

ESD – meeting 4

Engineering for
Sustainable Development

Want to enroll?
Visit www.tudelft.nl/tiscd

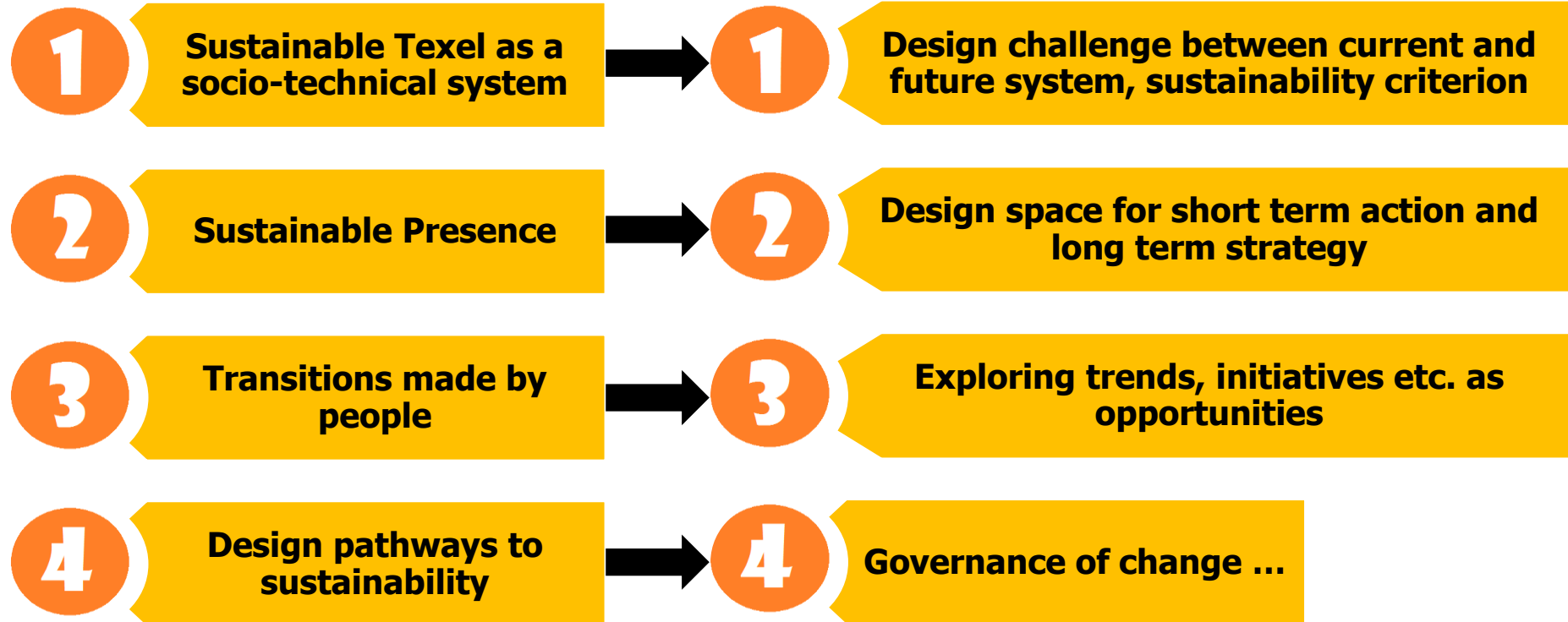
Deadline: October 8th 2015
Contact: ESD@tudelft.nl

- ✓ Learn in a non-traditional educational environment
- ✓ Apply your knowledge in Texel, a beautiful Dutch island.
- ✓ 5 ECTS Master Interdisciplinary Colloquium (WM0939TU)
- ✓ Compulsory for Technology in Sustainable Development Annotation
- ✓ Includes 1-week of fieldwork (expenses not covered: 100€)



- Institutional context of sustainability transitions - Nienke Saanen
- How Urgenda makes sustainability transitions happen - Antoine Maartens
- Designing pathways to sustainability

So far ...



Why change?

- To bridge between current unsustainable and future sustainable ST system
- To solve between what is and what ought – short term action to improve the current (sustainability) functioning of the ST system
- To steer from now to then – long term strategies to transition in a sustainable ST system

Governance of change

Borrás (2015: 25)

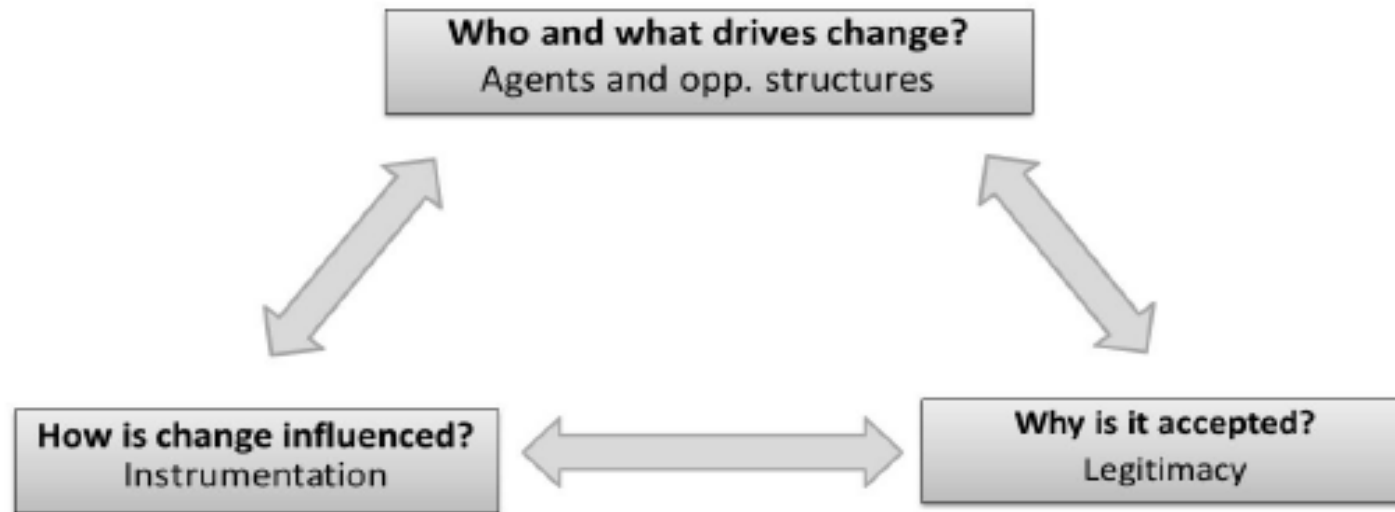


Figure 2.1 Three pillars to understand governance of change in STI systems

Governance

From government to governance:

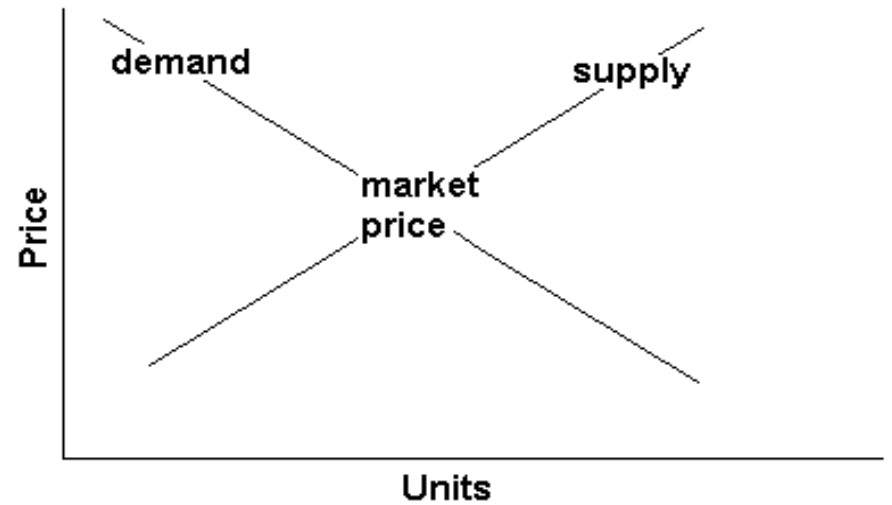
- “political institutions have limited capabilities to ‘steer’ because social systems have dynamics that are determined by all kinds of institutional, cultural, technological and other factors.”
- “systems are not influenced or changed through political institutions alone (as in ‘steering’), but by the interplay of societal and state actors”
- “this means that the boundaries of state and non-state action are becoming blurred”

(Borras & Edler, 2014, p13)

December 7, 2015

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Hierarchy, market, networks



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Hierarchy



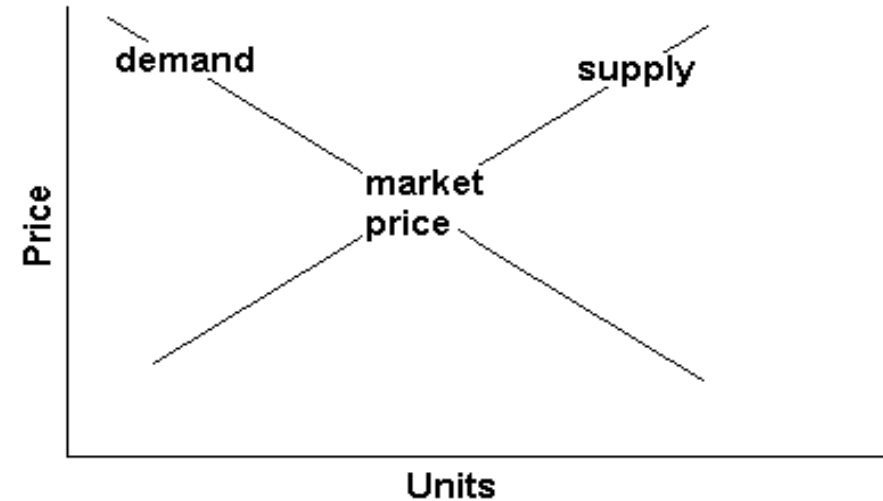
- Internal organisation (bureaucracy)
- External organisation (central planning, demand management by governments)
- The state: 'command and control'

- Problems:
 - Globalisation and deterritorialization erode nation states
 - Increased complexity and dynamics in society
 - Resistance of societal groups

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Market



- Market mechanism: optimal resource allocation through processes of demand and supply
- Coordination between private parties maximizing their private interest
- Liberalisation and privatisation of public goods and services
- Problems
 - Market failure, e.g. external effects and collective goods
 - Not everything can be expressed in supply and demand
 - Potential social inequality

Network



- Interdependent actors jointly search for satisfactory outcomes
- Governing by discussion and negotiation
- Public services in the hands of networks of public and private actors with diverging interests
- Problems:
 - Vulnerable interests insufficiently organised
 - Shifting of costs and risks on parties outside network
 - Lack of transparency (accountability, democracy)

Coordination and instruments

	Economic instruments	Communicative instruments	Legal instruments
Hierarchy			
Network			
Market			

Coordination and instruments

	Economic instruments	Communicative instruments	Legal instruments
Hierarchy	Tax on undesired behaviour	Information on behaviour change	Ban on undesired behaviour
Network	Subsidy for innovation	Creating a forum for negotiation	Codify outcomes of negotiation
Market	Enlarging freedom of choice for consumers	Increase transparency of markets	Norms for market actors

100% self sufficient

- Sustainability criteria: Define what 100% self sufficient in 2065 means for your topic
- What mix of technologies seems promising?
- What current trends and initiatives may be the basis for that?
- You're part of community
- Who is the blacksmith?
-we need to find the next partner in the sustainability challenge

Design 2 pathways for 1 sustainable future

1. Map the future ST (sub) system
2. Consider 2 very different governance arrangements, i.e. package of coordination and instruments
3. Set in-between stages and milestones on a time-line
4. For each arrangement, answer per stage:
 - Who and what drives change?
 - How is change influenced?
 - Why is it accepted?

Socio-technical systems

Articulated ensembles of **social** and **technical elements**, which interact with each other in distinct ways, are distinguishable from their environment, have developed specific forms of collective knowledge production, knowledge utilization and innovation, and which are oriented towards specific purposes in society and economy.

Borrás (2015: 11)

Next week, chapters report on

