

SCIENCE FOR THE FUTURE

THE POTENTIAL OF INTER- AND TRANSDISCIPLINARY SUSTAINABILITY RESEARCH

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SUSTAINABILITY RESEARCH

Which problems is it dealing with?

- Problems in the intersection of different disciplines
- Highly uncertain problems which have to be solved urgently
- Complex problems which have to be defined cooperatively by actors from science and the life-world
- Problems which are connected to values and normative decisions





Need for inter- and transdisciplinary research!

SUSTAINABILITY RESEARCH

Challenges of inter- and transdisciplinary research

- Disciplines speak 'different languages' .
- Different theoretical and methodological approaches have to be integrated.
- Science and life world actors speak 'different languages'.
- Science and life world actors act with different rationalities: different time horizons, different criteria for success etc..
- Power relations within science and within the life-world

 Inter- and transdisciplinary cooperation doesn't function "on its own"; it has to be managed.

 Tools are necessary for achieving a mutual understanding and integrating different types of knowledge .

SUSTAINABILITY RESEARCH AT THE CTS

Initiation and management of inter- and transdisciplinary research projects in the fields of:

- **Sustainable housing** (architects, constructing engineers, city planners, economists, environmental psychologists)
- **Sustainable mobility** (traffic engineers, city planners, sociologists, political scientists, historians)
- **Sustainable energy supply** (engineers, regional planners, political scientists)
- **Sustainable landuse** (agriculturists, ecologists, agricultural economists, political scientists, sociologists)

SUSTAINABILITY RESEARCH AT THE CTS

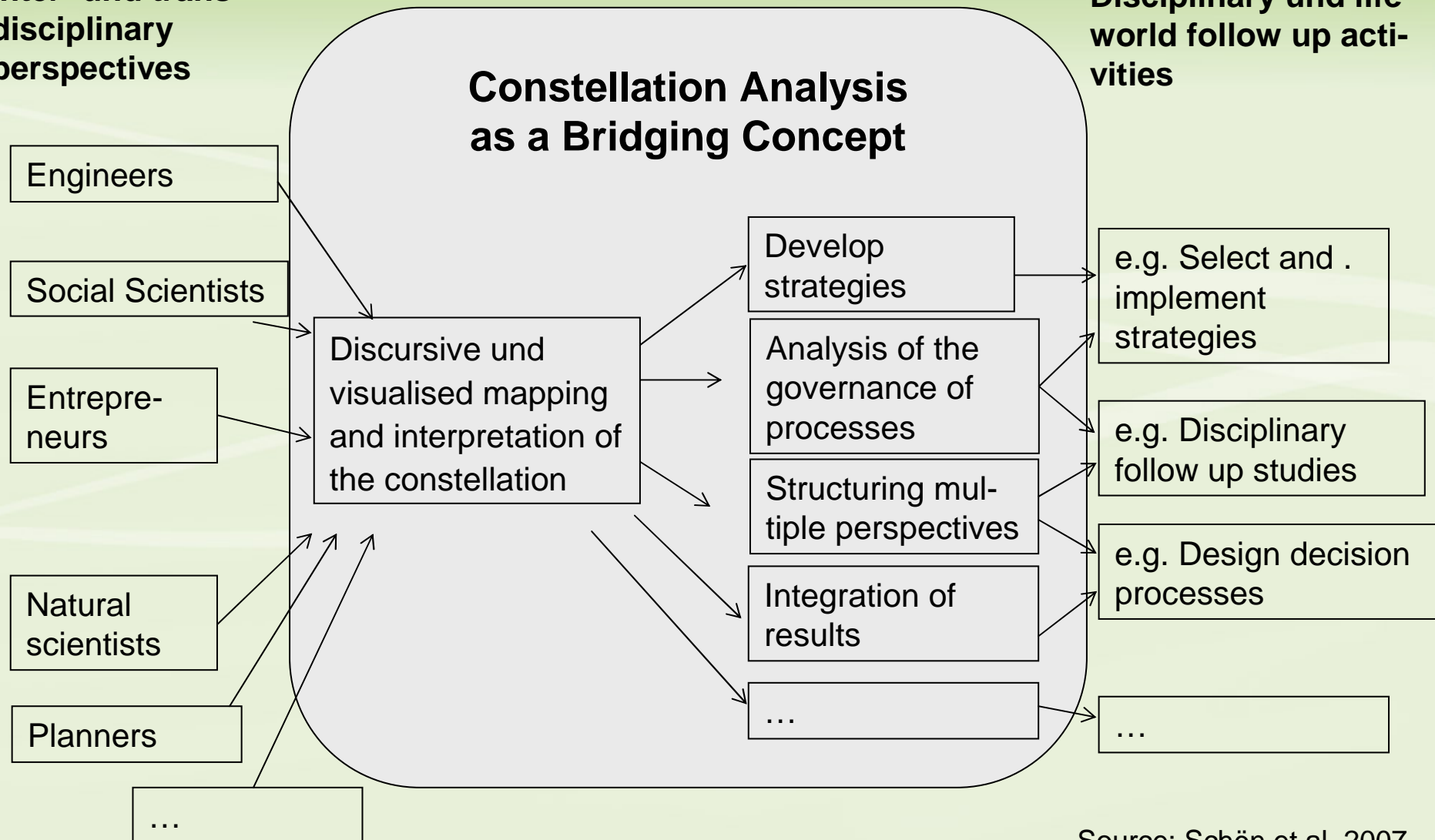
Tools and methods of inter- and transdisciplinary cooperation management:

- Innovative participation methods: e.g. citizen juries and citizens' exhibition
- Handbooks for inter- and transdisciplinary cooperation management
(Schophaus et al. 2004, von Blanckenburg et al. 2005)
- Development of a tool for inter- and transdisciplinary discourse: the constellation analysis (Schön et al. 2007)

CONSTELLATION ANALYSIS

Inter- und trans-
disciplinary
perspectives

Disciplinary und life-
world follow up acti-
vities



Source: Schön et al. 2007

CONSTELLATION ANALYSIS

Conceptual characteristics:

- Equivilancy between heterogenous elements



- Focus on the relations between the elements: constellation

Methodological principals:

- Generally understandable language
- Visual support
- Discursive character

CONSTELLATION ANALYSIS

The constellation analysis is able to:

- Facilitate the discourse about the status quo of a problem:
identify main actors and their role, dominant signs, technical and natural elements; interrelations of the elements
- Create transparency about different perspectives on a problem
- Mapping different stages of a certain process
- Mapping possible future developments anticipating a change in elements or in their relations
- Integrating results of different disciplines together in one constellation
-

CONSTELLATION ANALYSIS

First example: 'Innovation Biography: Wind Energy Sector'

- Mapping the development of the wind energy sector in phases
- Understanding the relations between the main elements and the impact of regulation measures
- Learning from former experiences for the future
- Learning from the development in one sector for other sectors (solar energy, energy from biomass)

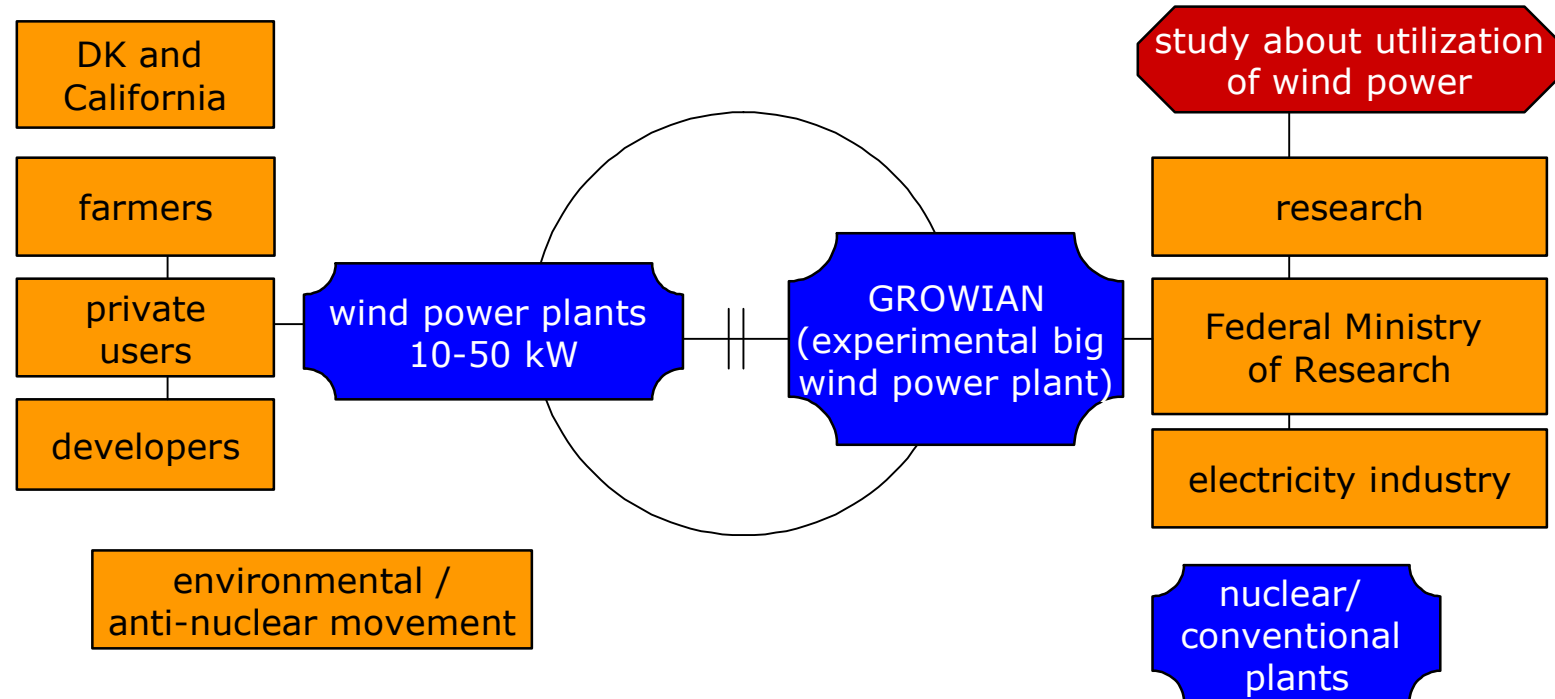
1975-1986 Departure/ Pioneer Phase

Principle of operation of the niche constellation: concept of an environment-friendly and decentralized energy supply

oil crisis/
rising oil prices

„limits of growth“

principle of operation of the dominant constellation: economic concept of supply guarantee

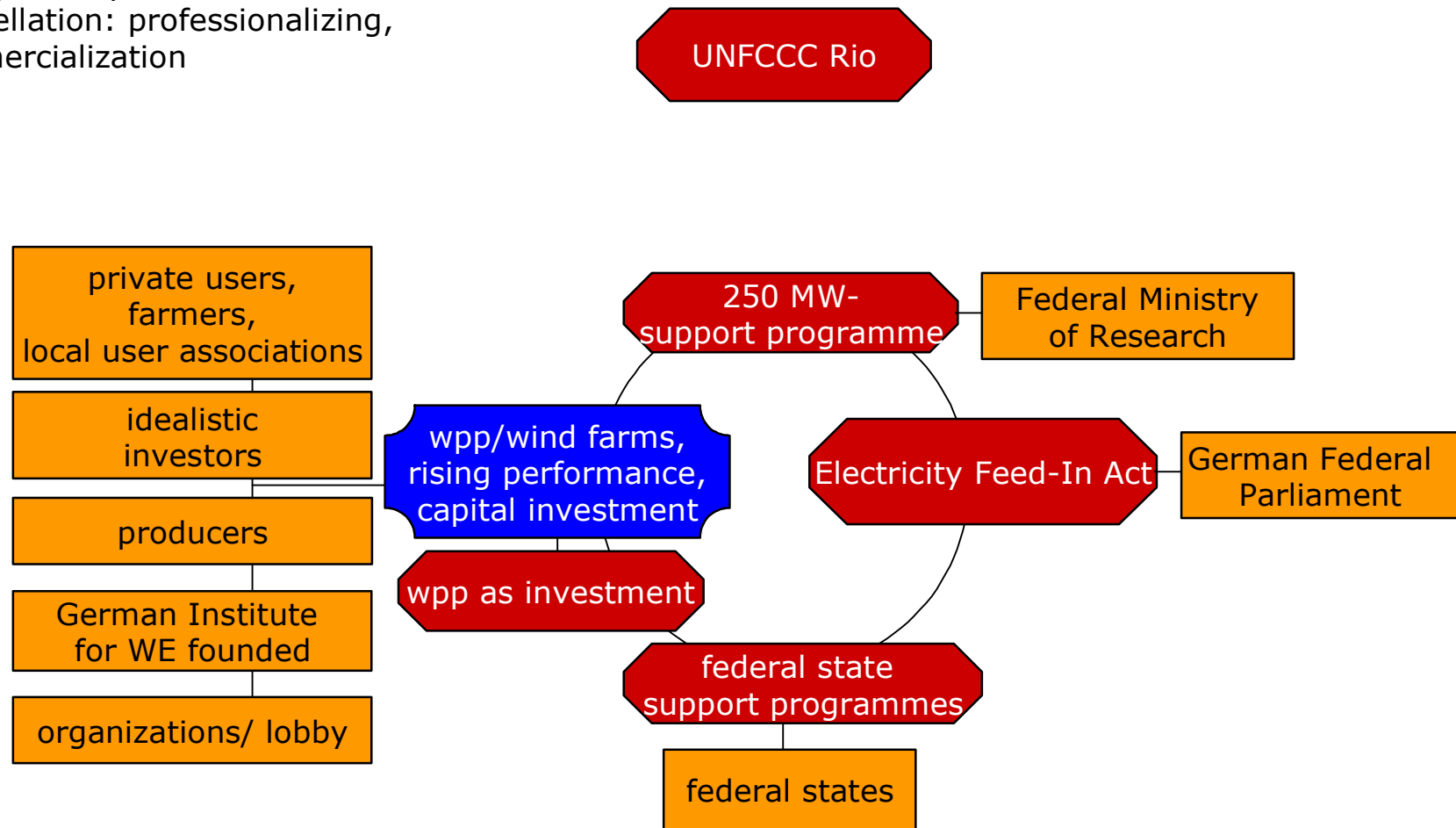


The circle symbolizes the core of the constellation.

Example for applying the constellation analysis: innovation biography
(Ohlhorst 2009)

1991-1995 First Boost And Concentration

principle of operation of the niche constellation: professionalizing, commercialization



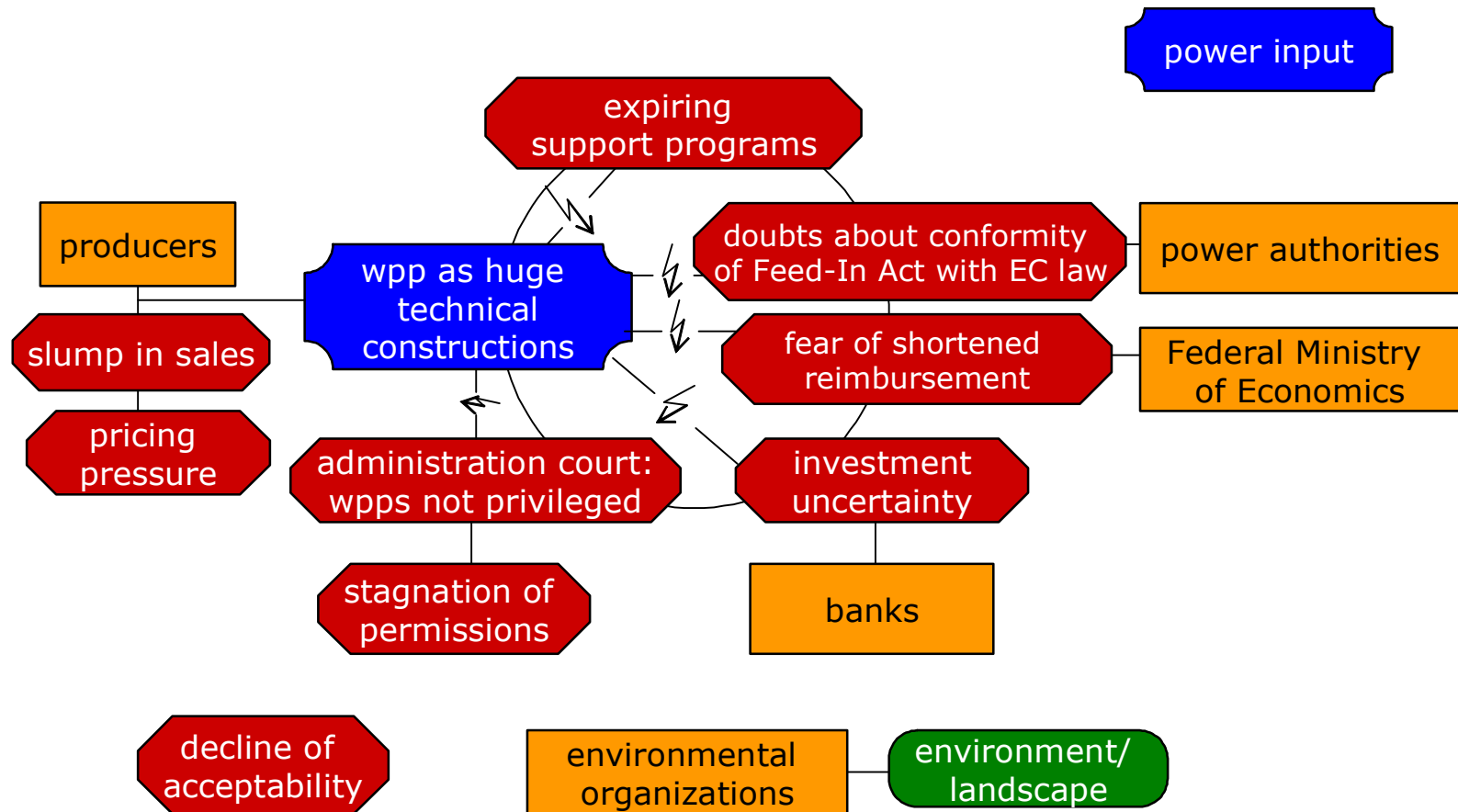
wpp = wind power plant
WE = wind energy

**Example for applying the constellation analysis:
innovation biography (Ohlhorst 2009)**

1995 - 1997/98 Set Back

principle of operation of the niche constellation: economic and judicial struggle for survival

principle of operation of the dominant constellation: economic and judicial slow down

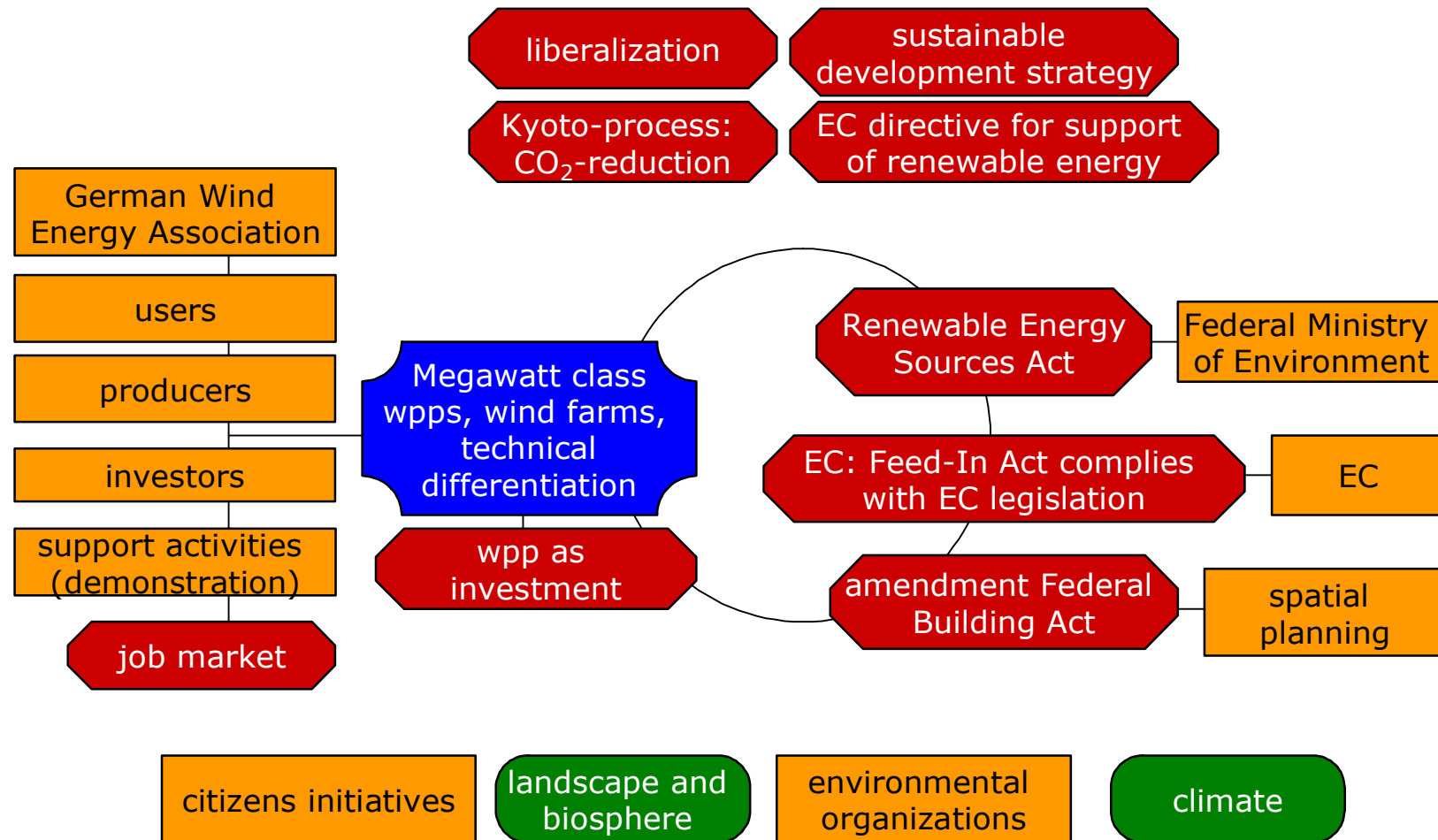


wpp = wind power plant

**Example for applying the constellation analysis:
innovation biography (Ohlhorst 2009)**

1997/98 - 2002 Second Boost

emancipated niche constellation:
climate policy through growing wind energy supply



Sub-constellation of heterogeneous wind energy critics

wpp = wind power plant

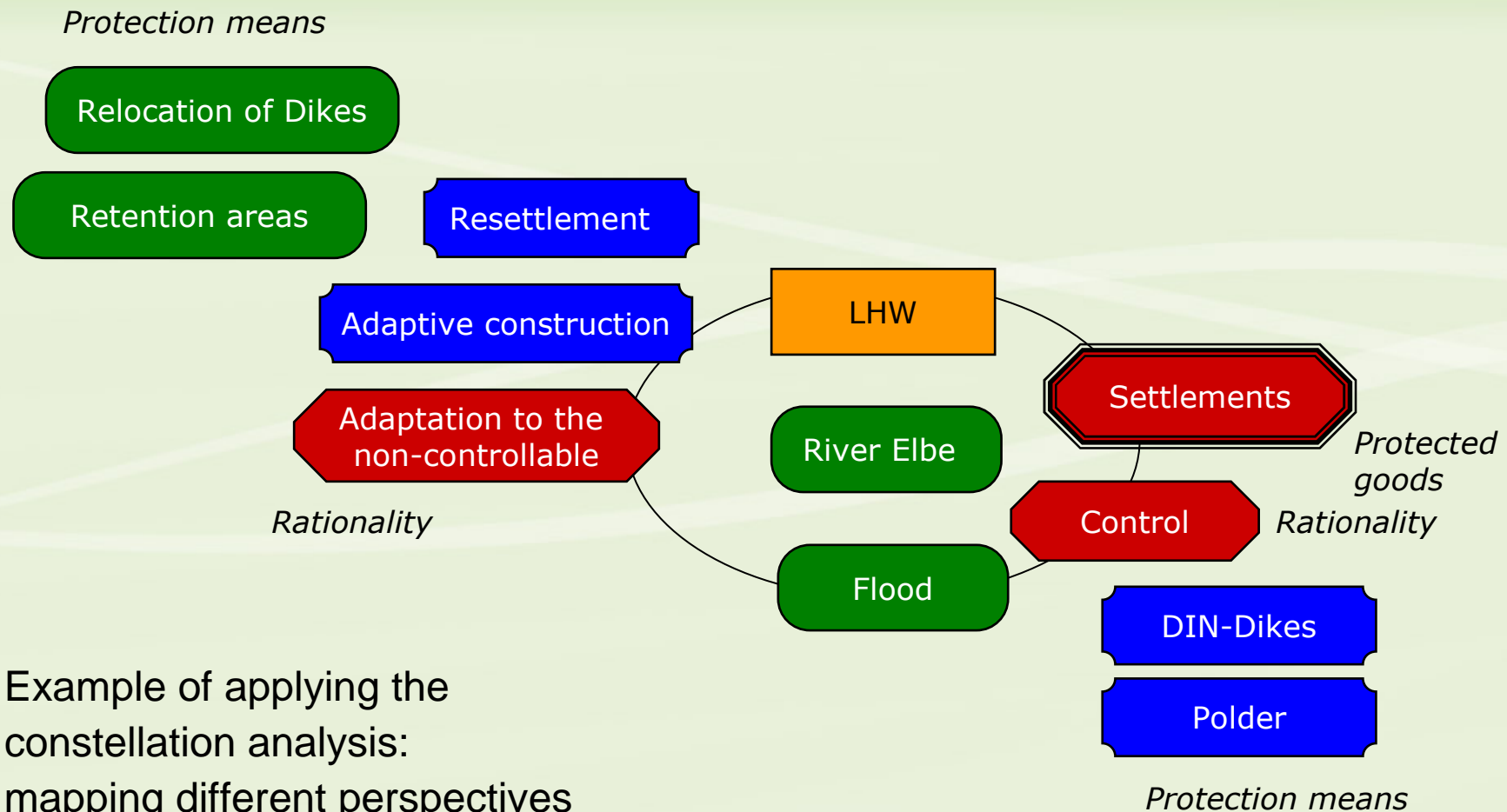
**Example for applying the constellation analysis:
innovation biography (Ohlhorst 2009)**

CONSTELLATION ANALYSIS

2nd example: Regional flood protection measures

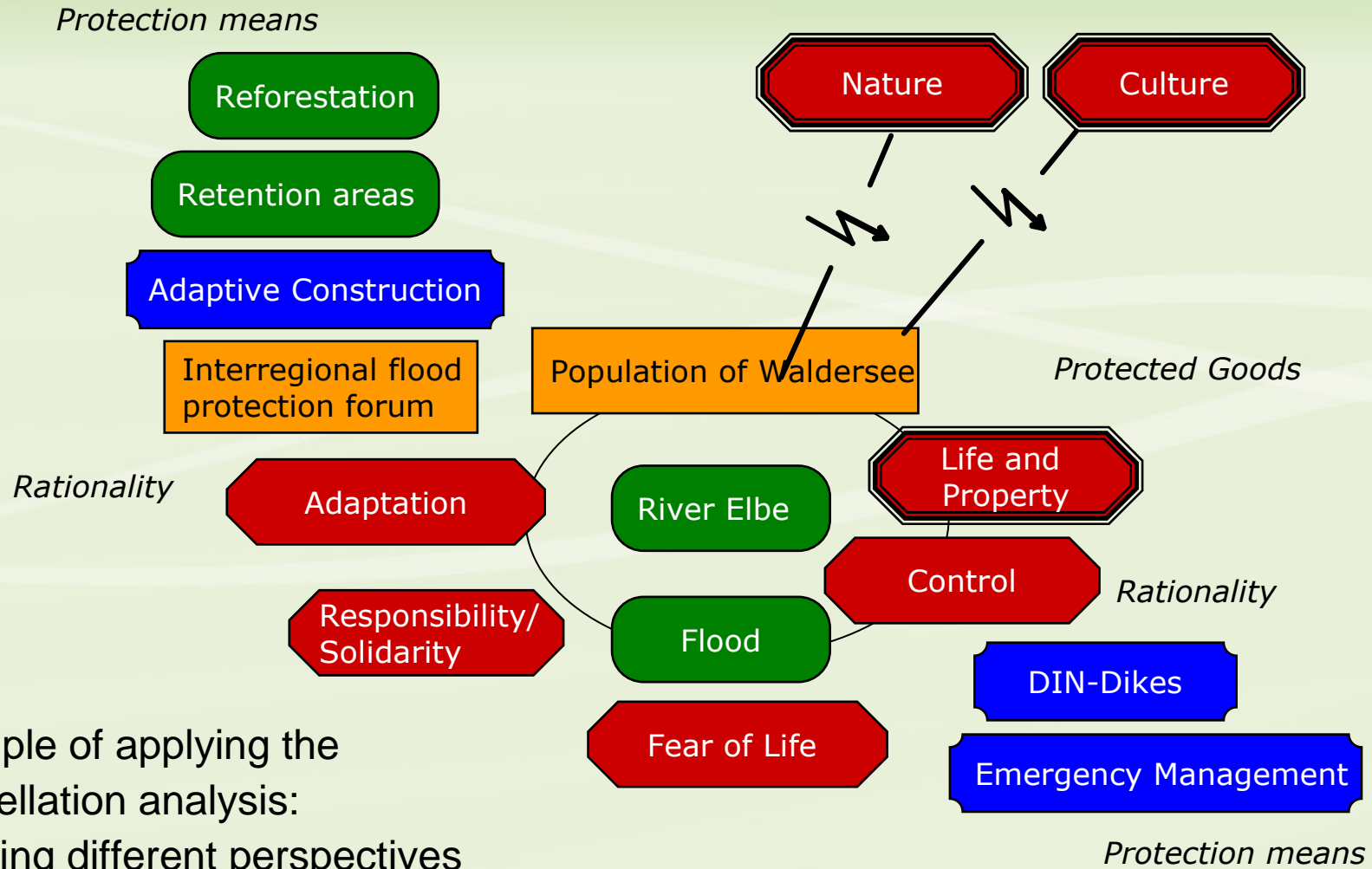
- Mapping the heterogeneous perspectives (and the underlying normative background) on possible flood protection measures
- Use the visualisation for a dialogue between the actors and a mediation process
- Enabling mutual understanding and support decision making

FIRST PERSPECTIVE (ADMINISTRATION): RANGE OF CONSIDERED FLOOD PROTECTION MEASURES



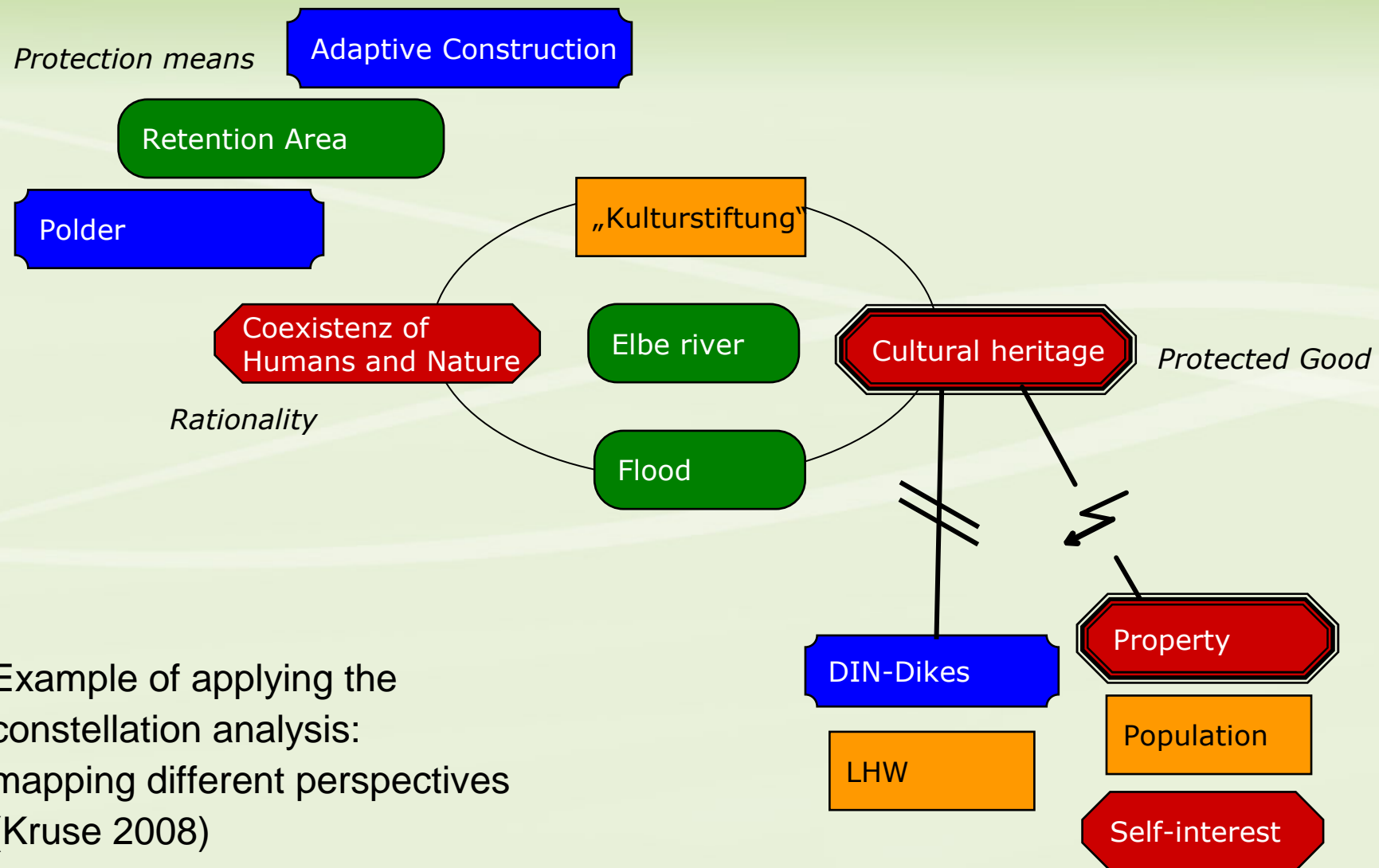
Example of applying the constellation analysis: mapping different perspectives (Kruse 2008)

SECOND PERSPECTIVE: POPULATION OF WALDERSEE



Example of applying the constellation analysis:
mapping different perspectives
(Kruse 2008)

THIRD PERSPECTIVE (KULTURSTIFTUNG): PROTECTION FROM PROTECTION MEASURES



Example of applying the constellation analysis: mapping different perspectives (Kruse 2008)



Mapping the Constellation – work in progress (Schön et al. 2007)

POTENTIAL OF INTER- AND TRANSDISCIPLINARY SUSTAINABILITY RESEARCH

- Integrate different perspectives and types of knowledge, thus being able to deal with complexity and uncertainty
- Transparency about normative background of different actors
- Identify “blind spots” and avoid unilateral solutions
- Create socially robust strategies which have better chances of being implemented
- Avoid time lag in implementation by integrating life world knowledge of a broad range of stakeholders in the research process

Thank you for your attention!

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