

Accelerating transitions – new challenges and lessons for research

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Outline

1. Why is acceleration so difficult?
2. Challenges of acceleration?
3. Can existing frameworks deal with acceleration?
4. Bigger picture: further challenges ahead!

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Acceleration challenges – JMN

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1 Acceleration needed but difficult

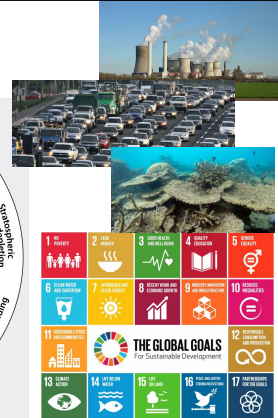
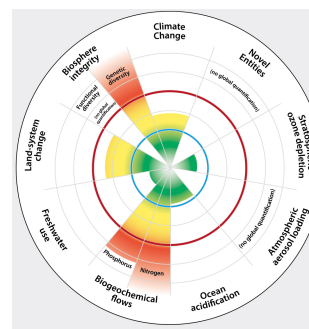


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We are living at the edge

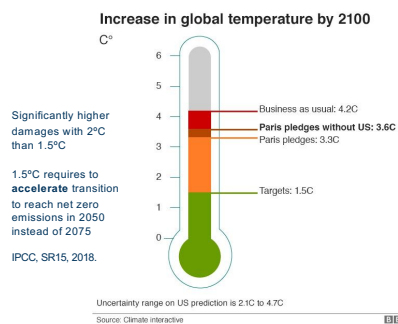


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Example: Climate change



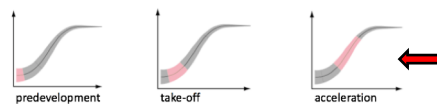
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Acceleration needed

- Sustainability transitions are a **central option** to respond to grand challenges
- We need to move quickly from early stages to **acceleration**



- But acceleration can be difficult

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Why is acceleration often difficult?

- Resistance of incumbents, strong **coalitions in favor of transition** need to emerge [Kungl & Geels, 2018; Lauber & Jacobsson 2016; Meckling et al. 2015; Smink et al. 2015]
- Resistance of **local communities**, lack of legitimacy; variety of social movements [Feola & Jaworska 2018; Johnstone & Hielscher 2017]
- Weak or unreliable policies
- Low(er) performance, higher costs of alternatives
- Inertia of existing **infrastructures**, takes time & resources to build new ones



2 “The next phase” - new phenomena

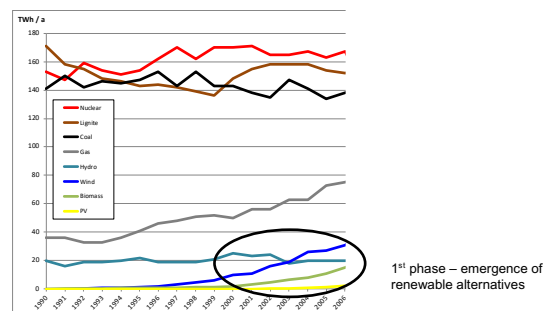


Example Energy Transition

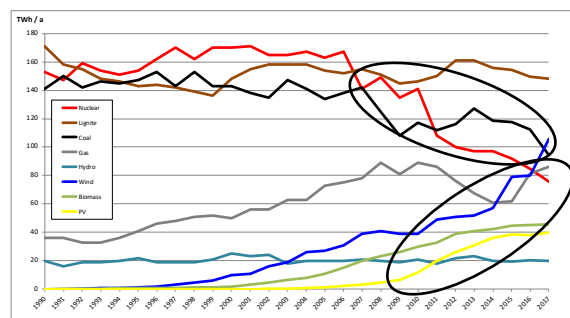
- Argument [Markard 2018a]
 - In some places, we currently see a **new phase** of the energy transition with **new phenomena**
 - The new phase comes with a set of **new challenges**
 - These new challenges have **implications** for the **conceptual frameworks** we use, and for **policy making**

Illustration: Germany - Earlier developments

Power generation in TWh (2017: 650 TWh total)



Germany: 2nd phase



Portugal: Interplay of hydro, fossil & wind

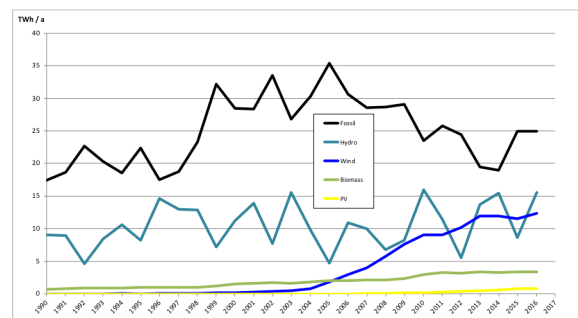


Illustration II: Portugal - Earlier developments

Historical diffusion of energy technologies in Portugal in the 20th century (cumulative installed capacity in MW, log scale)

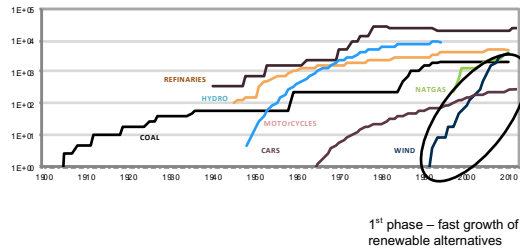


Illustration II: Portugal - Comparison of RES shares

Share in Gross Final Electricity Consumption (in %)

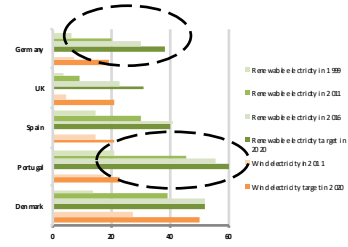
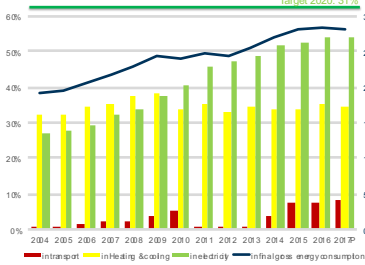


Illustration II: Portugal - Next phase: Spread acceleration

Contribution of RES to gross final energy consumption (in %)

Decarbonization 2050: ~100%

Target 2020: 31%



Increasing structuration of activities in local practices

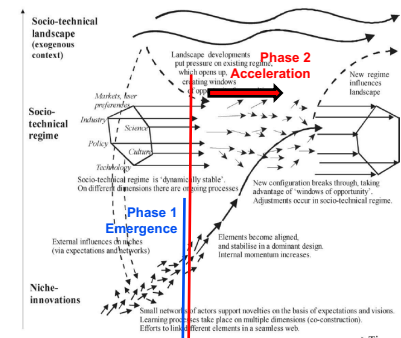


Fig. 1. Multi-level perspective on transitions (adapted from Geels, 2002, p. 1263).

Geels & Schot 2007

Four exemplary challenges

Multi-tech interaction & system functioning

[e.g. Markard & Hoffmann, 2016; Sanden & Hillmann 2013]

Multi-sector interaction

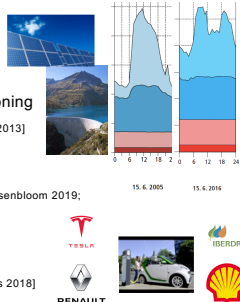
[e.g. Konrad et al. 2008; Papachristos et al. 2013; Rosenbloom 2019; Schot & Kanger 2018; Sutherland et al. 2015]

Escalating struggles & politics

[e.g. Hess 2016; Kern & Rogge 2018; Roberts & Geels 2018]

Decline

[e.g. Turnheim & Geels 2012; Rogge & Johnstone 2017; Rosenbloom 2018]

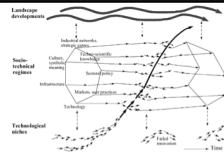


3 Repercussions for existing frameworks?



Multi-level perspective

- First question:
Is MLP the right approach for your study?
Do not just use it because everybody does ☺
- Multi-tech & multi-sector interaction [Geels 2018; Papachristos et al. 2013; Sutherland et al. 2015]
Open: Tech interplay & sector performance? 'Soft' transitions: which regime dimensions remain stable and why?
- Politics [Geels, 2014; Kern & Rogge 2018; Markard et al. 2016]
Open: Why does resistance increase during acceleration?
- Decline [Turnheim & Geels 2012, 2013]
Open: Specific decline processes, when does decline become irreversible?

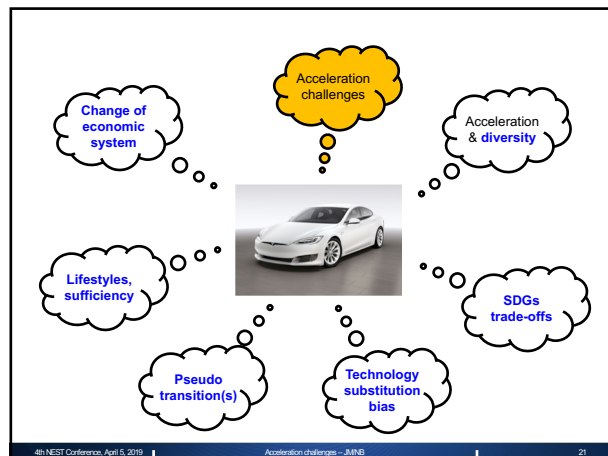


Technological Innovation Systems

- First question:
Is TIS the right approach for your study?
Do not just use it because you like the functions ☺
- Multi-tech & multi-sector interaction [Andersen 2014; Bergek et al. 2015; Sanden & Hillman 2011]
Open: How to address sector performance from a TIS perspective?
- Politics [Binz et al. 2016; Kern & Rogge 2018; Markard et al. 2016]
Open: Struggles over TIS functions, de-legitimation etc.
- Decline [Kivimaa & Kern 2016; Markard 2018b]
Open: Key processes of TIS decline (decline functions?), acceleration of decline?



4 Further challenges



5 Wrap up

- Acceleration is **needed** to address sustainability issues
- Acceleration comes with **new challenges**
- Established frameworks have to **adapt** (or: we need new ones)!
- And: there are even more complex challenges – **more work for you** ☺
- Always make sure: framework fits your research question
(no tech no TIS, isolated experiment no MLP)



Thank You!

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