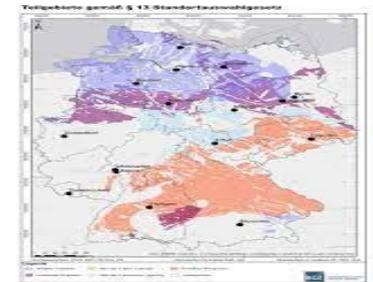


# Governing Nuclear Waste in the Long-Term: On the Role of Place

Melanie Mbah, Sophie Kuppler  
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Session: Geographies of Nuclear Energy

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# Outline

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1. Introduction – why place-sensitive long-term governance?
2. Theoretical approaches to place-sensitive long-term governance
3. Phases in place-sensitive long-term governance
4. Empirical design for understanding place-attachment better
5. Outlook / Research needs

# 1. Introduction – why place-sensitive long-term governance? I

- Nuclear wastes need to be safely stored or disposed for extremely long time spans
- Siting is already a highly controversial and long-term task
- Our example: Germany
  - First attempt at siting in the late 1970s was accompanied by decades of protests (cf. Hocke/Kallenbach 2015)
  - New site selection process was decided upon in 2013, siting is envisaged for 2031 (StandAG 2017)
  - Some estimate that site selection, approval and construction will take about 100 years (cf. Thomauske/Kudla 2016)
  - Retrievability of the waste needs to be ensured for 500 years after emplacement

# 1. Introduction – why place-sensitive long-term governance? II

Complex disposal system, consisting of:

- different phases and steps over long time spans

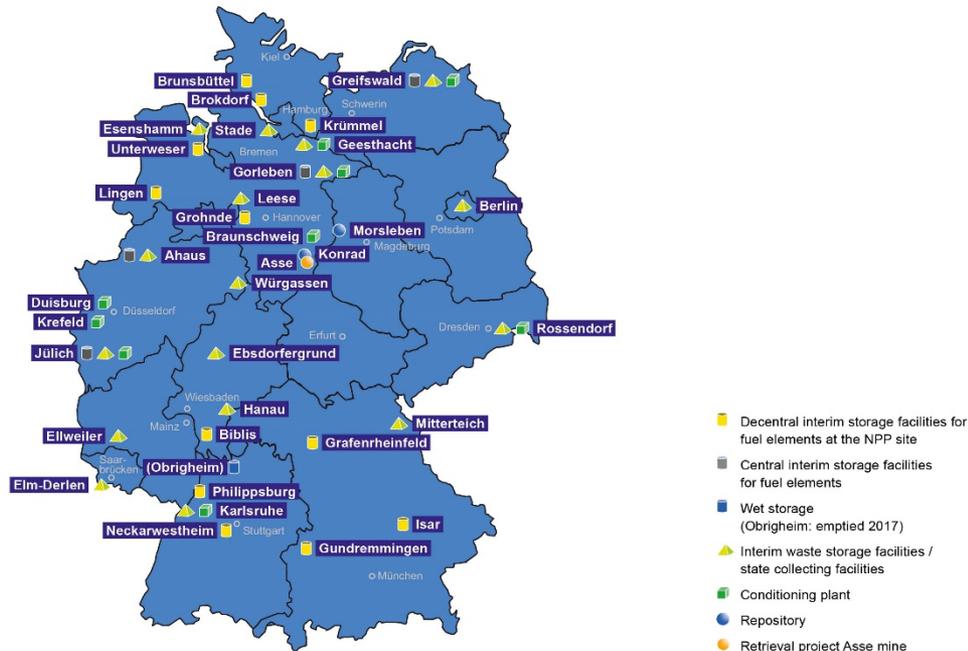


- in several places and with different effects
- many different actors involved and directly or indirectly affected now and in the future

# 1. Introduction – why place-sensitive long-term governance? III

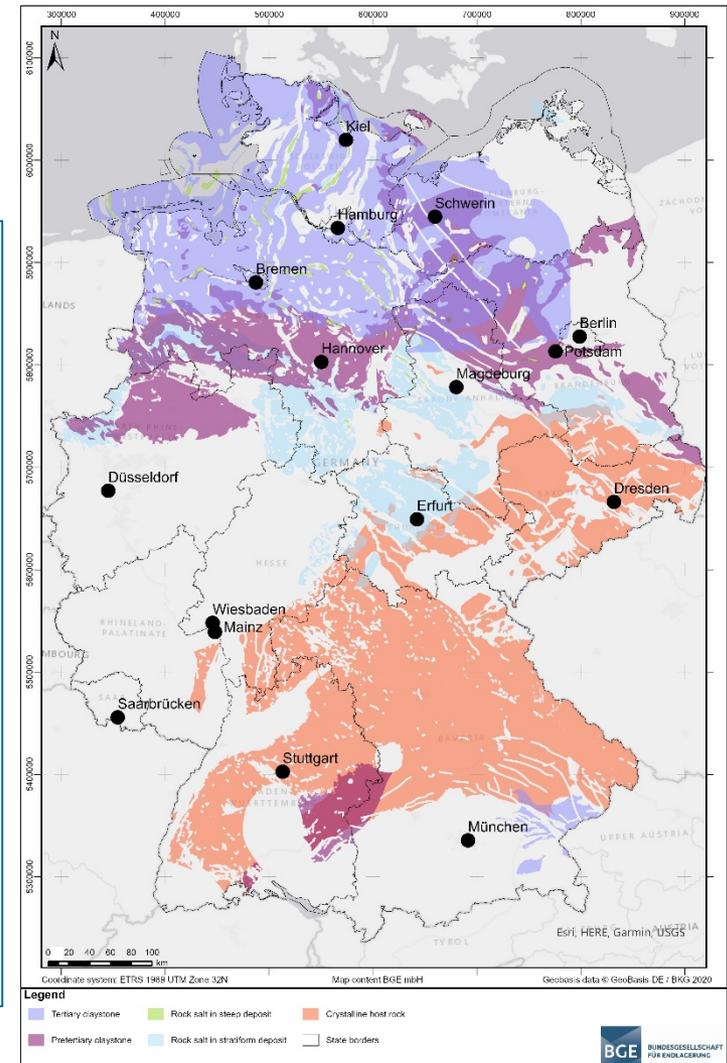
Several places are already affected, some will be affected in the near and far future

Radioactive waste management facilities in Germany



SOURCE: ÖKO-INSTITUT, 2016

Sub-areas pursuant to § 13 Site Selection Act (StandAG)



# 1. Introduction – why place-sensitive long-term governance? IV

- Infrastructures cause long-term spatial change
- In addition, many context factors of nuclear disposal might change over time, e.g.
  - Preferences regarding public participation
  - Understandings of what is considered safe
  - Local acceptance or resistance towards a site
- Need for place-sensitive long-term governance, which is flexible and adjustable to different contexts and finds a balance between local needs and societal responsibility for safe disposal

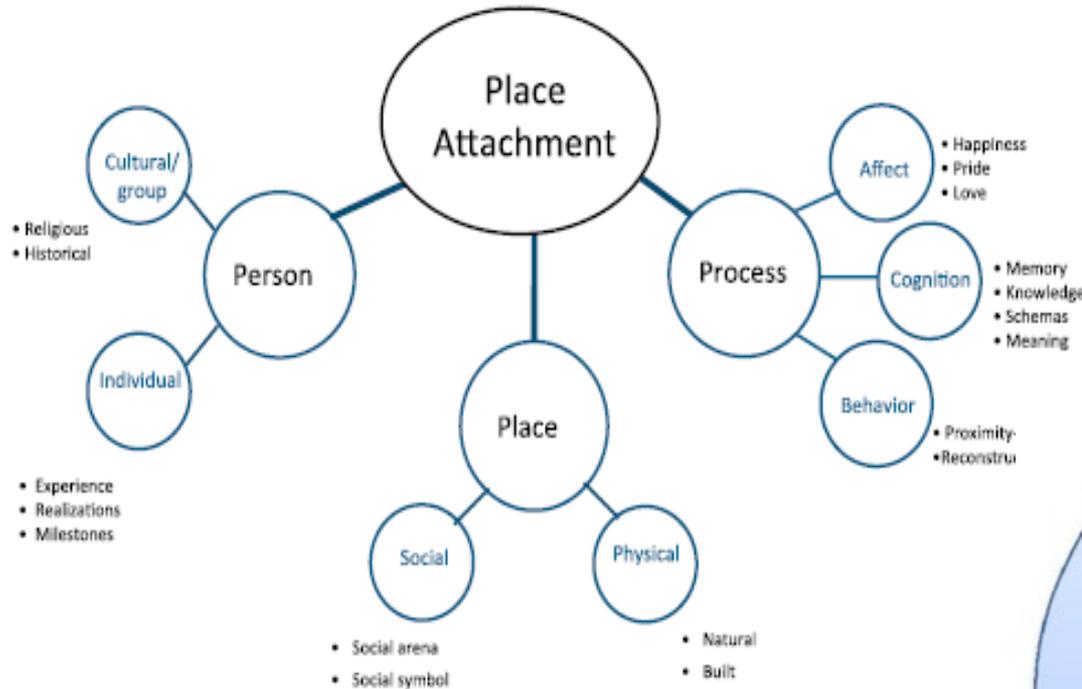
## 2. Theoretical approaches to place-sensitive long-term governance II

Long-term Governance (Kuppler & Hocke 2019):

- Who can take decisions oriented at public welfare a few hundred years from now?
- How to ensure knowledge transfer?

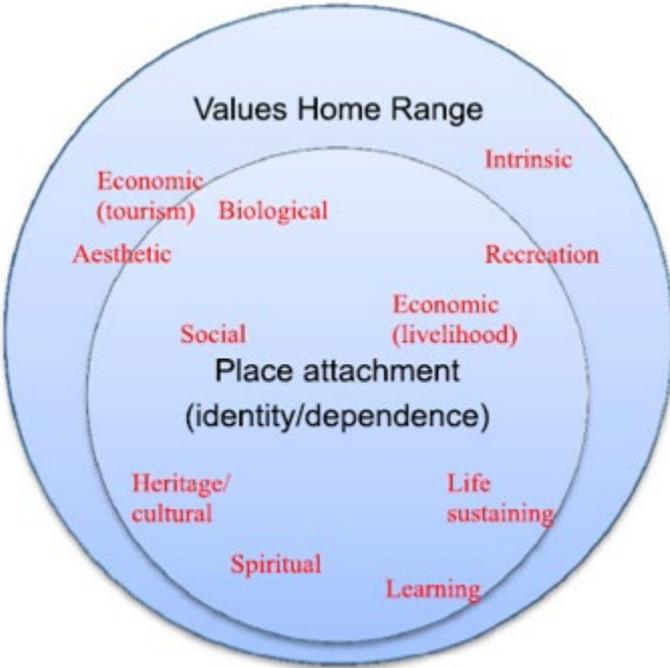
Long-term governance (LTG) as an approach for discussing institutionalisation processes within fields of technology that have (potentially averse) long-term effects

# 2. Theoretical approaches to place-sensitive long-term governance I

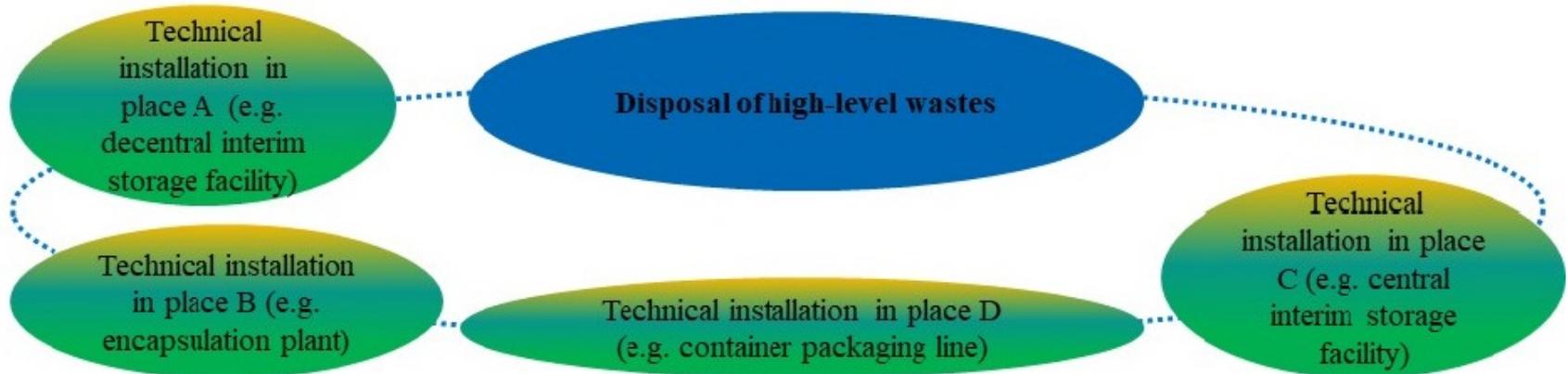


Source: Brown et al. 2015, p. 44.

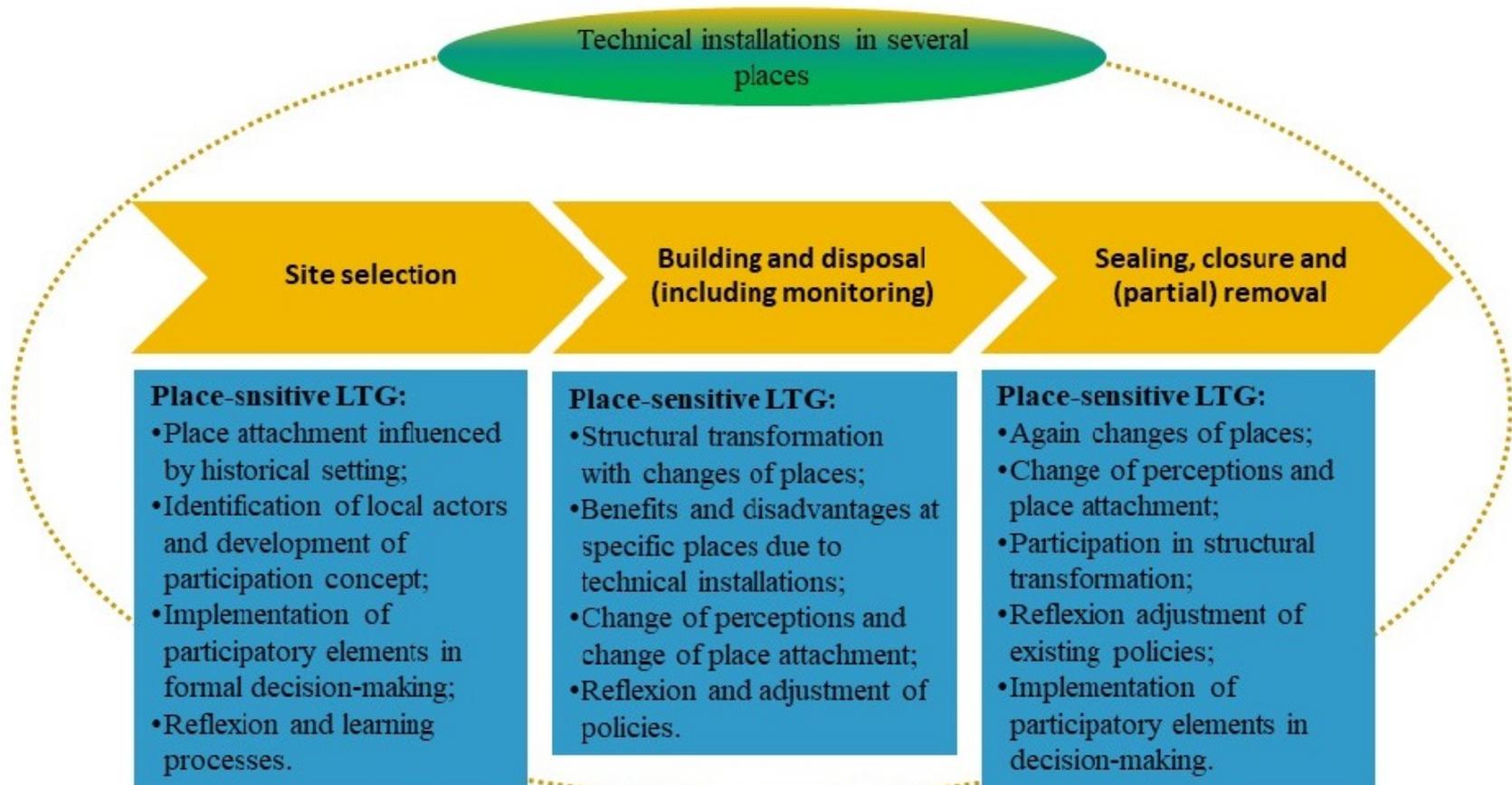
Source: Scannell & Gifford 2010, p. 2.



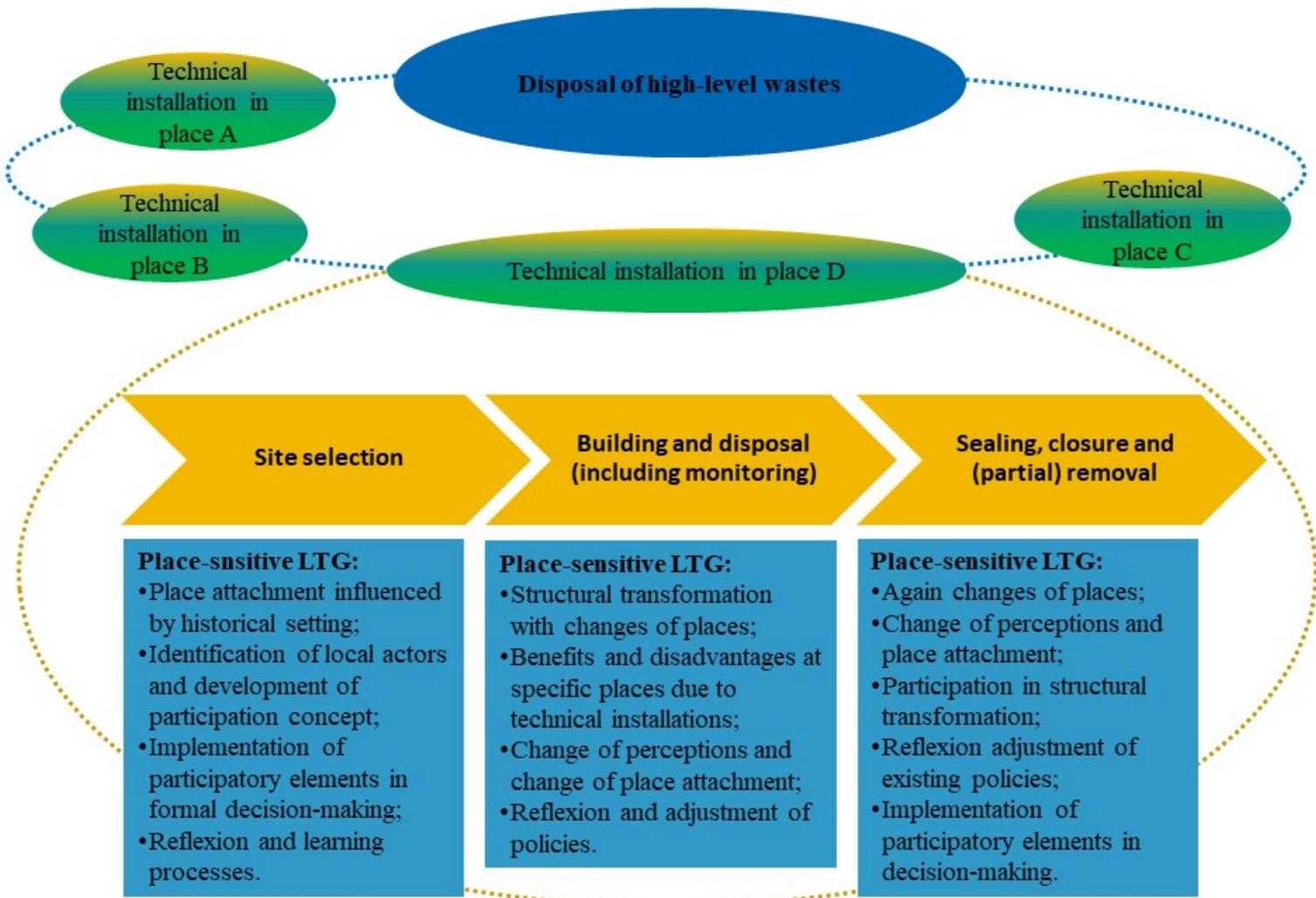
### 3. Phases in place-sensitive long-term governance



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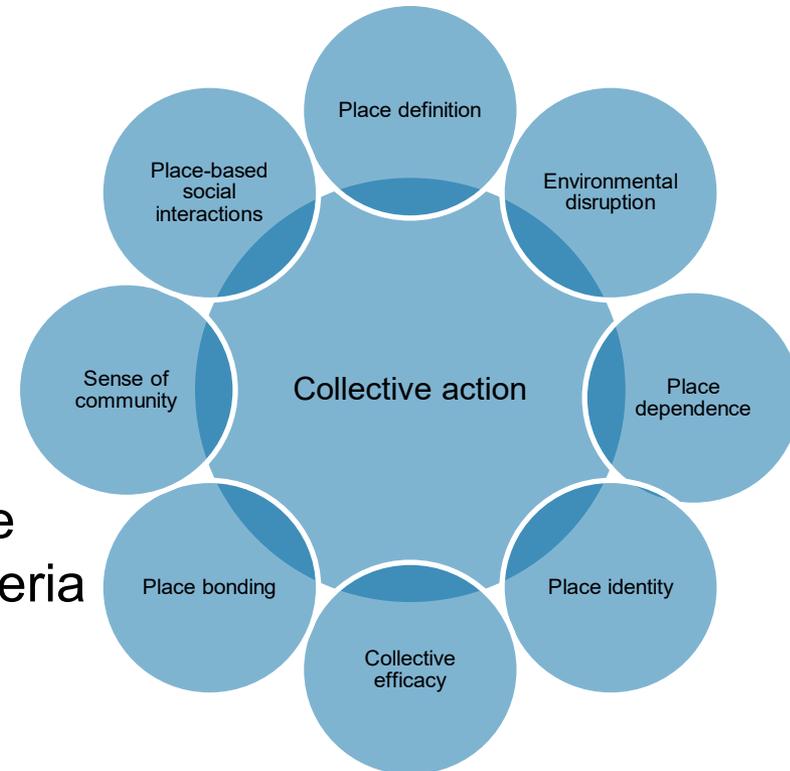
# 3. Phases in place-sensitive long-term governance



Source: Translated depiction of Mbah & Kuppler 2021, p. 434.

## 4. Empirical design for understanding place attachment better

- Research aim: analysis of effects of place attachment in spatial transformations (cf. Mihaylof & Perkins 2014)
  - Method:
    - Visualization of possible spatial transformations by disposal facility and associated technical installations
    - Analysis of place attachment in three regions in Germany (selected by criteria e.g. cultural bonds, structural transformation experience)
- interviews, workshops, questionnaires, visual psychological experiment



## 5. Outlook / Research needs

- Enhance empirical basis for long-term governance
- Link empirical findings on place-attachment to long-term governance by integrating
  - various place attachments depending on context and actors needs
  - different needs regarding participation (consultation and collaboration (of experts, stakeholders and public) with different methods and formats at different points of time in the long-term governance process)
- Investigate further needs regarding linkages between participatory elements and decision-making (design of interfaces)

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# Thank you for your attention!

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