

Sustainability Transitions

Challenges with making them happen

Anna J. Wieczorek

School of Innovation Sciences, Eindhoven University of Technology
SMARTER webinar, 10 November 2020



Overview

- New problems, new approaches
- Sustainability Transitions
 - The theory
 - The policy
 - The practice
- A few conclusions

From end-of-pipe to system innovation

New challenges, new responses

Response Phase Focus of Attention Main Actors Driving Philosophy

Reactive

End-of-pipe

Specialists

Minimisation

Receptive

Process

Managers

Optimisation

Constructive

Product/ eco-design

Sector

Acceleration

Pro-active

Systems

Society

Vision



Sustainability transitions: emerging field

Major research areas 'STRN agenda'

- **Understanding transitions *)**
- **Governing transitions *)**
- Power, agency and politics in transitions
- Civil society, culture and social movements in transitions
- Organisations and industries in sustainability transitions
- Transitions in practice and everyday life
- Geography of transitions: spaces, scales, places
- Ethical aspects of transitions: distribution, justice, poverty
- Methodologies for transitions research
- **MISSING: Making transitions happen *)**

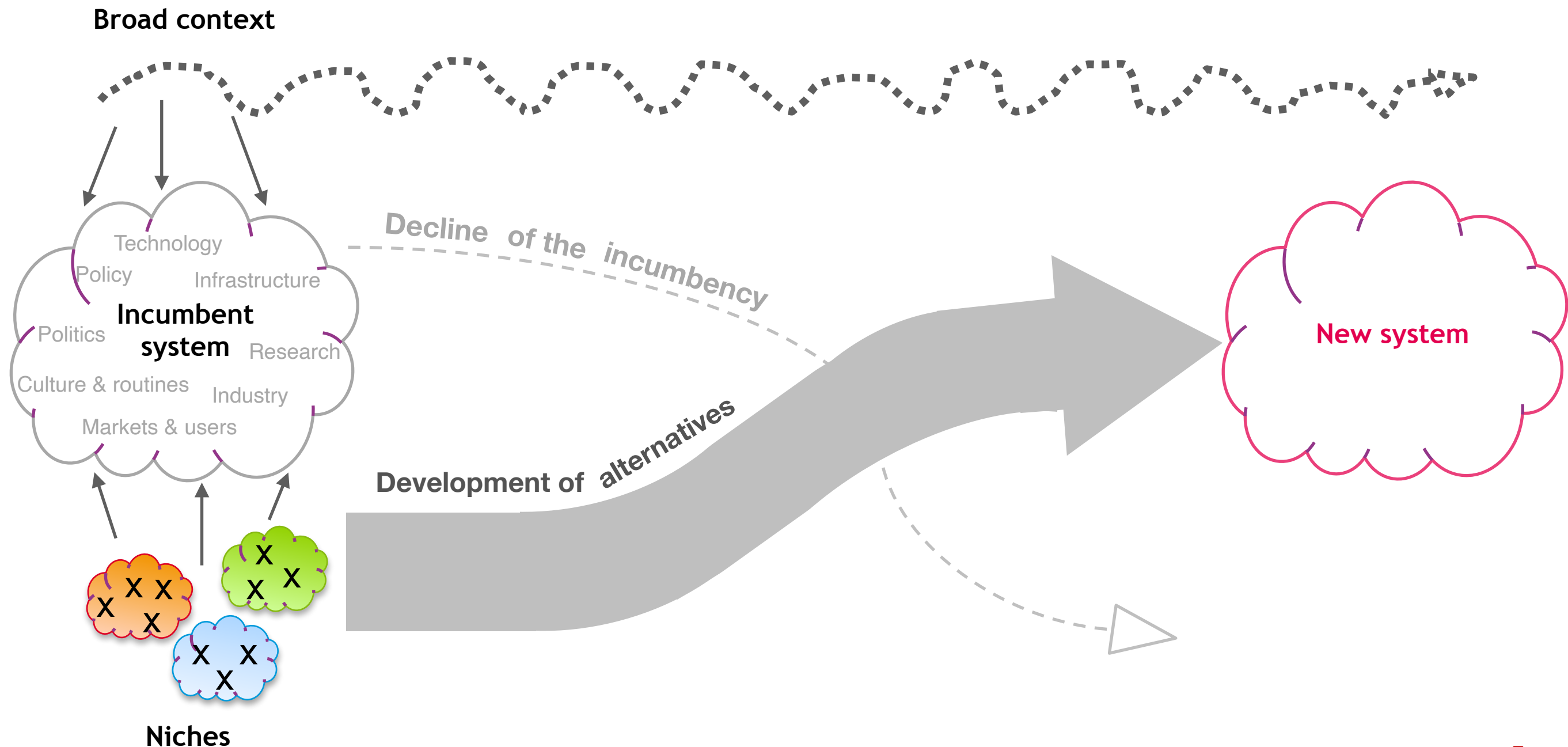


Understanding transitions

The theory

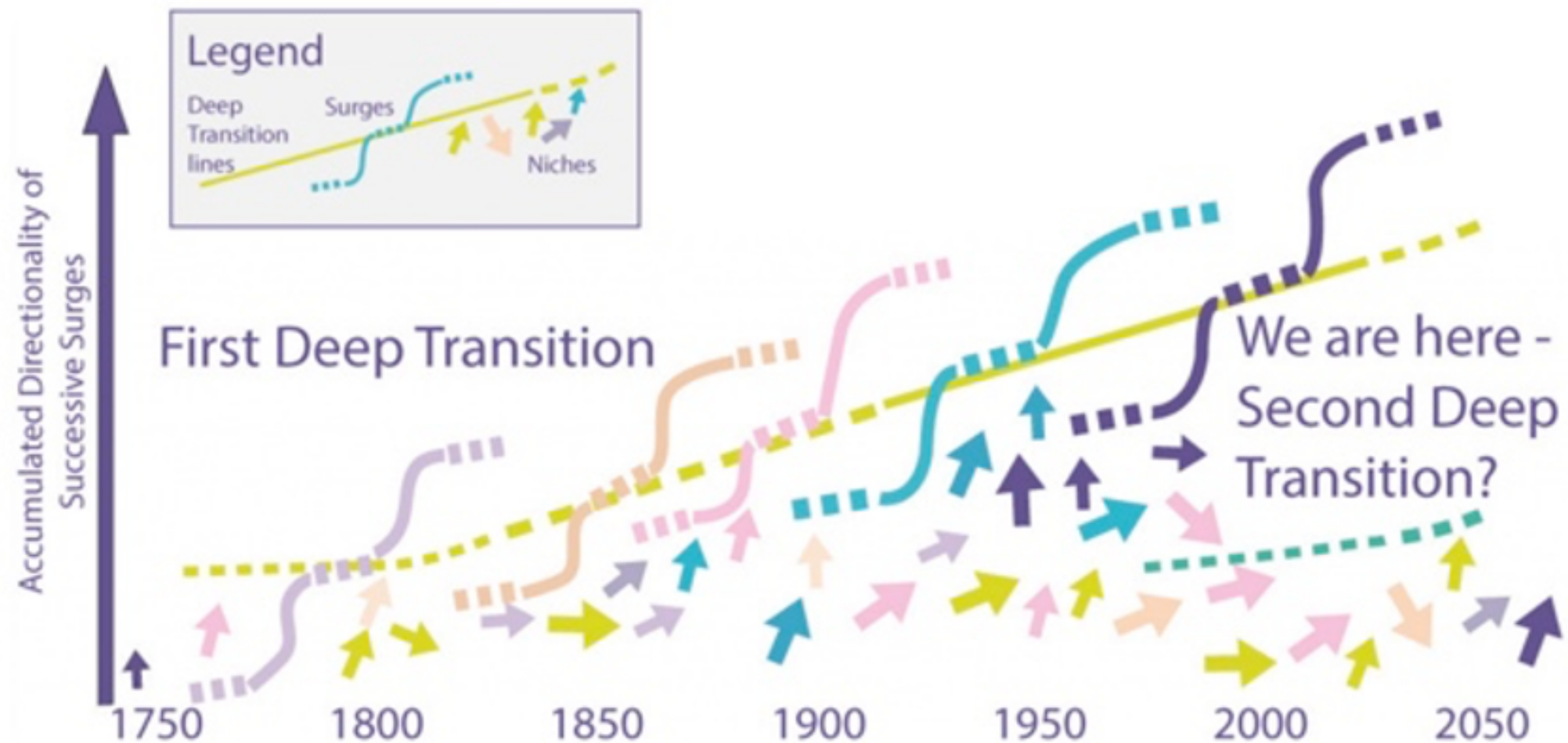
Understanding transitions

Basic frame for research on change in systems providing human needs



Deep transitions

An alternative development pathway emerging



From 1st to 2nd deep transition

fossil fuels

renewables

mass product.

specialised production

labour productivity

resource efficiency

centralisation

decentralisation

ownership

sharing

competition

collaboration

linear waste prod

circular economy

Global Value Chains

localised production

Governing transitions

The policy

Two powerful framings for S&T policy

	Linear model	Innovation Systems
Model of innovation	<ul style="list-style-type: none"> ✓ Linear, neo-classical economics ✓ R&D source of innovation ✓ Knowledge - public good ✓ Technology - application of science 	<ul style="list-style-type: none"> ✓ Interactions, feedback, learning ✓ Context matters: institutions explain why actors behave as they do ✓ Geo differences in capacity to innovate, -> competition b'n nations
Policy goal	<ul style="list-style-type: none"> ✓ Economic growth, prosperity 	<ul style="list-style-type: none"> ✓ Address consequences of modern economic growth ✓ Competitiveness of IS
Rationale	<ul style="list-style-type: none"> ✓ Market failure 	<ul style="list-style-type: none"> ✓ System failure, systemic problems
Actors & roles	<ul style="list-style-type: none"> ✓ State - new role in financing R&D ✓ Private sector - transform discoveries into innovations 	<ul style="list-style-type: none"> ✓ Innovation - collective: all involved ✓ R&D, Mode 2, Tripple H, entrepreneurs ✓ State.: expand competitive advantage of domestic firm
Policy instruments	<ul style="list-style-type: none"> ✓ R&D focused ✓ Favourable tax treatment, direct subsidies, IPP to appropriate innovation, TA, regulation 	<ul style="list-style-type: none"> ✓ Techn. diffusion & absorptive capacity ✓ Education and training ✓ Public procurement, cluster policies, TT, Foresight, TA,

What's problematic with these paradigms?

- Directionality based on economic growth
 - Neglect of societal challenges
 - Continued focus on technologies, industry development
 - Lack of reflexivity
-
- No drivers for new ways of system organisation
 - No support to transformative system change

Transformative policy

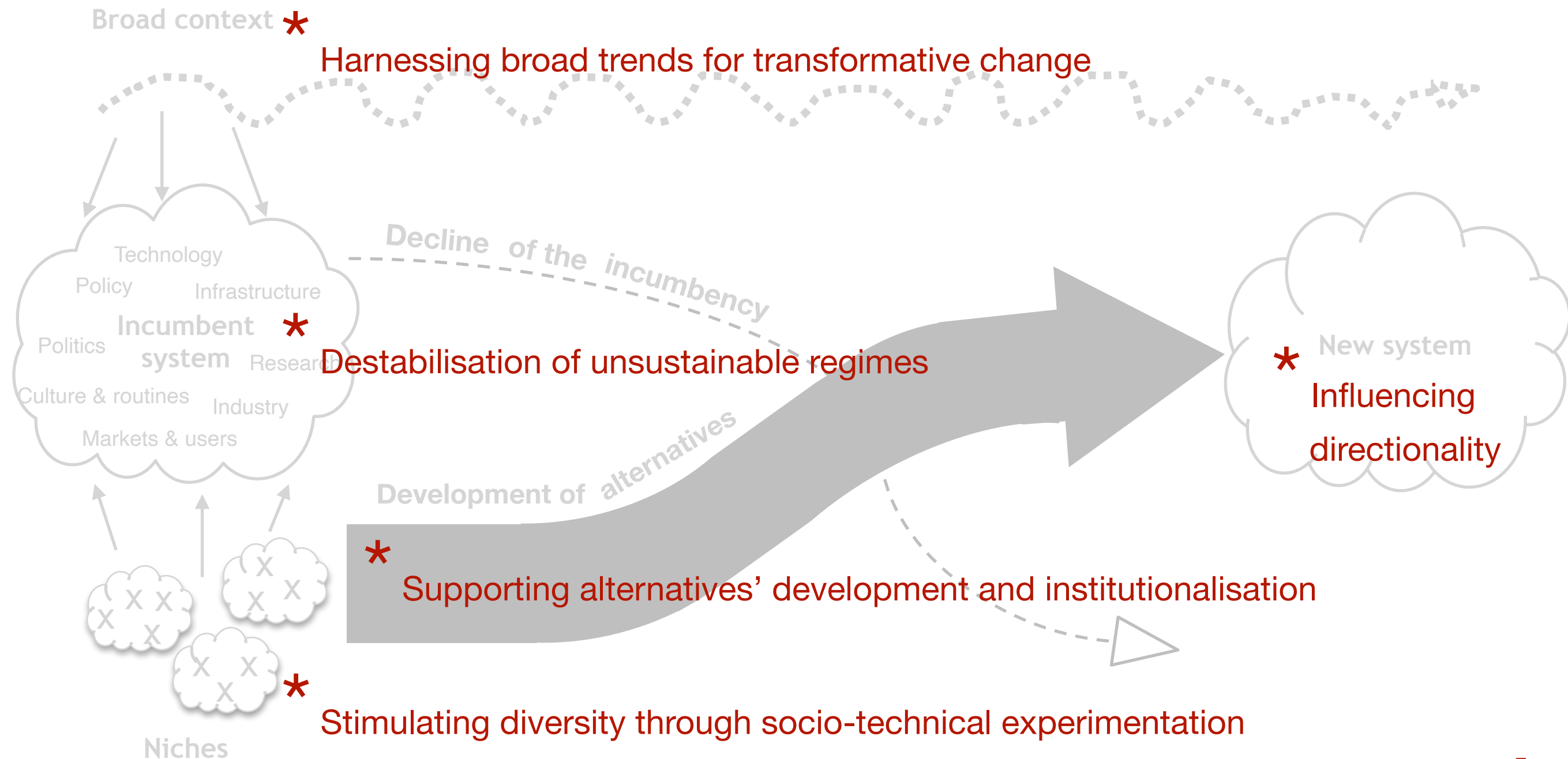
	Linear model	Innovation Systems	Transformative Change
Model of innovation	<ul style="list-style-type: none"> ✓ Linear, neo-classical economics ✓ R&D source of innovation ✓ Knowledge - public good ✓ Technology - application of science 	<ul style="list-style-type: none"> ✓ Interactions, feedback, learning ✓ Context matters: institutions explain why actors behave as they do ✓ Geo differences in capacity to innovate, -> competition b'n nations 	<ul style="list-style-type: none"> ✓ Radical socio-technical system change ✓ Less focus on products, processes, firms, R&D, and optimisation ✓ Beyond catch-up: we all develop ✓ Means: RRI
Policy goal	<ul style="list-style-type: none"> ✓ Economic growth, prosperity 	<ul style="list-style-type: none"> ✓ Address consequences of modern economic growth ✓ Competitiveness of IS 	<ul style="list-style-type: none"> ✓ Address societal challenges ✓ Address externalities of innovation ✓ Embed processes of change in society ✓ Adaptability, collective search, societal learning, anticipating a diversity of options, no picking winners
Rationale	<ul style="list-style-type: none"> ✓ Market failure 	<ul style="list-style-type: none"> ✓ System failure, systemic problems 	<ul style="list-style-type: none"> ✓ Transformation failures
Actors & roles	<ul style="list-style-type: none"> ✓ State - new role in financing R&D ✓ Private sector - transform discoveries into innovations 	<ul style="list-style-type: none"> ✓ Innovation - collective: all involved ✓ R&D, Mode 2, Tripple H, entrepreneurs ✓ State.: expand competitive advantage of domestic firm 	<ul style="list-style-type: none"> ✓ Society responsible ✓ Importance of users, intermediaries
Policy instruments	<ul style="list-style-type: none"> ✓ R&D focused ✓ Favourable tax treatment, direct subsidies, IPP to appropriate innovation, TA, regulation 	<ul style="list-style-type: none"> ✓ Techn. diffusion & absorptive capacity ✓ Education and training ✓ Public procurement, cluster policies, TT, Foresight, TA, regulations 	<ul style="list-style-type: none"> ✓ Creating new markets; destabilising incumbency, support experiments ✓ Policy mixes, PPPs, constructive foresight for early shaping of innovation

Making transitions happen

The practice

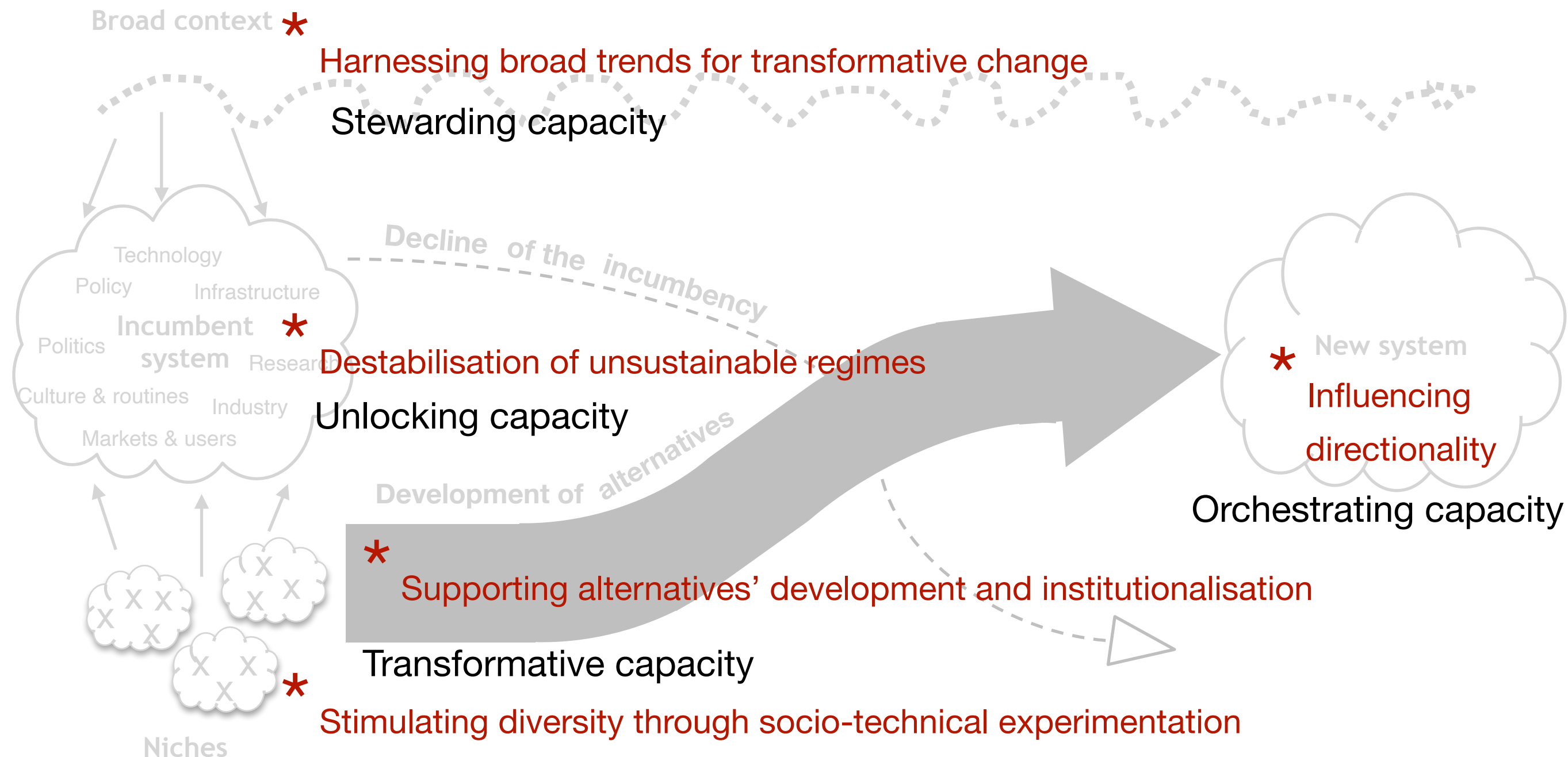
Making transitions happen

Five intervention points



Making transitions happen

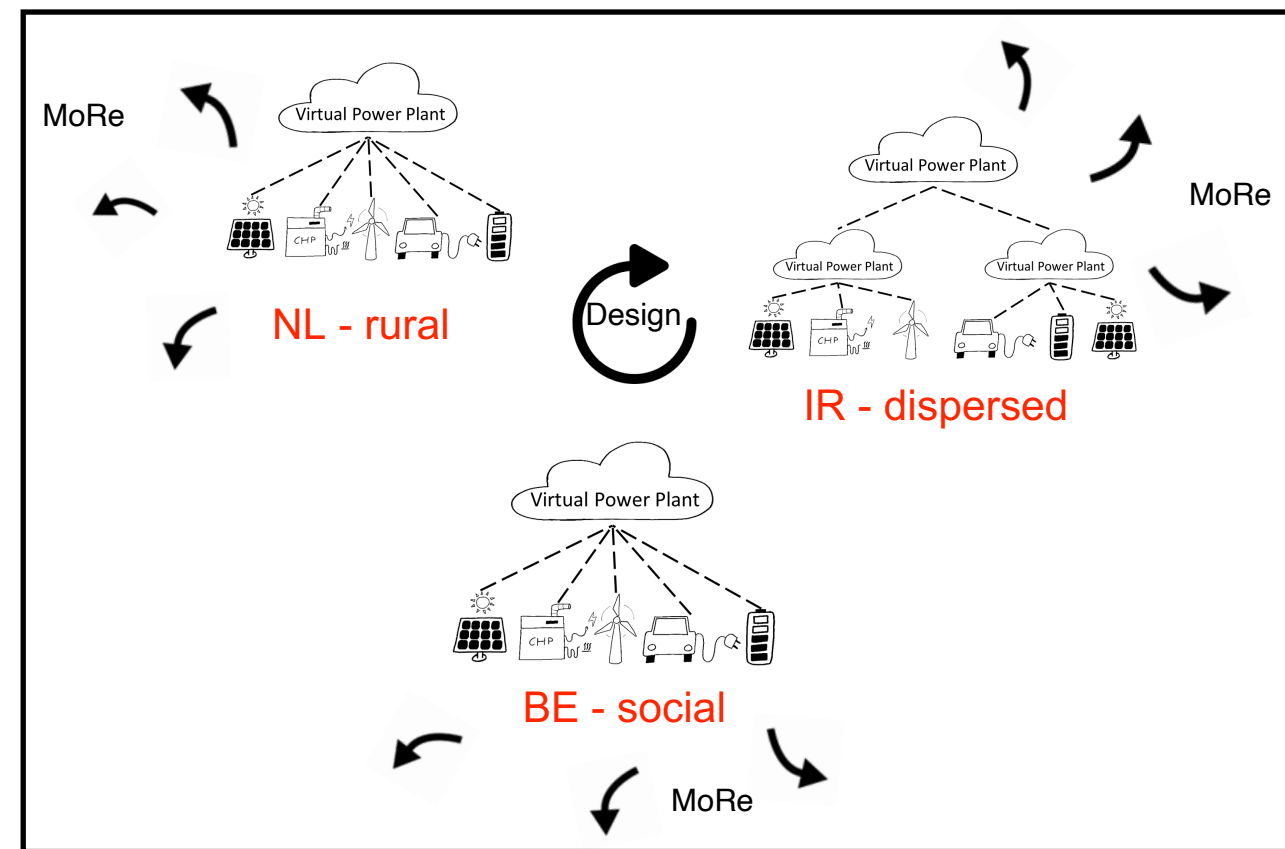
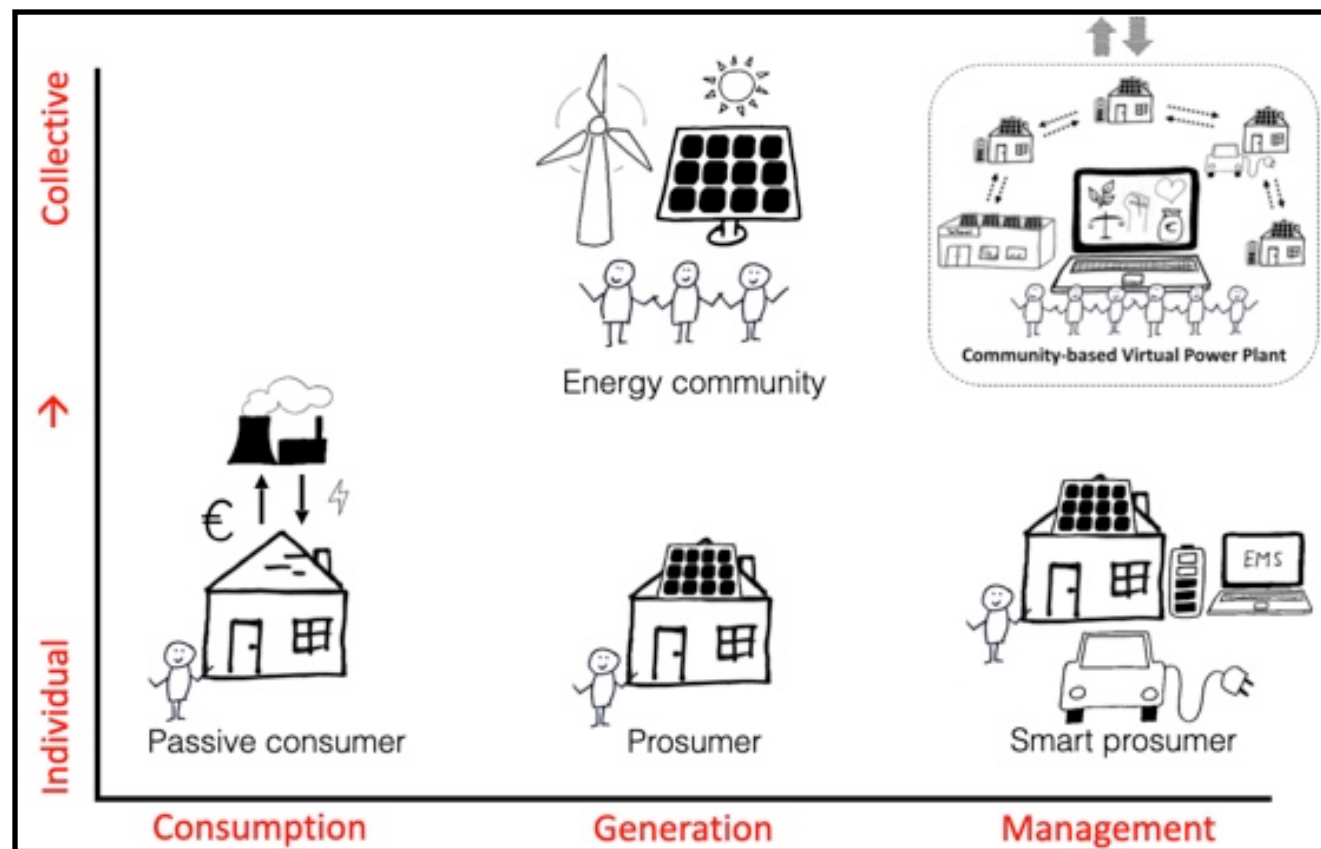
Transformative capacities



Stimulating diversity through experiments

A community-based Virtual Power Plant

- Radical socio-technical innovation
- Local scale to prove the concept
- Multi-actor: municipalities, researchers, industry, cooperatives, DSOs
- Aiming at radical decarbonisation and democratisation of the energy system



Governance challenges

Lost in translation

Context

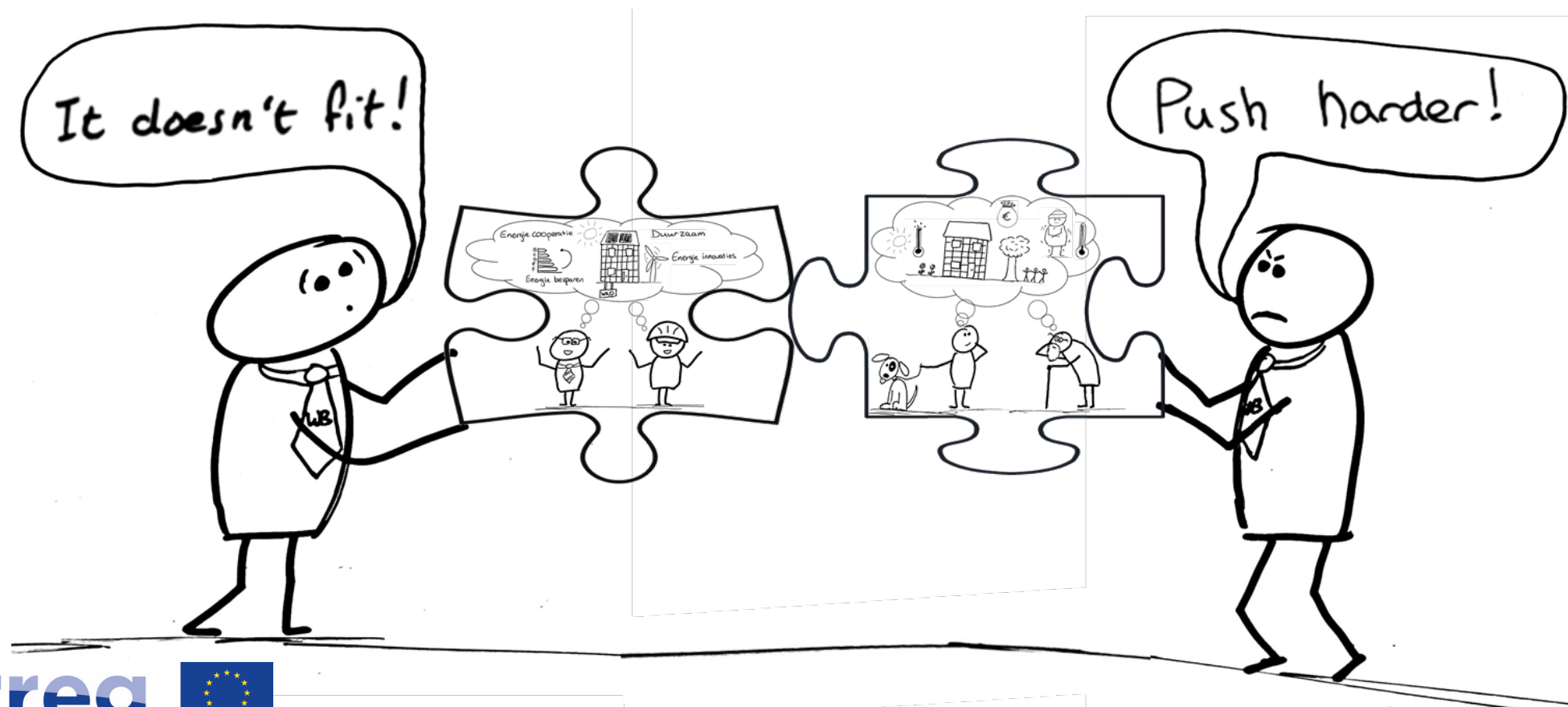
Unlocking capacity missing

Locked-in: reg. framework; overwhelming market power of FF, supply-driven market model, balancing the grid oriented

Community

Transformative capacity missing

Internally unorganised, ideologically driven, lack critical mass, confined to niches, small, discriminated



Influencing directionality

The Dutch Energy Transition

- Climate Agreement targets
- Renewable Energy Strategy RES
- Region
 - Close to people
 - Local energy
 - Local chances for employment
- 30 regions
- Citizens participation



Governance challenges

Difficult interactions b'n governance bodies

Municipalities – Energy Region

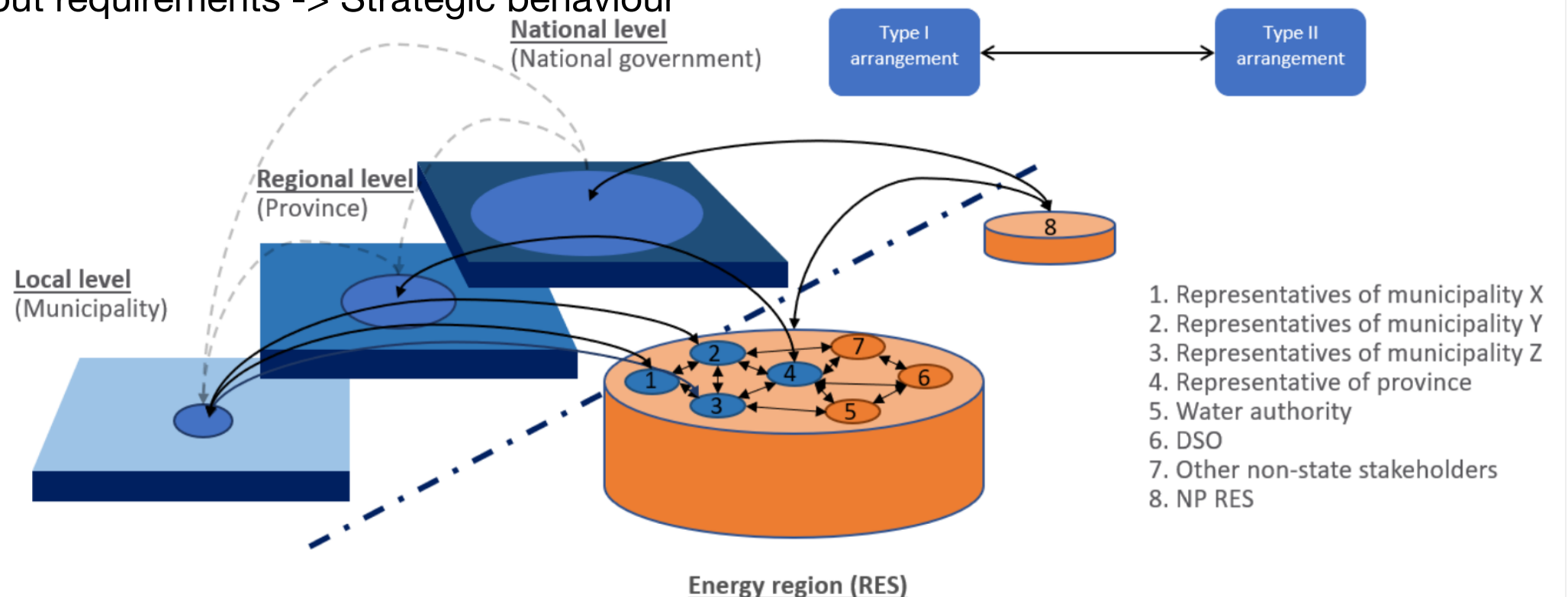
- Type I mentality
- Conflicting interests
- Low knowledge levels
- Weak accountability mechanisms

Municipalities – Province

- Ambiguous role
- Variety of approaches from restrictive to more flexible

National government – Energy Region

- Ambiguous role of nat gov
- Unclearity about requirements -> Strategic behaviour



Concluding

Region as a level for implementing transitions

- **Makes sense in the context of deep transitions:**
 - Local renewables, specialised & localised production, resource efficiency, decentralisation, sharing, collaboration, circular economy
 - Good context for learning & critical mass for local initiatives
- **But not w/t challenge**
 - Theory: better conceptualisation of RET
 - Policy: new governance approach
 - Practice: regional capacities, operationalisation of the theory

Concluding

Smart specialisation and transitions

- Entrepreneurial discovery vs experimentation
- Intentionality vs directionality
- Specialisation and diversification vs evolutionary dynamics
- Relational density vs niche
- Distributed capacities vs transformative capacities
- Top-down/bottom up combi
- Participation vs actors and agency
- Competitive advantage vs collaboration for common goal

Thank you!
@AnnaJWieczorek