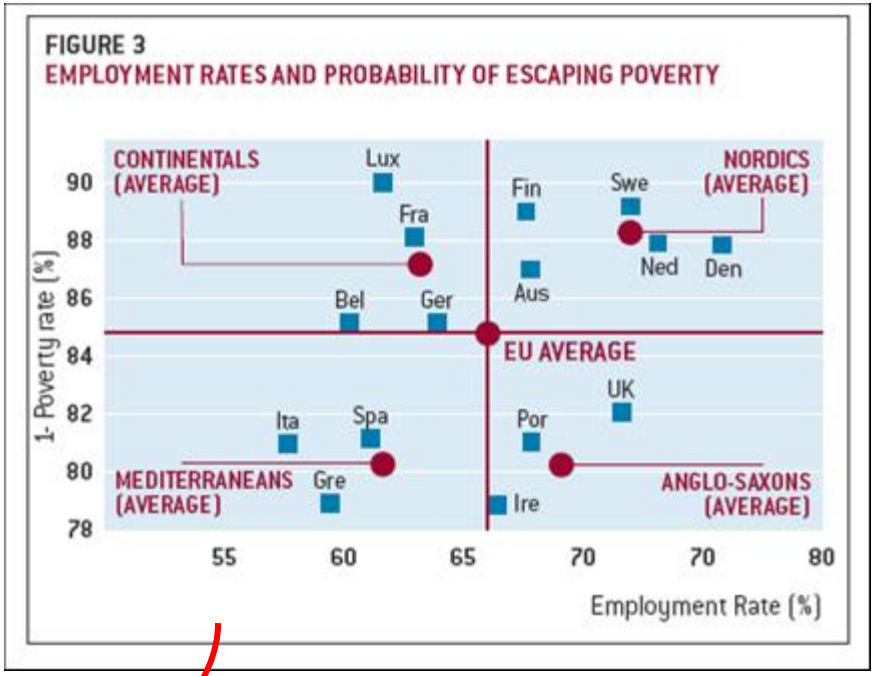
stakeholder involvement

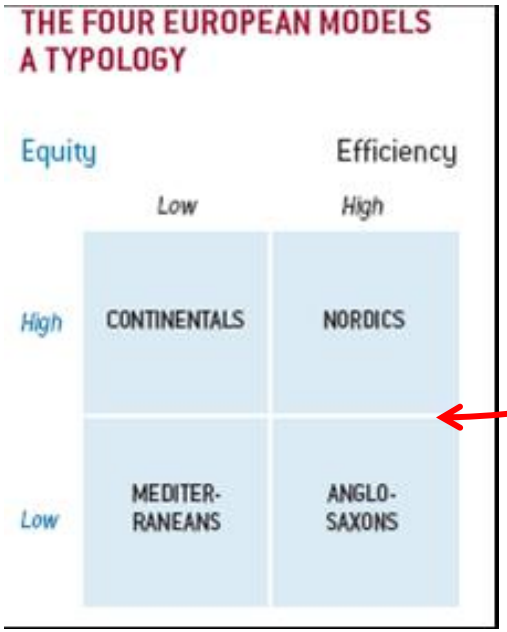
- Step 1. Developing a theoretical framework
- Step 2. Selecting indicators
- Step 3. Multivariate analysis
- Step 4. Imputation of missing data
- Step 5. Normalisation of data
- Step 6. Weighting and aggregation
- Step 7. Robustness and sensitivity
- Step 8. Links to other variables
- Step 9. Back to the details
- Step 10. Presentation and dissemination

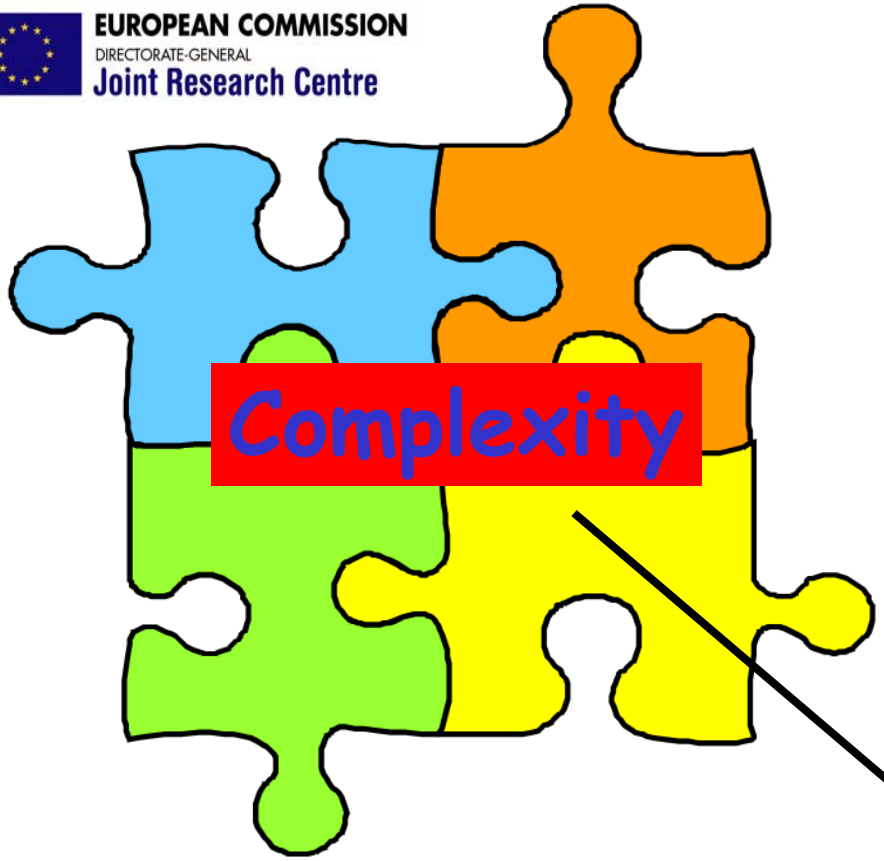
[from the JRC-OECD Handbook]

Comparing effectively complex dimensions with other variables

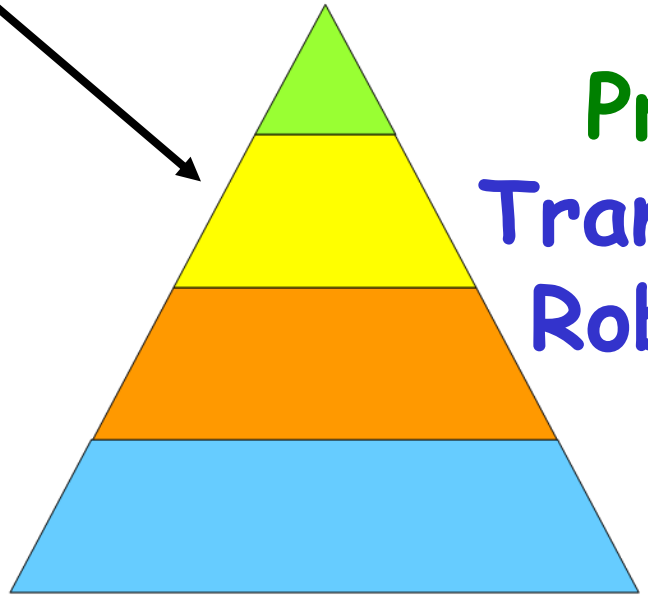
Andre' Sapir's work (*Globalisation and the Reform of European Social Models, 2005*).
Employment rates versus probability of escaping poverty







Policy messages



Process:
Transparency
Robustness

Composite Indicators

Conclusions

A well-designed Index…

- can provide a comprehensive vision of a multidimensional phenomenon
- allows for the setting of national benchmarks and for further international comparisons
- is a starting point for analysis and discussion

Kill the messenger but listen to the message…