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## Transformative Innovation Policy – premise, promise, pitfalls

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SYLVIA SCHWAAG SERGER, NOVEMBER 2022



# The New Deal Came Too Late for Electric Vehicles

Lack of energy infrastructure explains the rise of the gasoline car

By Josef Taalbi, Hana Nielsen



<https://www.scientificamerican.com/article/the-new-deal-came-too-late-for-electric-vehicles/>

*“All the advanced-country R&I systems with which we are familiar are trying to work out how to tackle transitions at the national level”*  
(Arnold et al, Evaluation of Academy of Finland 2022)



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# Personal reflections based on...

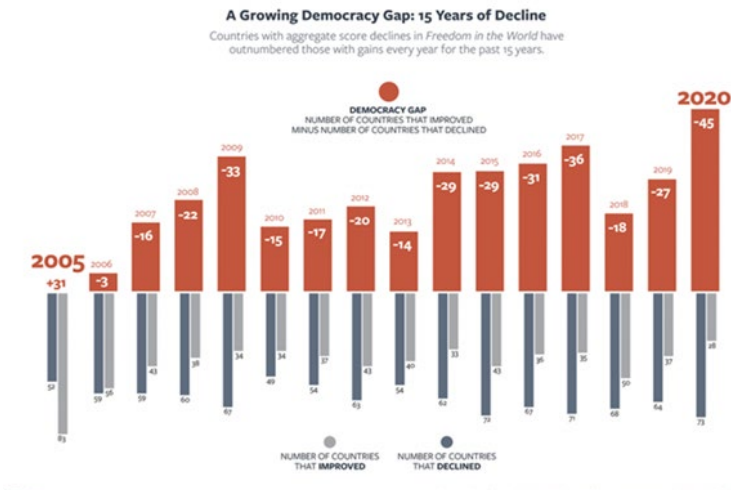
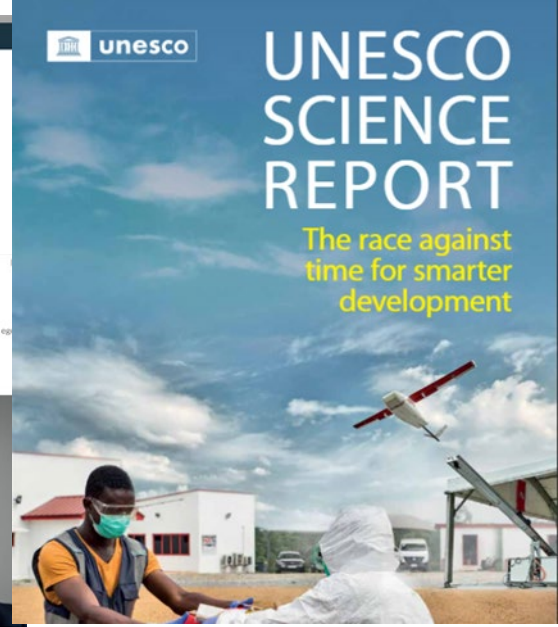
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- Involvement in policy processes and analysis/knowledge of research and innovation systems in Austria, China, Denmark, Finland, Germany, Korea, Norway, Sweden and the European Commission
- Membership of Swedish National Innovation Council, International Advisory Board of the Norwegian Research Council, Swedish Government Commission on Research (Forskningsberedning), Austrian Council for Research and Technological Development
- University leadership (Lund, Uppsala)
- Evaluating Academy of Finland and Danish Innovation Fund
- Being in charge of intl strategy at Vinnova
- Working extensively with the OECD (advisory board S&T Policy 2025)
- Chairing EU expert groups (on regional transformation and on international cooperation)



# 'Runaway world'

- New actors in research and innovation
  - Increasingly urgent societal challenges (eg climate change) and 'wicked problems'
  - Democracy, science and international coop. increasingly questioned / threatened
  - Disruptive technologies
  - Increasing inequalities/polarization within and between countries
- ⇒ Increasing complexity, uncertainty, instability
- ⇒ Covid and the war on Ukraine accentuated problems and frictions (did not cause them)!!
- ⇒ **"We're not living in an era of change, we're living in a change of eras"** (Jan Rotmans)





# If everything is changing...

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- ... then shouldn't that also apply to innovation policy?
- "Innovationspolitik ist nicht mehr nur Wirtschaftspolitik sondern auch Gesellschaftspolitik"

## *The beginning of history?*

*"we are likely to encounter bigger questions and be forced to consider more radical approaches that reflect the challenges posed by the transformations and perils ahead... Enormous economic, social and political transformations remain possible – and necessary."*

(William MacCaskill, *Foreign Affairs* 2022)

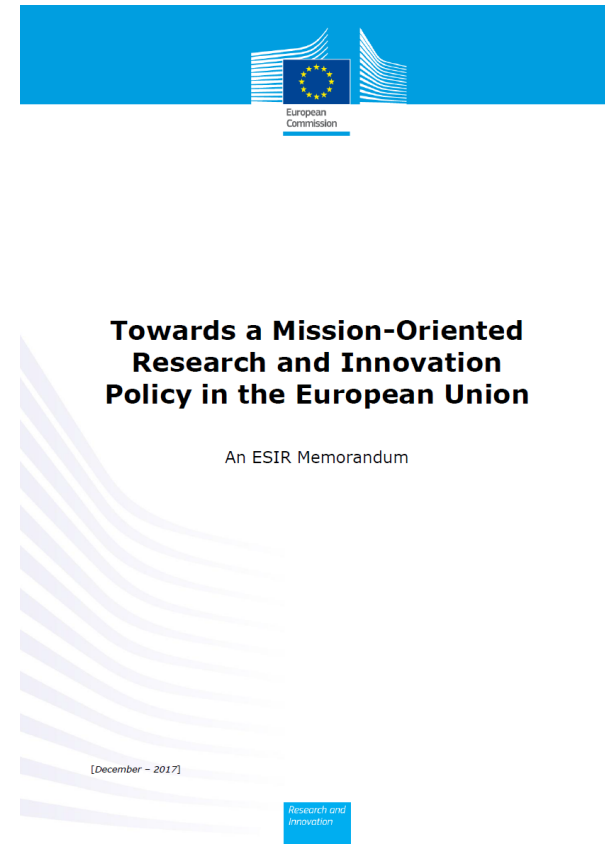
*"Wir stehen vor einer globalen Herkulesaufgabe: Es geht ja um nicht mehr und nicht weniger als die Transformation unser ganzen Lebens- und Wirtschaftsweise"* (Angela Merkel, April 22, 2021)

[Merkel über Klimapolitik: „Geht um Transformation unserer Lebensweise“ \(faz.net\)](#)



# Dimensions of change / transformation

- Changing research and innovation policy context (technology, geopolitics, climate change, speed, disruption)
  - Changing research and innovation policy (Europe, Asia, North America)
    - More directionality (eg 'missions) (Borras and Schwaag Serger 2022), and on several levels (Schwaag Serger et al 2022 forthcoming)
    - New expectations and demands on innovation policy regarding societal challenges and transformation / structural change (eg Agenda 2030, climate change) (Lundin & Schwaag Serger 2018)
- => Transformative mission-oriented research & innovation policies (MOIPs)

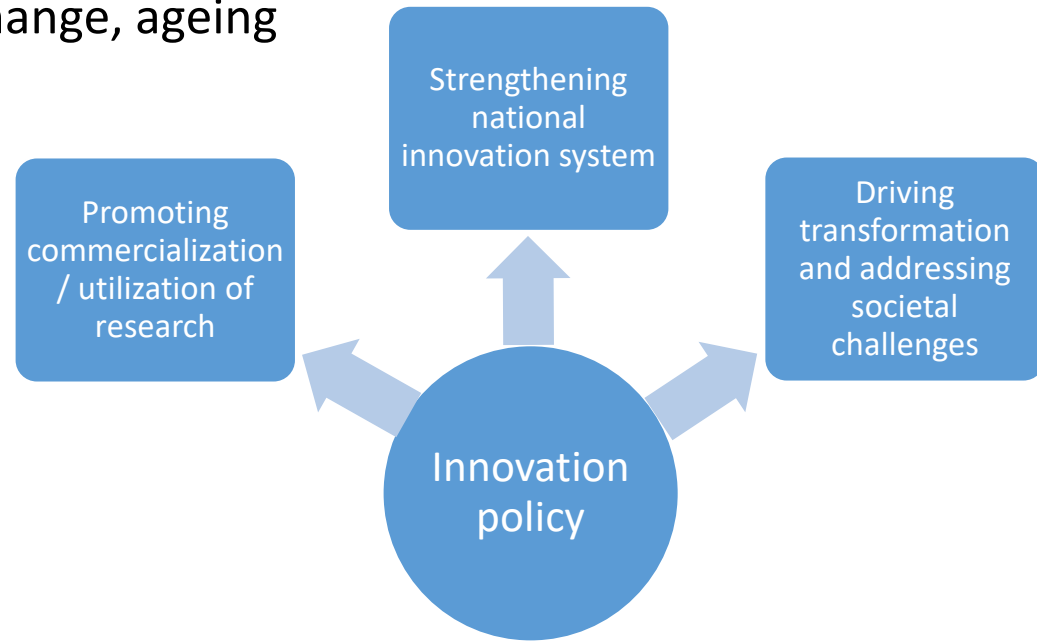


# Transformative innovation policy

## ➤ Stems from the realization

- that not all innovations automatically make a positive contribution to society, economy and the environment
- that the societal challenges we face (eg sustainability, climate change, ageing, polarization, geopolitical tensions) require a different approach and a different innovation policy
- that science and technology alone are not sufficient to address these challenges

## ➤ Claims to drive systemic and directional change (eg energy supply, combating climate change, ageing population, pandemics)



## Innovation

Implementation /  
diffusion of new  
processes, products or  
organizations

Relationship?!

## Transformation

Societally desirable  
change (directionality,  
impact)

### Role of the state / instruments

- Funding R&I (Supply)
  - Procuring (Demand)
  - Connecting (actors, demand & supply)
    - Regulating
- => **ENABLING AND PROMOTING**

### Role of the state / instruments

- Funding, procuring, connecting, regulating
- BUT ALSO**
- Mobilizing
  - Directing
  - Destabilizing
  - Co-ordinating
  - Experimenting
  - Risk-taking
- => **DRIVING?**



# Transformative innovation policy

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- More than just missions
- Not as new as many think: Ergas (1986, 1987), DARPA (1958)
- From scientific, technological and industrial to societal missions:
  - *“The global community is facing Grand Challenges. The European Knowledge Society must tackle these through the best analysis, powerful actions and increased resources. Challenges must turn into sustainable solutions in areas such as global warming, tightening supplies of energy, water and food, ageing societies, public health, pandemics and security. It must tackle the overarching challenge of turning Europe into an eco-efficient economy.”* (Lund Declaration 2009)
- Many examples, approaches and manifestations in present and past (Germany, China, South Korea, Nordic countries, EU, USA)
- **Complement, not substitute, of ‘traditional’ innovation policy**



# Transformative innovation policy

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- Not a matter of yes or no (transform or be transformed) but rather of
  - Context, ambition and mandate
  - Skills, institutions, political will and risk appetite
  - Coordination
- Tools for transformative innovation
- How do we know when it works?
- Pitfalls / misconceptions:
  - Not the same as or limited to missions
  - Normative system transformation not the same as radical innovation
  - The role of innovation policy in driving transformation?
  - Does not mean the state should drive innovation
- "Transitions need to be managed on a more decentralised basis and with bigger networks than in traditional research and innovation policy". (OECD 2017 Innovation Review Finland, p.174)



# Examples of innovation policy with transformative ambitions

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- **Sweden:** Flagship Transformation programs (Challenge-driven innovation and strategic innovation programs)
- **Finland:** embedded transformation through research, focus and eco-systems
- **Austria:** Thematically focussed transformation (Mobility strategy)
- **Norway:** Missions (e-Pilot)
- **Netherlands:** Top sector missions
- **Denmark:** Global Solutions (Danish Innovation Fund)
- **European Commission:** global challenges, missions, Green Deal



# Transformative and mission-oriented innovation policies (MOIPs) in practice

- High normative/transformative **ambition** (and some evidence of learning)...
  - ... yet to be matched by **transformative design, implementation, evaluation**
  - Challenge in moving from traditional stakeholder involvement to **curating collective responsibility for transformation**
  - **Horizontal policy coordination** is still not happening sufficiently (policy silos rather than resource fluidity)
  - Continued focus on funding research and projects rather than **driving transformation** (market creation, regulation, legislation etc.)
  - "Every agency wants their mission"
  - Need for more inter- and multidisciplinary, resource fluidity and agility
  - Need for more conscious and informed **risk-taking**
  - MOIPs expose inherent problems in research system: Disciplinary divides, incentives / funding, measurement of quality, performance, impact
  - Tends to neglect demand side and importance of market & competition dynamics
- (Borras & Schwaag Serger 2021, Palmberg and Schwaag Serger 2021)

# Framework for assessing new innovation policy alignments with system-transformational failures

System failures			Transformational failures			
<i>Institutional environment</i>	<i>Interactions</i>	<i>Change and conflict management</i>	<i>Directionality</i>	<i>Demand articulation</i>	<i>Policy coordination</i>	<i>Reflexivity and openness</i>
Absence, excess or shortcomings of formal institutions, capacities or infrastructures	Lack of interactions across sectors, disciplines, companies, actors  Path-dependency and lock-in to sub-optimal interaction	Lack of capabilities and structures for change and to react to landscape movements	Lack of shared vision of transformational change, needs of industry and society	Insufficient links to needs, understanding of consumers, users	Lack of coordination across ministries, agencies and other policy stakeholders	Insufficient ability to monitor, anticipate landscape changes, involve new actors, experiment and learn

Source: Palmberg and Schwaag Serger (2017 and 2021) based on Weber & Rohracher (2012), Kuhlman & Rip (2014), Karo & Kettel (2016)



# Traditional research & innovation policies

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- Tend to be bottom-up (non-directional)
  - Tend to focus on funding research and (some?) innovation projects
  - Tend to focus on the national context
  - Focus on creation rather than destruction, destabilization, overcoming resistance and compensating losers
  - Focus on developing solutions for the future rather than solving problems in the present
  - Neglect the importance of coordination
  - Tend to focus on what's feasible rather than what matters (eg carbon taxes)
- => Tensions with transformative ambitions?!





# Driving transformation...

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⇒... is about curating change...

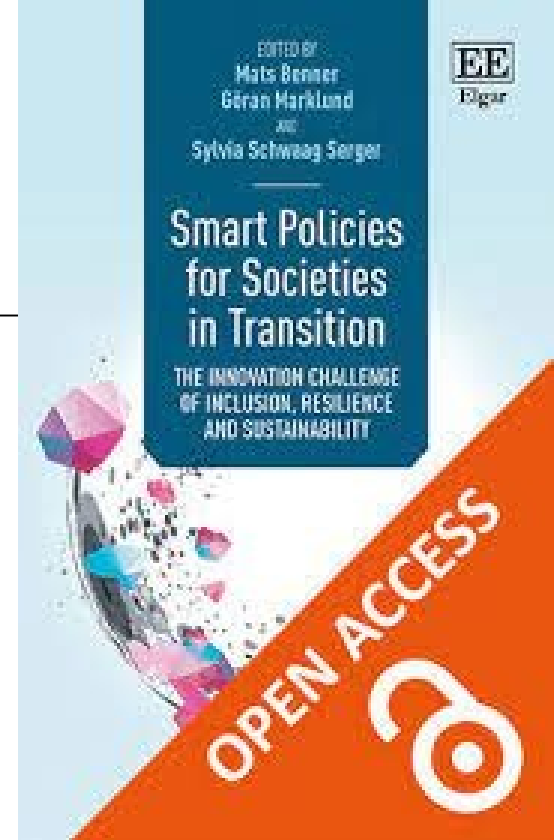
⇒... which requires

- Mobilization (industry, regions, academia, society)
- Institutions
- Resources and tools
- Regime destabilization
- Risk-taking
- **A theory of change** (and change in all sectors, including government, and the interaction between them)

⇒Transformation and research/innovation policy are not the same!

⇒The relationship is not as obvious as one might think

⇒Gap/discrepancy between transformative intention and implementation



# Which role can/should the state assume in promoting innovation (Borrás und Edler 2014/2020)?

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- Night watchman?
- Coordinator?
- Promoter?
- Conductor/architect?
- Catalyzer?
- Initiator?
- Investor?
- Arbitrator?
- Compensator?
- Problem owner? customer?
- "Value creator"?
- Create spaces for experimentation and niche development (Schot & Steinmueller)
- Define missions (Mazzucato)

- **Which role can/should the state assume in driving transformation?**
- **"Industry 5.0 requires government 5.0" (ESIR 2021)**



# Issues to think about...

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- Risk-taking
- Portfolio approach
- Harnessing urgency and crisis
- Mobilizing resources beyond government budgets
- Identifying problems rather than picking winners
- Managing expectations
- Professionalizing change management (based on a theory of change)
- **Optimizing the relationship between agility and accountability**
- **EDUCATION!!**



# Concluding reflections

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- Much innovation policy is still very linear (knowledge push rather than demand pull)
- Excessive focus on funding research and innovation projects, neglects other factors that might affect innovation (demand, competition, regulation, conflicting policies)
- The key/challenge is to mobilize/incentivize public and private resources (people, investments, actions, entrepreneurship, innovation, creativity, international partners) and to channel or nudge them towards desirable economic and social outcomes
- A big challenge is often scaling and the ability to handle serendipity
- Excessive focus on creating new domestic research rather than utilizing and recombining knowledge



# Questions for discussion

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- What do you want to achieve (Raise R&D spending, attract research and innovation resources, strengthen research and innovation, increase FDI...?)?
- What are special challenges/opportunities in your region/country?
- What is your timeframe?
- What factors can you influence?
- What role can/should the state assume in your country and how can/should it partner with other actors (academia, industry, society, internationally)?



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*Our society is managed by an administrative apparatus. That may be appropriate for handling current issues of resource allocation and providing social services. When that same apparatus has to tackle the future, it naturally does so in the only way it can: it allocates money in the established patterns, using precise rules and comforting control mechanisms. A fundamental reason why we get stuck is that we are trying to use an **administrative apparatus** where we actually need a **change agent**.*

Bertil Agdur, STU D-G 1971-75, cited from (Weinberger, 1997)





# What do you think?

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# Tack!

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