



Bundesinstitut  
für Bau-, Stadt- und  
Raumforschung

im Bundesamt für Bauwesen  
und Raumordnung



# Defining and measuring sustainable regional development – results and lessons from Germany

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## **Regional Planning Act (since 1997):**

***§1 (2) leading principle of the federal regional planning is a sustainable regional development, harmonising the social and economic requirements on space with it's ecological functions***

...

**§ 25 the BBSR operates a regional monitoring system**

**→ Indicator system monitoring sustainable regional development**

- I. Definition of SDR
- II. Measuring method
- III. Further research

# What is the definition of sustainable regional development?

## Basic sources for the definition of sustainability

1. RIO declaration (1992)
2. Federal Enquete committee „Protection of Human and Environment“ (1995-1998)
3. Regional Planning Act (1997)

### → Definition of three dimensions:

- Economic competitiveness
- Social and spatial justice
- Protection of natural resources

### → Further deduction of objectives till meaningful indicators can be defined

First concept existed of 70 objectives and indicators,  
comprehension on 17 core indicators

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# When is regional development sustainable?

## Targets for all 17 indicators:

- There are mainly no politically or scientifically defined sustainability targets for these 17 objectives and indicators
  - What is **not** sustainable?
  - Defining thresholds
  - Measuring regional development of more or less sustainability = deficits of sustainability

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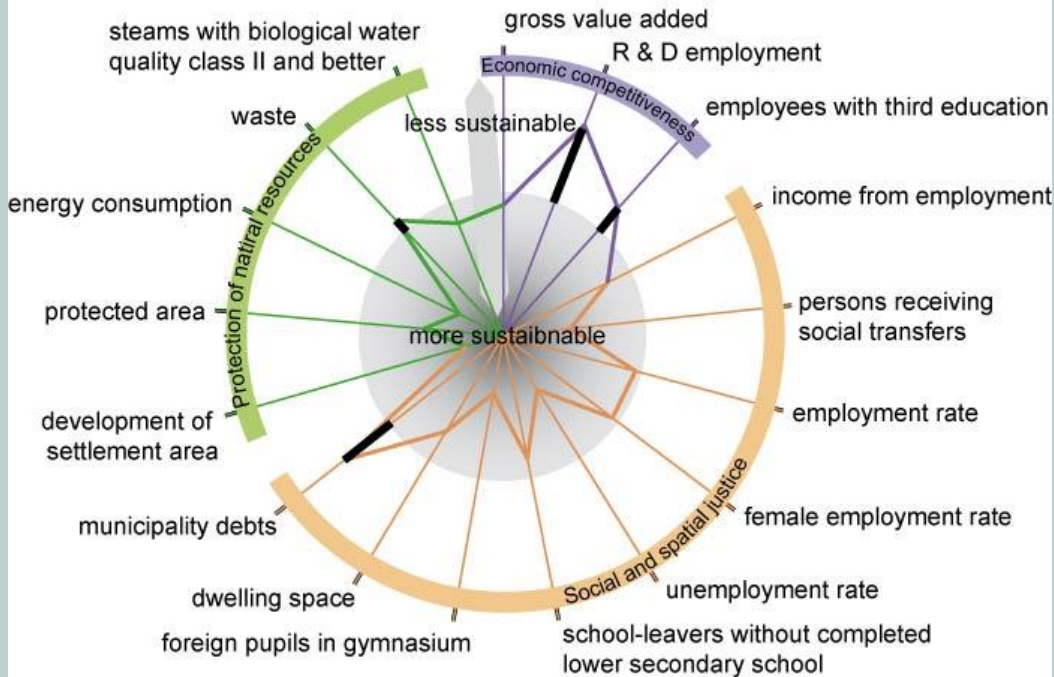
# Core indicators and targets of sustainable regional development

| Dimension/Objective                              | Indicator   | Target   |
|--|---|--|
| Economic competitiveness                         |   |  |
| maintain economic performance                    | gross value added in Euro per inhabitant aged 15 to 64 years  | at minimum 75% of average - target is related to the threshold of the EU structural funds          |
| improve innovation capacity                      | employees in R & D (ingenieurs, natural scientists) per 1000 employees (without agriculture, private households and NGOs) |  |
| maintain professions of long-term viability      | share of employees with third education of all employees  |  |
| Social and spatial justice                       |   |  |
| maintain fair income from employment             | income from employment in Euro per employee   | at minimum 75% of average (see above)  |
| minimize the dependance on transfer payments     | persons receiving social transfers per 100 inhabitants  | at maximum 20% above average   |
| increase employemnt                              | employment rate   | at minimum 90% of average  |
| increase female employemnt                       | female employment rate  | at minimum 80% of total employment rate  |
| ensure working places                            | unemployment rate   | at maximum 25 % above average  |
| improve education chances                        | share of school-leavers without completed lower secondary school  | at maximum 10% above average   |
| improve integration of young foreign inhabitants | share of foreign pupils in gymnasiums and comparable secondary schools  | at minimum 75% of the share of German pupils   |
| ensure satisfactory dwelling/housing space       | dwelling/housing space in m² per capita   | at minimum 90% of average of agglomerated areas  |
| stabilize public budget                          | depts of municipalities in % of GDP   | at maximum 25% above average   |
| Protection of natural resources                  |   |  |
| reduce the development of settlement area        | change of settlement area in ha / day   | 30ha/day-target in 2020 in total, regional target is average share of regional population and area |
| protect endangered animals and plants            | share of protected area   | target is related to 10% EU target   |
| reducing the use of expiring resources           | energy consumption in MJ per inhabitant and employee  | at maximum the average of agglomerated areas   |
| reducing pollution and use of resources          | waste in kg per inhabitant and employee   |  |
| improving the water quality                      | share of rivers and streams with a biological water quality class II and better   | at minimum 90% (political target of 100 % in 2015)   |

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# When is regional development sustainable?

### Deficit method

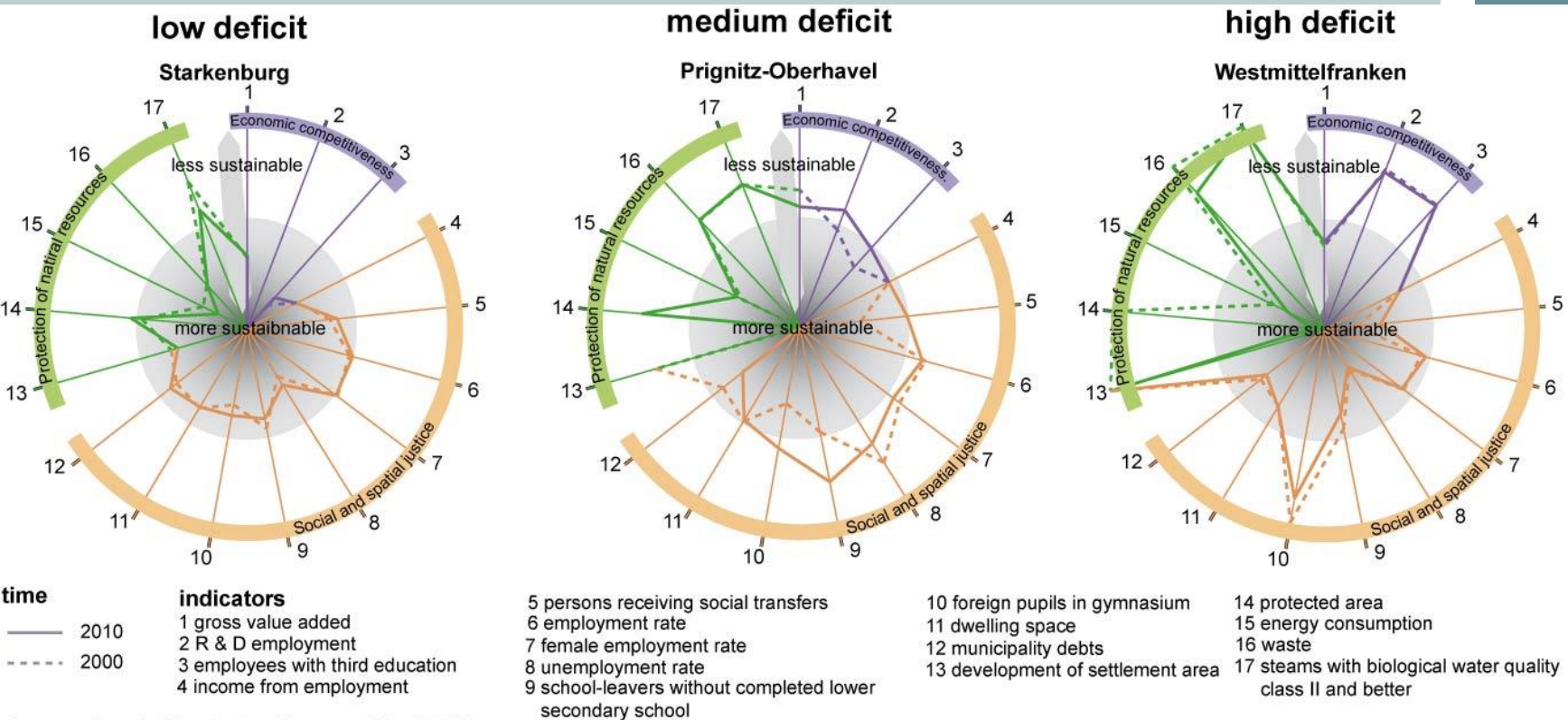


Source: Spatial Monitoring System of the BBSR © BBR Bonn 2012

1. Average deficit of each dimension
2. Culmulated deficit of all three dimension

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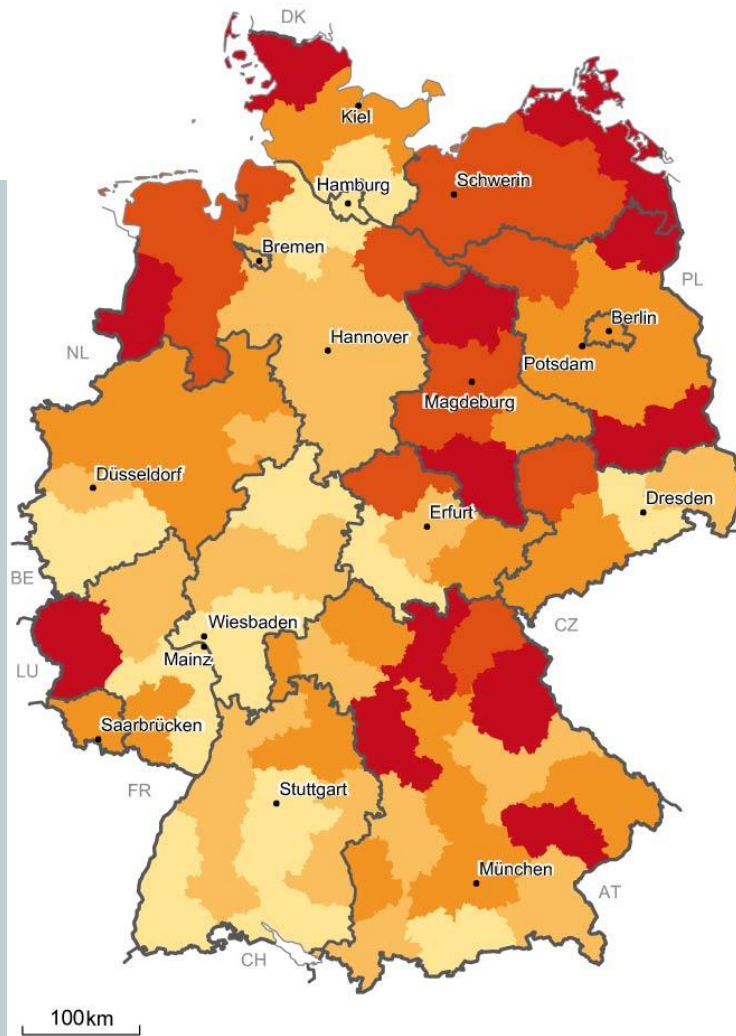
# When is regional development sustainable?



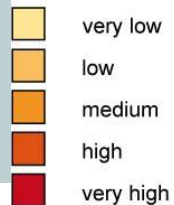
Source: Spazial Monitoring System of the BBSR

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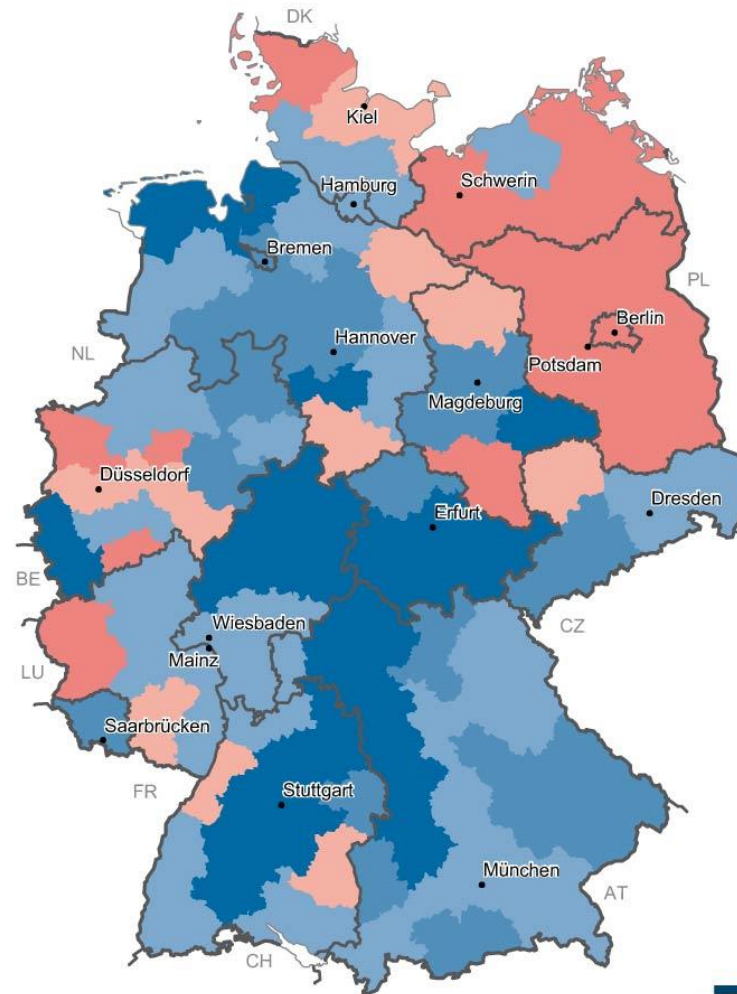




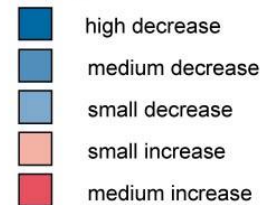
Deficit 2010



Source: Spatial Monitoring System of the BBSR



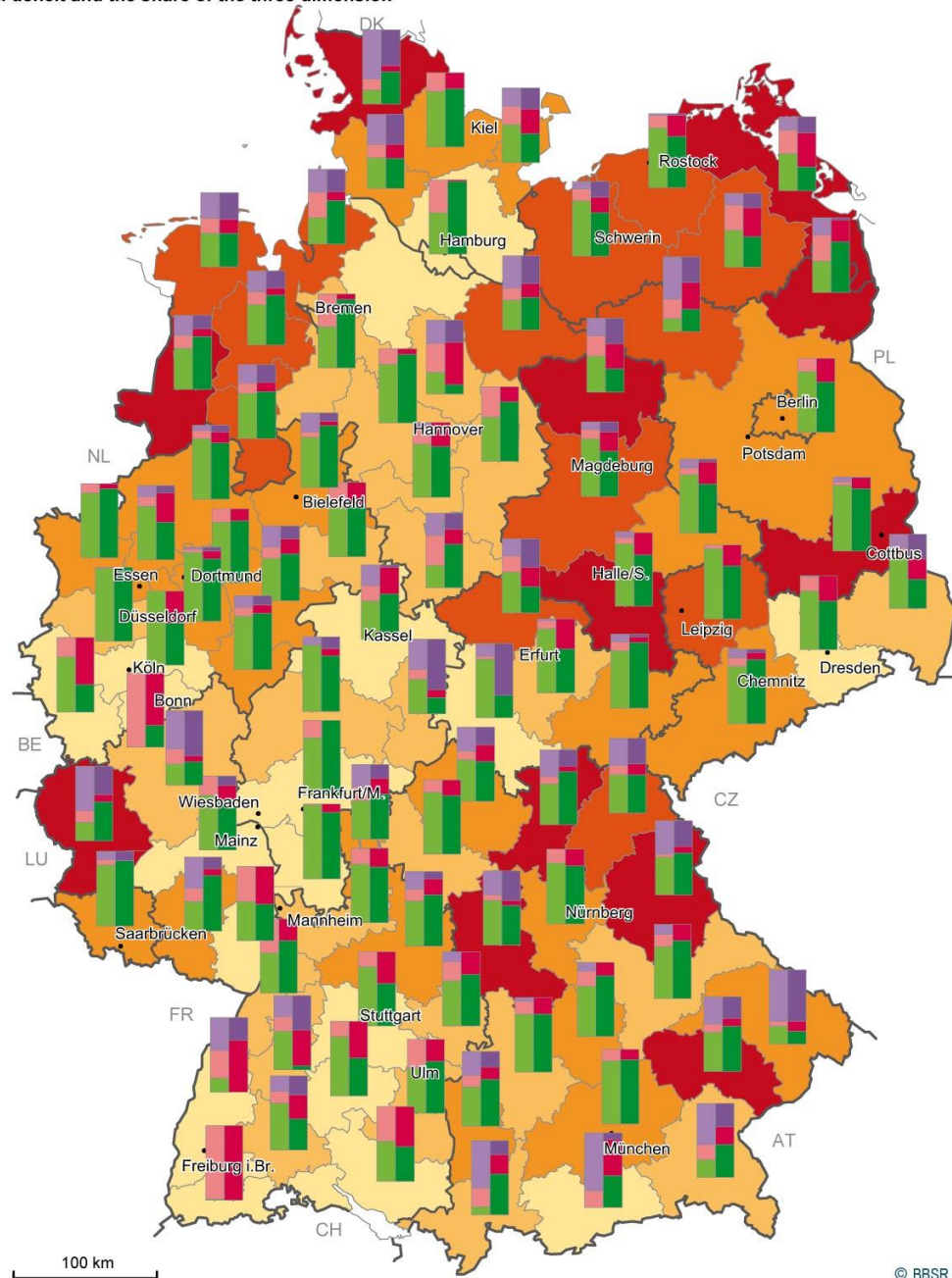
Change of deficit 2000-2010



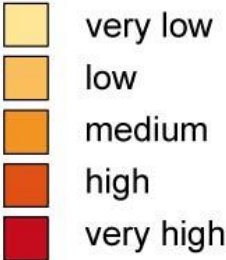
Spatial Planning Regions, 31.12.2010

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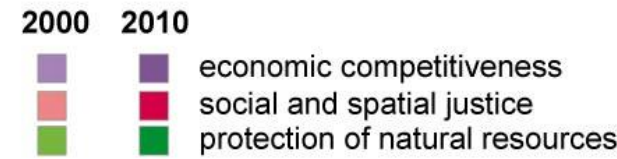
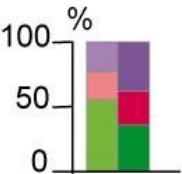




Deficit 2010



Share of the dimensions of the total deficit



## What lessons do we learn?

- + concrete targets**
- + visualisation method („sustainability wheels/web“)**
- + composed indicator for mapping the results**
- + indicators are frequently updated → development, progress or setback**
- + method can easily be transferred (e.g. Europe)**
  
- subjective indicator choice**
- interlinkages between dimensions not included**
- Interlinkages between regions not included**
- targets show deficits, question of „what is sustainable“ remains unanswered**

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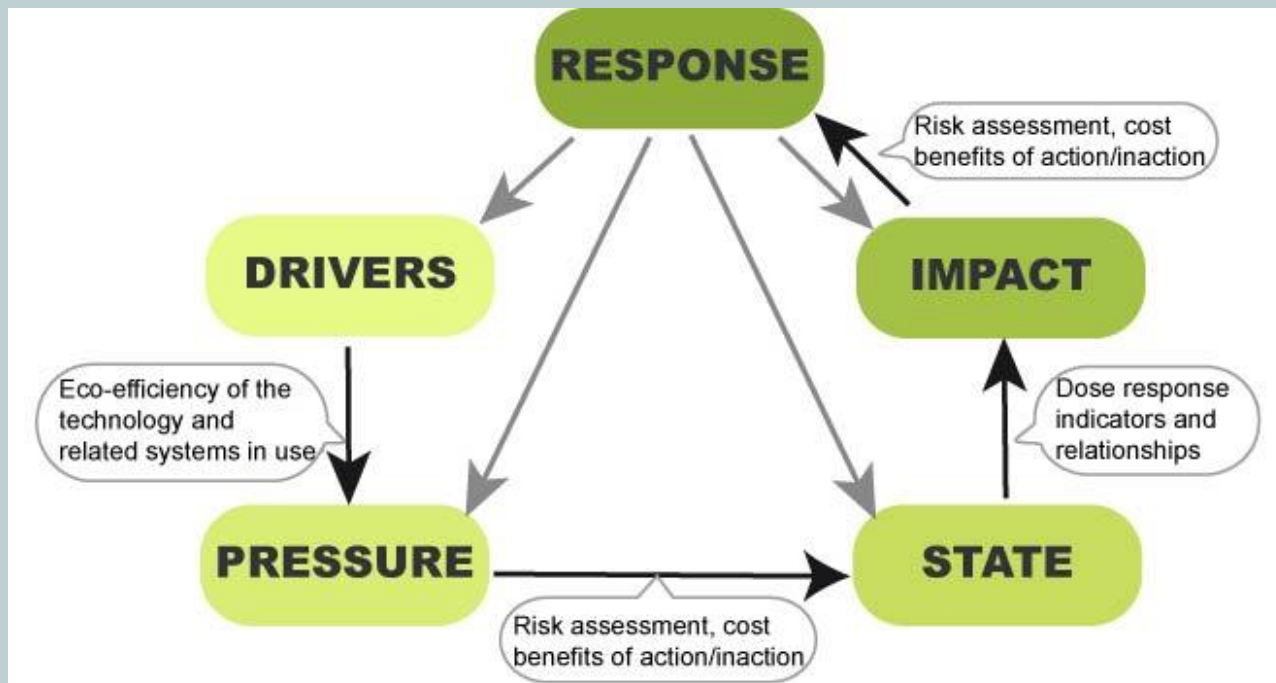
### **Assessment of the BBSR indicators by systemic regional development methods:**

- 1. DPSIR models (D=driving forces, P=pressure, S=state, I=impact, R=response)**
- 2. Orientor approach by Hartmut Bossel (1998/99)**

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## What lessons do we learn?

### 1. DPSIR:



Source: EEA 2012, [http://ia2dec.ew.eea.europa.eu/knowledge\\_base/Frameworks/doc101182](http://ia2dec.ew.eea.europa.eu/knowledge_base/Frameworks/doc101182)

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# What lessons do we learn?

## 2. Orientor approach by Hartmut Bossel (1998/99)

Relationship between environmental properties, system complexity and basic orientor emergence.

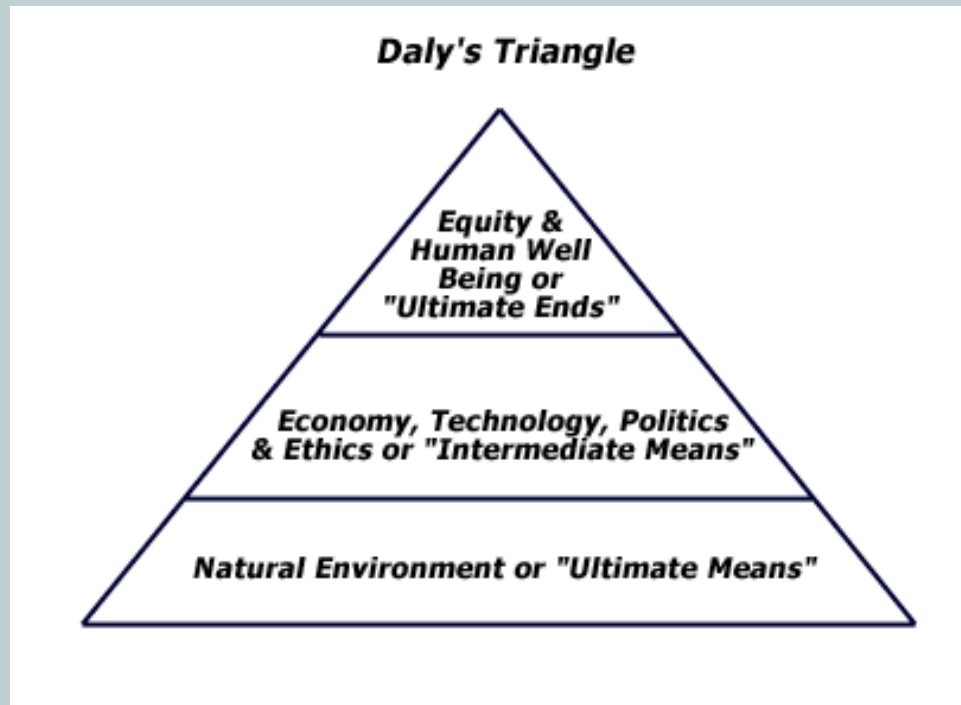
| environmental property   | system category  | additional basic orientor   |
|--|--|---|
| normal environmental state<br>resource scarcity<br>variety<br>variability<br>change<br>other systems | static; metabolic<br>self-supporting<br>selective<br>protective<br>self-organizing<br>non-isolated | environment-determined:<br>existence<br>effectiveness<br>freedom of action<br>security<br>adaptability<br>coexistence |
|  | self-reproducing<br>sentient<br>conscious  | system-determined:<br>reproduction<br>psychological needs<br>responsibility   |

Source: Bossel 1999, p. 38

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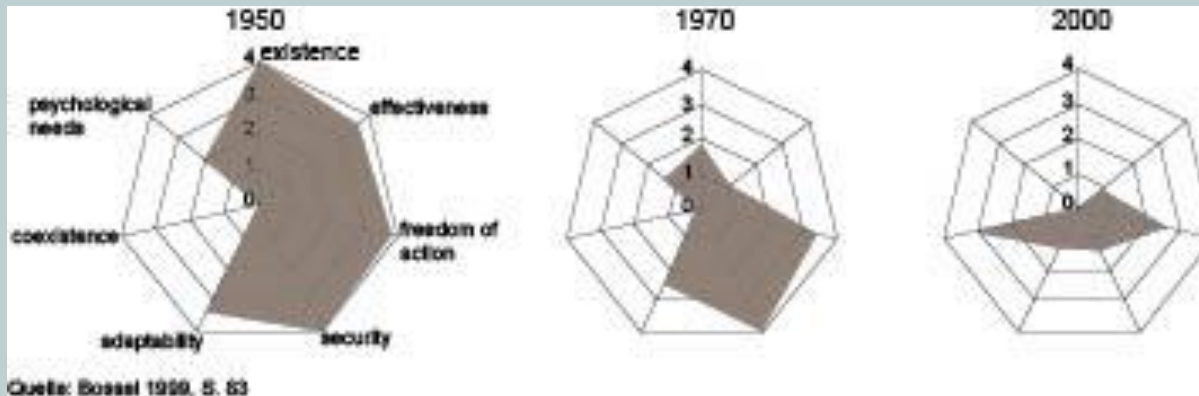
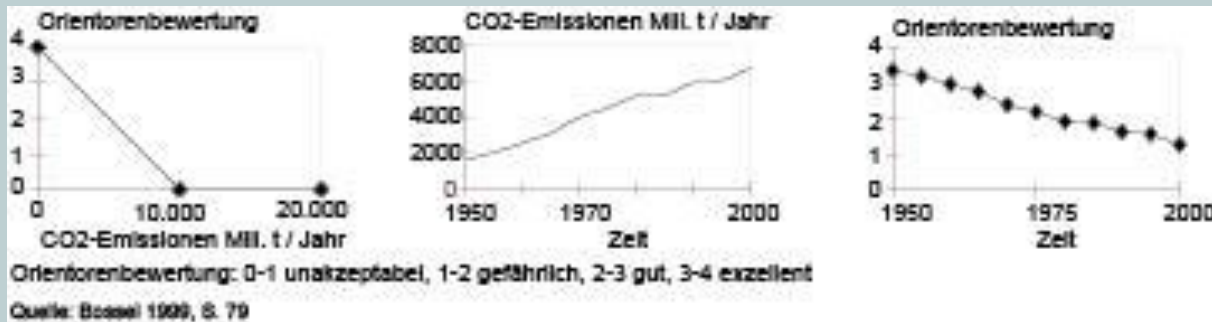
analogy to Daly's triangle



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## Improving the BBSR indicator system with the orientor approach

- **subjective indicator choice → all aspects of a system/sustainability**
- **interlinkages between dimensions not included → dependent on indicator choice**
- **interlinkages between regions not included → region is a non-isolated system**
- **targets show deficits, question of „what is sustainable“ remains unanswered → orientor values show sustainability, more flexible**
- + **visualisation method → similar but not the same**
- + **composed indicator for mapping → possibility of composed orientor values has to be tested**

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