

Catching-up in the new phase of the energy transition?

Principles for policymaking

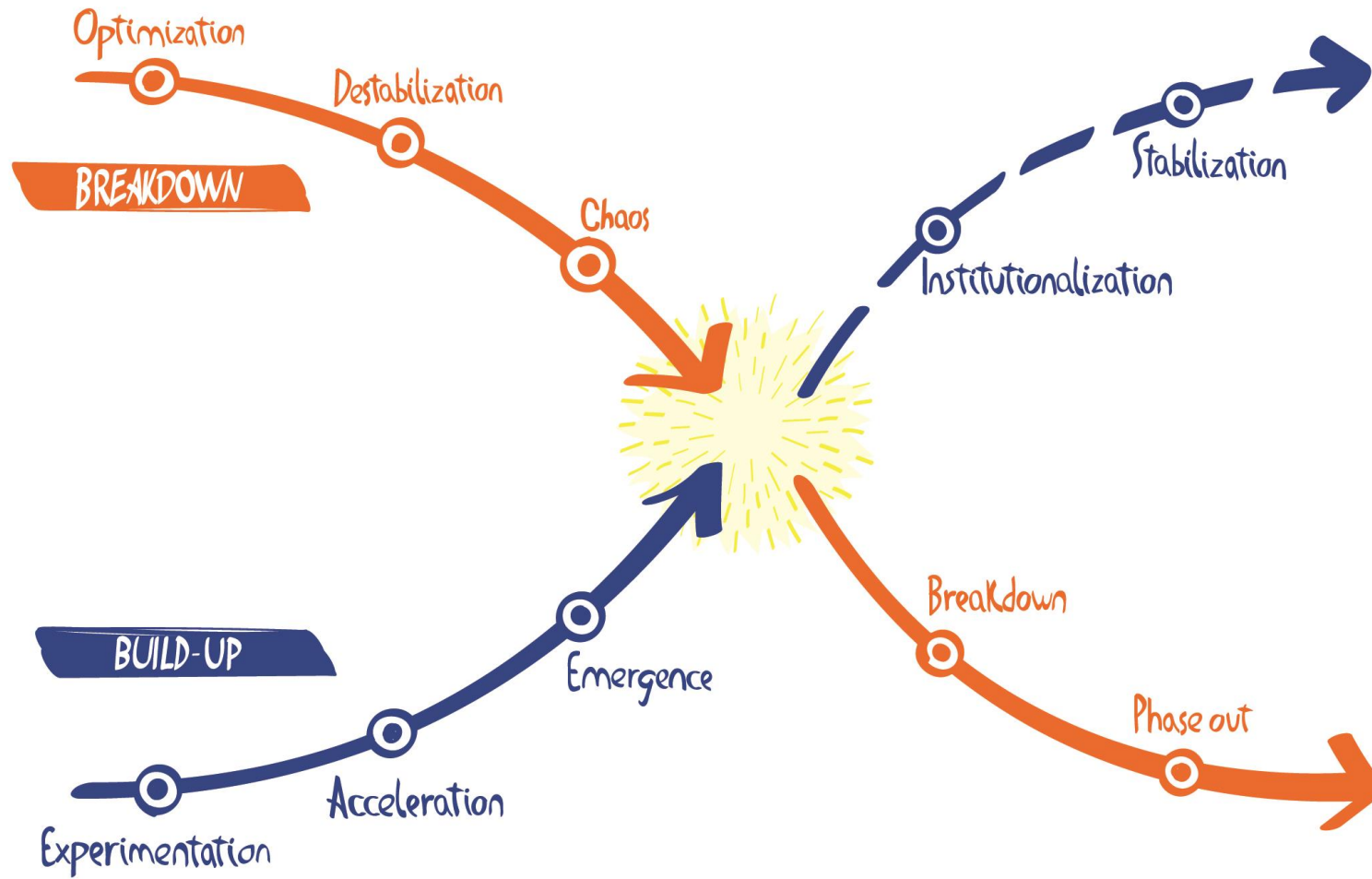
Teis Hansen

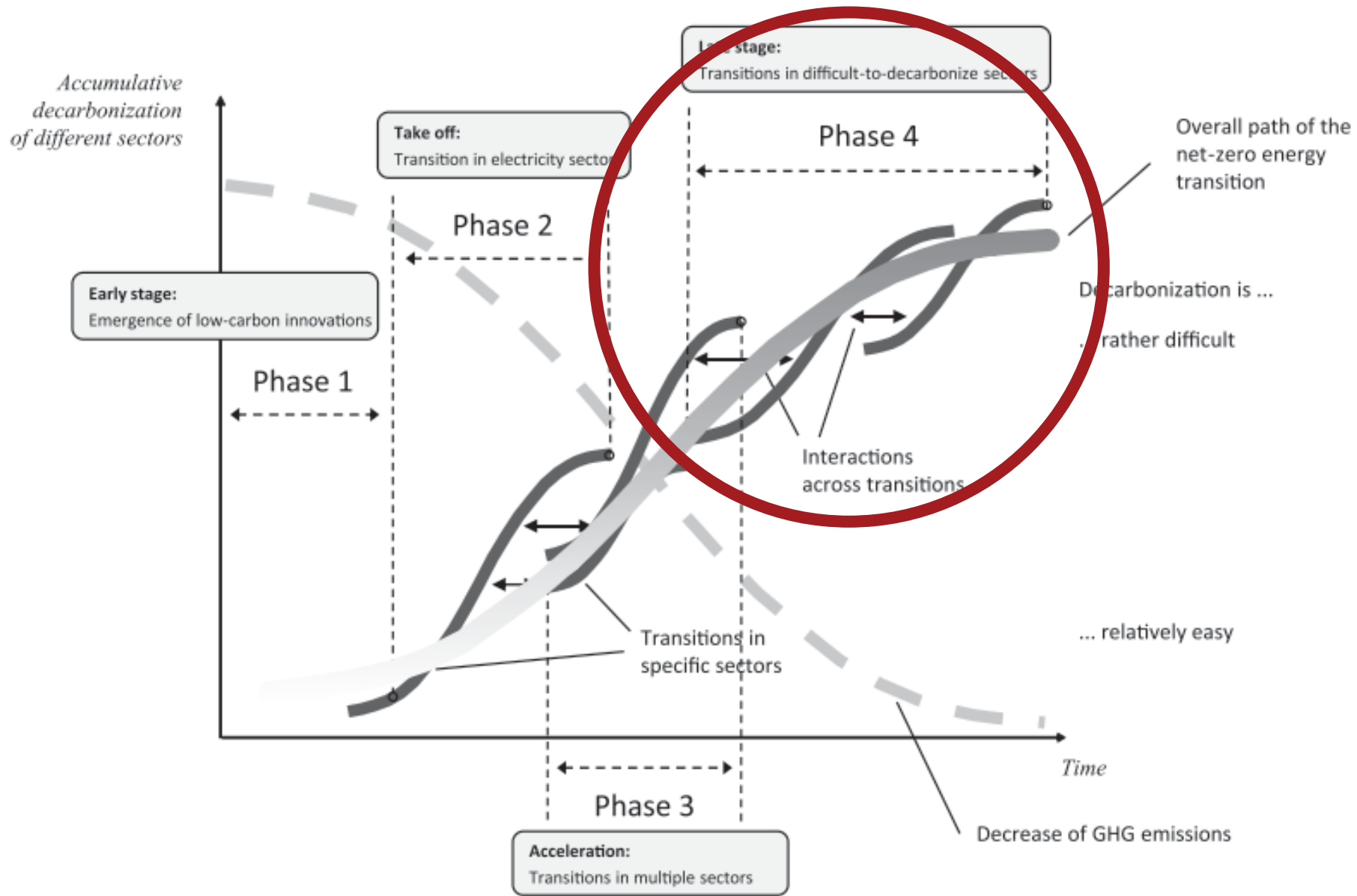
Department of Food and Resource Economics, University of Copenhagen

Department of Technology Management, SINTEF

UNIVERSITY OF COPENHAGEN

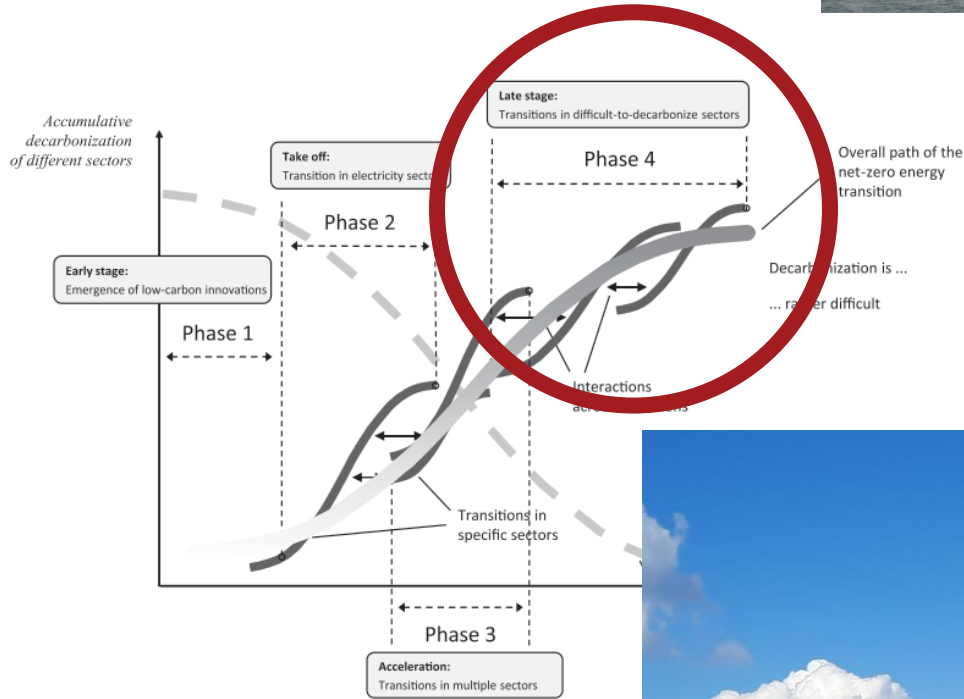








<https://flickr.com/photos/68359921@N08/48694054418>





Luister naar
16:06

Interview

De Indiase Tata-topman komt vaker op bezoek in IJmuiden: 'We staan niet onverschillig tegenover de zorgen hier'

TV. Narendran & Hans van den Berg | topmannen Tata Steel Deze zomer maakte Tata Steel bekend hoe het de staalfabriek in IJmuiden wil vergroenen en de uitstoot wil verminderen. „De verwachtingen hier zijn dat we meer doen dan door de wet is vereist”, zegt de hoogste baas TV. Narendran tijdens een bezoek aan Nederland.

Daan van Lent 18 augustus 2023 Leestijd 8 minuten



Drie dagen is TV. Narendran deze week op bezoek bij Tata IJmuiden. Narendran is de hoogste baas van Tata Steel, de Indiase aandeelhouder van het staalbedrijf in IJmuiden. De topman komt wel vaker op bezoek. Maar dan vliegt hij in voor een paar gesprekken en is hij weer weg. De laatste keer dat hij zo lang in IJmuiden bleef was in 2018, bij het honderdjarig bestaan van de hoogovens, toen kosten noch moeite werden gespaard om dat jubileum te vieren met de lokale bevolking.

„Toen was de sfeer heel anders”, memoreert Narendran. „Je voelde de trots voor het bedrijf.” Hij is zich welbewust dat de werknemers die trots nog wel hebben, maar de inwoners van Wijk aan Zee en andere omliggende gemeenten niet meer.

2018 was ook het jaar van de zwarte grafietregens, die inmiddels zijn gestopt maar destijds de inwoners alarmeerden. Daarna kwamen de rapporten die de uitstoot van kankerverwekkende stoffen als PAK's en lood en van fijnstof blootlegden. Tata zorgt bovendien voor ruim 7 procent van de CO₂-uitstoot in Nederland en is daarmee de grootste individuele bijdrager aan klimaatverandering in Nederland. De onrust nam toe, bezorgde inwonersgroepen werden luider, milieubewegingen meldden zich vaker met acties aan de poort, de Omgevingsdienst verscherpte het toezicht. Tata geldt in brede kring tegenwoordig als 'de grote vieze fabriek'.



<https://www.flickr.com/photos/worldsteel/27105002477>

<https://www.nrc.nl/nieuws/2023/08/18/de-indiase-tata-topman-komt-vaker-op-bezoek-in-ijmuiden-we-staan-niet-onverschillig-tegenover-de-zorgen-hier-a4172295>

Table 2. Policy mixes adapted to resource requirements for catching-up in three industry types

System resource	Process-intensive products	Design-intensive products	Complex product systems (CoPS)
Knowledge	<ul style="list-style-type: none"> • Government-funded basic science and R&D programs • Supporting the quick translation of new technologies to the manufacturing process • Support for entrepreneurial experimentation in private start-ups • Support imports of capital equipment, turn-key plants, and/or knockdown kits 	<ul style="list-style-type: none"> • Government-funded applied research and field trial programs • Cluster programs to ensure knowledge transfer between integrated equipment manufacturers and specialized component suppliers • Support for user-producer interaction through intermediary actors • Support licensed production of foreign equipment technology, creation of Joint Ventures 	<ul style="list-style-type: none"> • Government-funded pilot plant programs • Support for skills development in project contracting, and related management training programs • Support for feasibility studies and infrastructure need assessments • Support Foreign Direct Investment, openness of product markets to foreign competition
Market access	<p><i>Promotion of domestic markets:</i></p> <ul style="list-style-type: none"> • Policies aimed at creating domestic mass markets to facilitate economies of scale in production <p><i>Promotion of export market:</i></p> <ul style="list-style-type: none"> • Establishment of export processing zones with state-of-the-art trade infrastructure • Interventions to decrease factor costs (raw materials, capital costs, labor costs, energy costs) 	<p><i>Promotion of domestic markets:</i></p> <ul style="list-style-type: none"> • Policies aimed at creating domestic niche markets to facilitate learning-by-doing in denser user-producer-intermediary interaction <p><i>Promotion of export market:</i></p> <ul style="list-style-type: none"> • Supporting the international diffusion of domestic products through export credit assistance, tied aid 	<p><i>Promotion of domestic market:</i></p> <ul style="list-style-type: none"> • Public procurement with explicit technology innovation requirements • State co-financing of innovative pilot plants and demonstration projects <p><i>Promotion of export market:</i></p> <ul style="list-style-type: none"> • Participation in international pilot plant projects and technology consortia (e.g., international space programs or pilot projects in nuclear fusion or carbon capture and storage technologies)
Financial investment	<ul style="list-style-type: none"> • Providing low-cost loans for plant expansion, equipment purchases • Creating a supportive private equity and venture capital system 	<ul style="list-style-type: none"> • Supplying patient capital, long-term investment in niche technologies • Introducing renewable energy portfolio standards for utilities / SOEs 	<ul style="list-style-type: none"> • Direct plant co-financing to promote project-specific learning • Incentivizing incumbents to provide long-term investment capital
Technology legitimacy	<ul style="list-style-type: none"> • Adopting international quality certification & standards systems • Mobilizing policy/public support based on success stories in export markets 	<ul style="list-style-type: none"> • Setting high-quality requirements in public tender programs • Mobilizing policy/public support based on success stories in local market niches 	<ul style="list-style-type: none"> • Facilitating independent third-party assessment of pilot plant projects • Mobilizing policy/public support based on pilot performance, media coverage

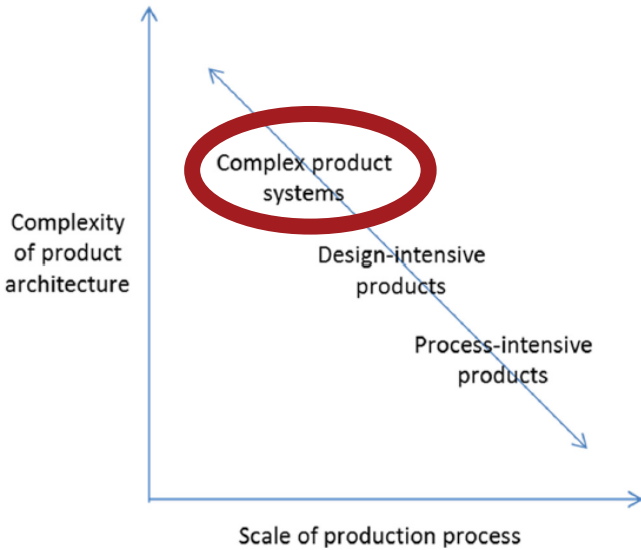


Figure 1. Stylized technology classification. Source: Based on Huenteler et al. (2016).

So, what's special about this phase of the energy transition?

<https://www.wallpaperflare.com/brass-colored-false-ceiling-complexity-chaos-structure-geometric-wallpaper-zqkic>



<https://www.flickr.com/photos/22711505@N05/52095238330>



Three principles for policymaking

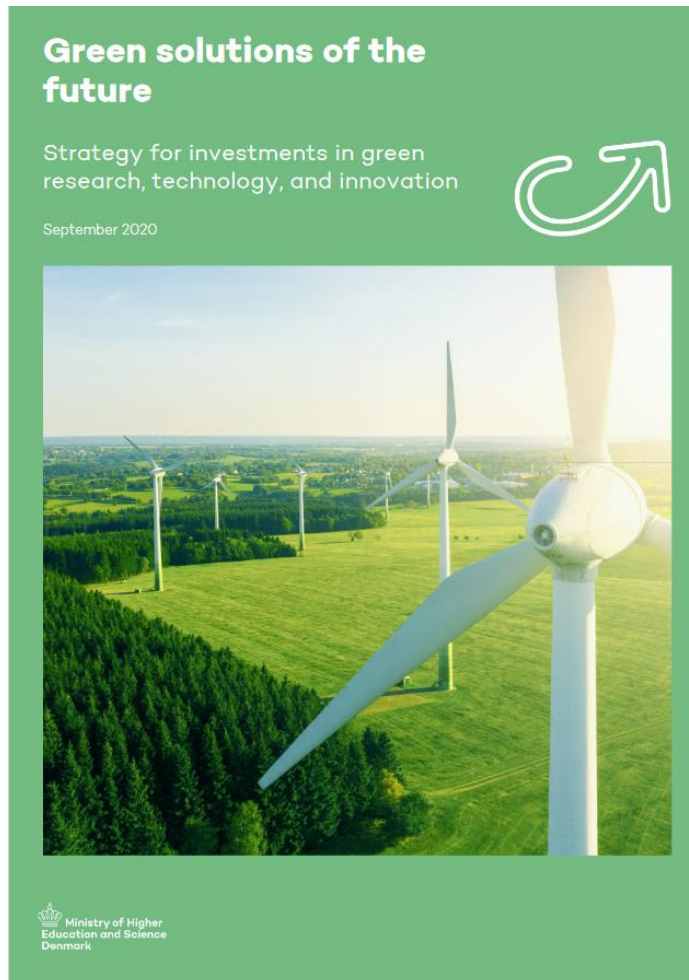
1. **Direction** for change needed
2. **Coordination** of policies central
3. Building capacity for **advocacy**

1. Direction for change

- 'Missions' as one approach to achieving directionality
 - Set societal goals
 - Make these goals ambitious
 - Identify measures to track progress
 - Set a timeframe for the missions



1. Direction for change



- Missions
 - Carbon capture and storage or utilization
 - Power-to-X
 - Climate and environment-friendly agriculture and food production
 - Recycling and reduction of plastic waste

How can we improve the process of formulating and selecting missions?



The Danish Government's Expert Group on the Role of Research in the Green Transition

1. Direction for change

- Making sure politicians have the possibility to make better informed decisions
- → Analytical framework allowing for comparison of potential missions
- Three core questions to consider?
 - Fit of mission to strategic focus?
 - Preconditions for mission success?
 - Potential of mission impact?

The main point:

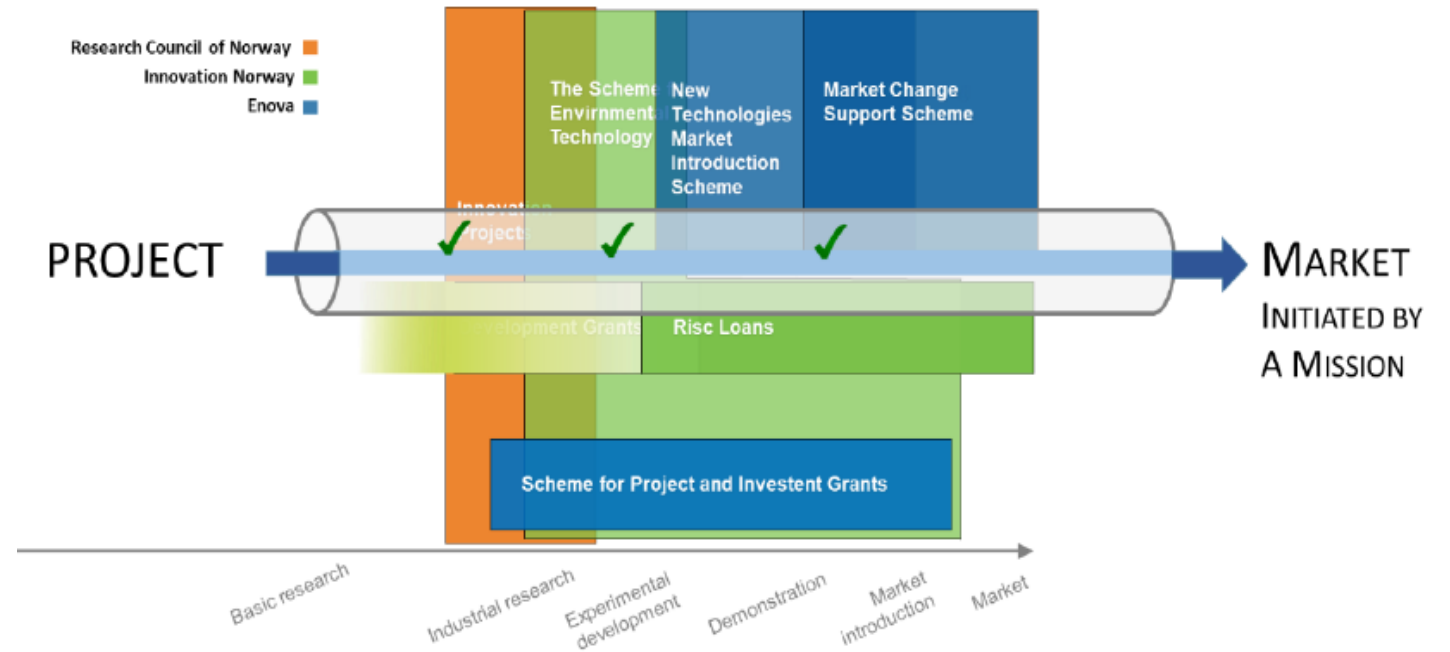
Setting a direction requires a more thorough analytical foundation than a traditional 'hands-off' approach

2. Coordination of policies



The Pilot-E program

- Research Council of Norway
 - Role: support R&D
 - Instrument: Innovation projects
- Innovation Norway
 - Role: develop business/industry
 - Instrument: Environmental technology scheme
- Enova
 - Role: accelerate implementation & commercialisation
 - Investment grants

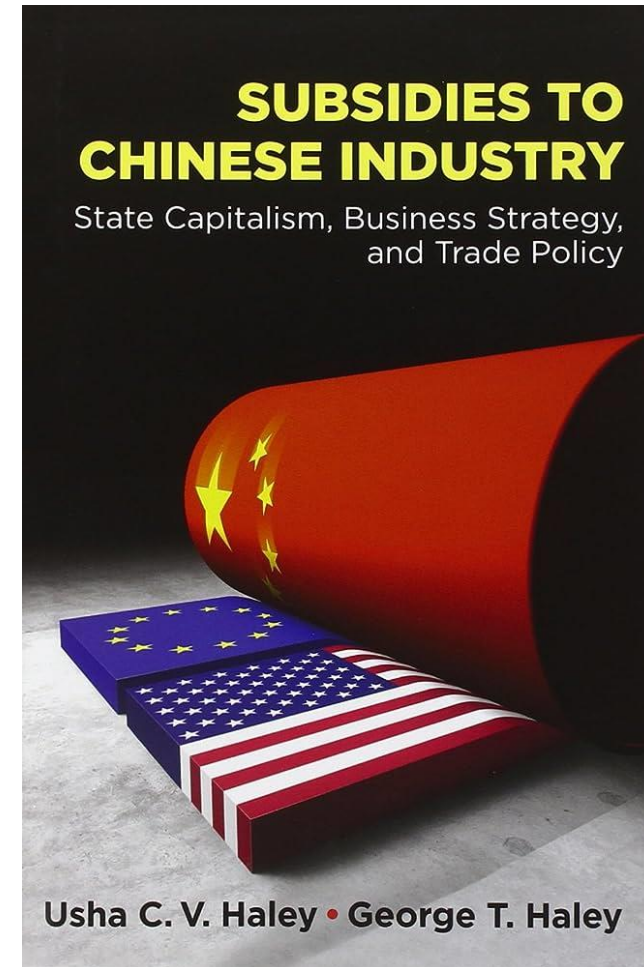
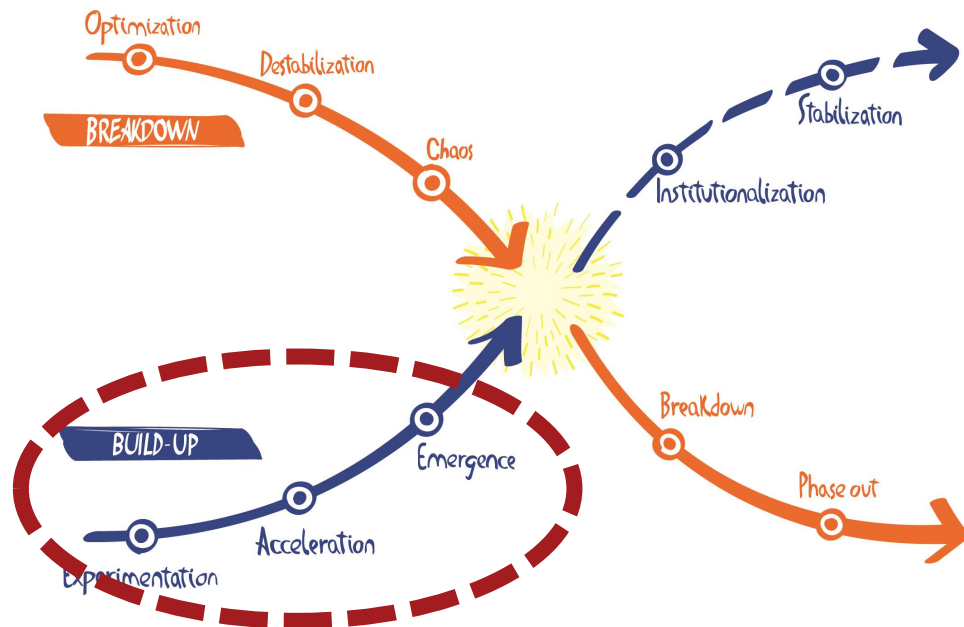


Pilot-E aims to support innovation in areas in which large investments are expected and where there is a need for new technology and solutions

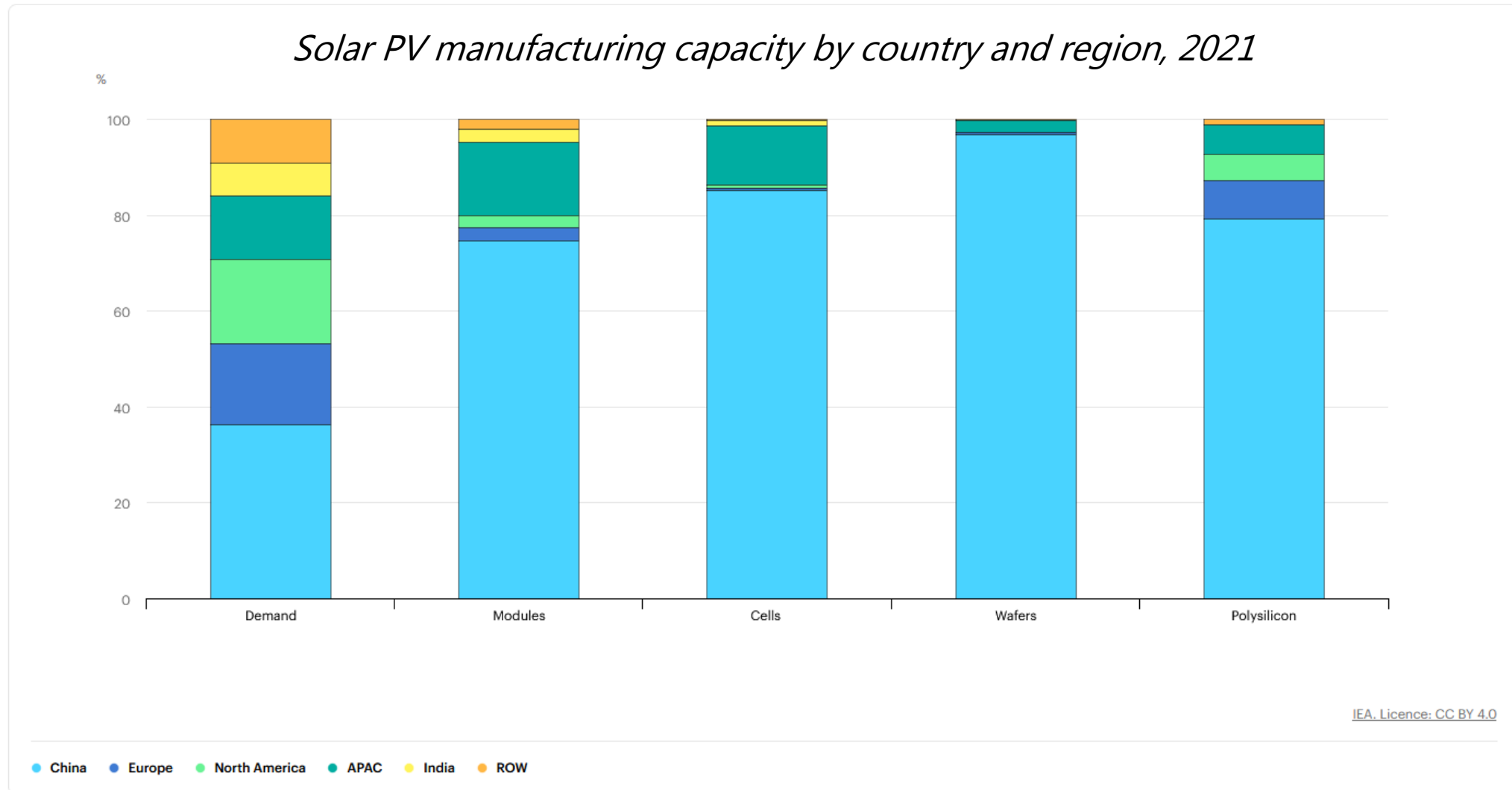


3. Building capacity for advocacy

- Why is this important?
 - Overcoming vested interests
 - Policy change conditioned by private sector action



3. Building capacity for advocacy



3. Building capacity for advocacy

World's Top 10 EV Battery Producers

Market share of top EV battery producers in 2022.

Market Share

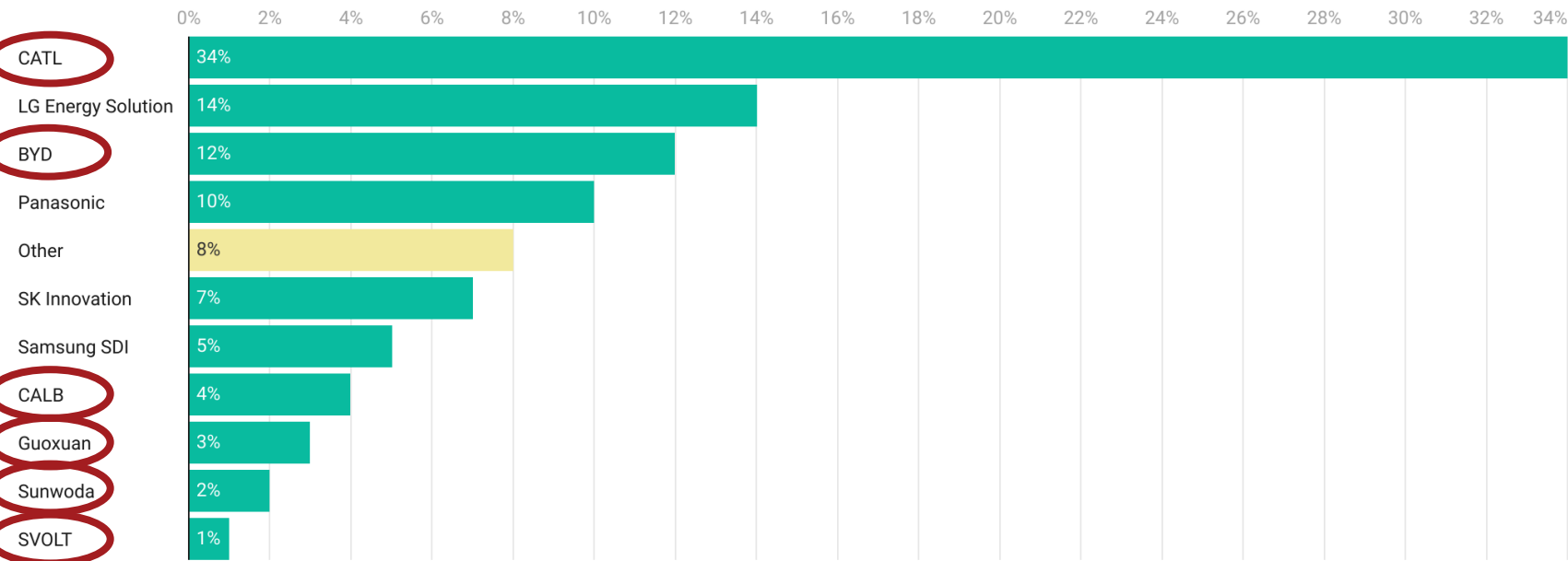


Chart: CleanTechnica • Source: SNE Research • Created with Datawrapper

CleanTechnica

- Adaptability of Chinese policy central
 - Policymakers observe changing needs and adjust policies
 - Industry actors actively engage in shaping modifications to policy frameworks

How can policy build capacity for this?

Final thoughts

- As the energy transition progresses, new windows of opportunity open
 - Complexity; speed; market power concentration
- Policymaking needs to be directed, coordinated and focused on building capacity for advocacy

NB! These are policy challenges that all countries struggle to get right!

Thank you!

Teis.Hansen@ifro.ku.dk