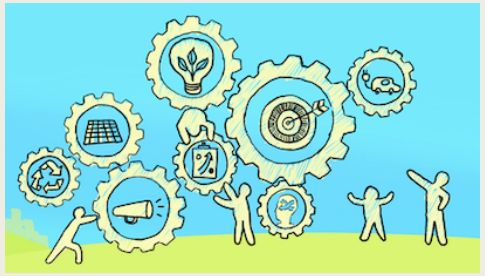


Collective system building

Guest lecture at Maastricht University

Julia Planko, PhD

20.05.2020

Contents

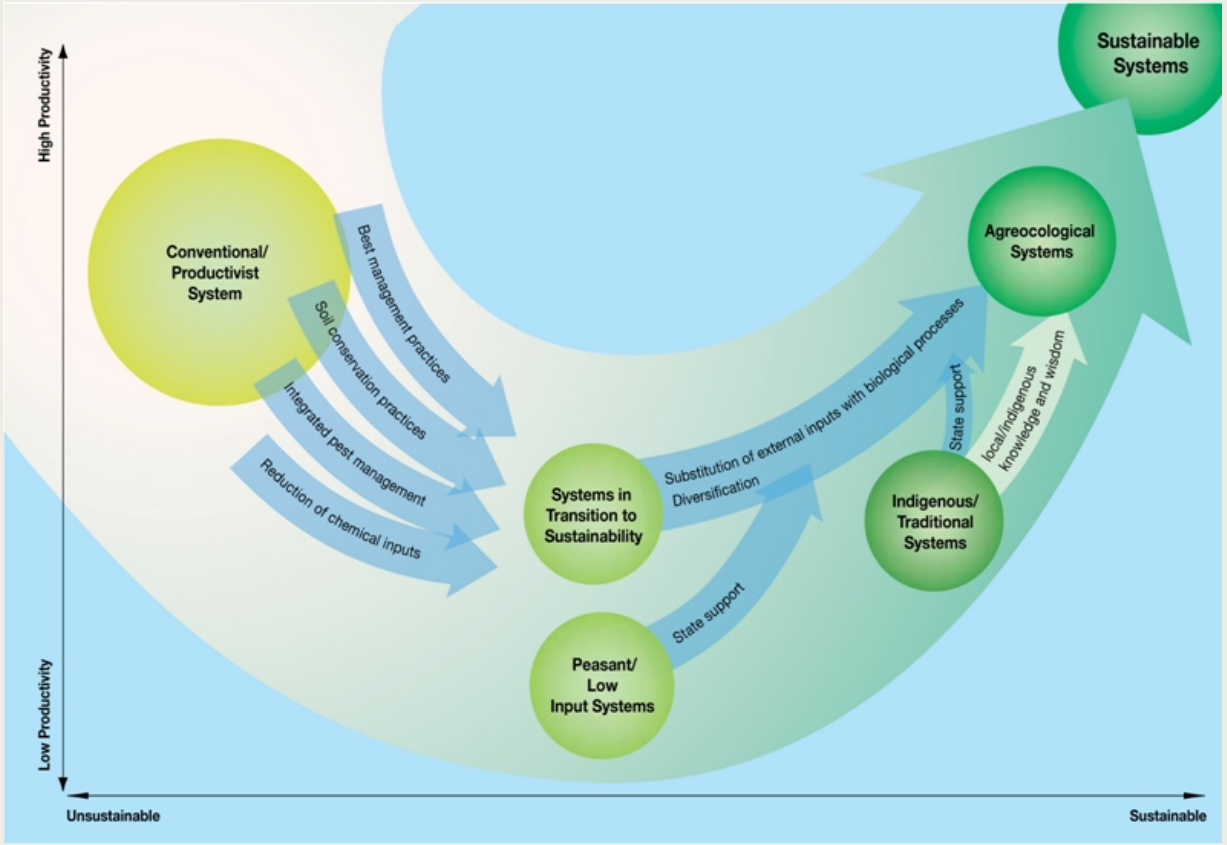
- Introduction sustainability transitions and systemic change
- The case of smart grids
- Collective system building framework and its activities
- Exercise
- Plenary / Feedback

Personal Background

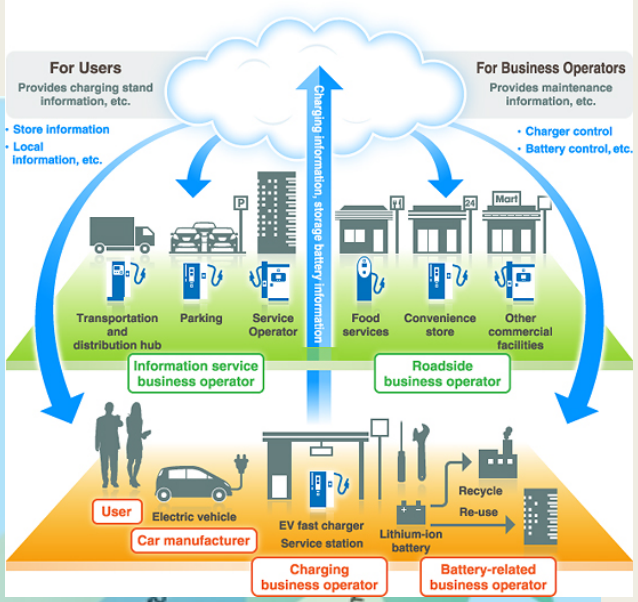
- PhD in Innovation Studies
  - *Copernicus Institute for Sustainable Development*
  - *Strategic collaboration in innovation ecosystems*
    - M.A. in International Economics
    - B.A. in International Business Managment
- Hogeschool van Amsterdam
  - *Senior researcher Circular and Sustainable Business*

Sustainability Innovations

Sustainability transitions



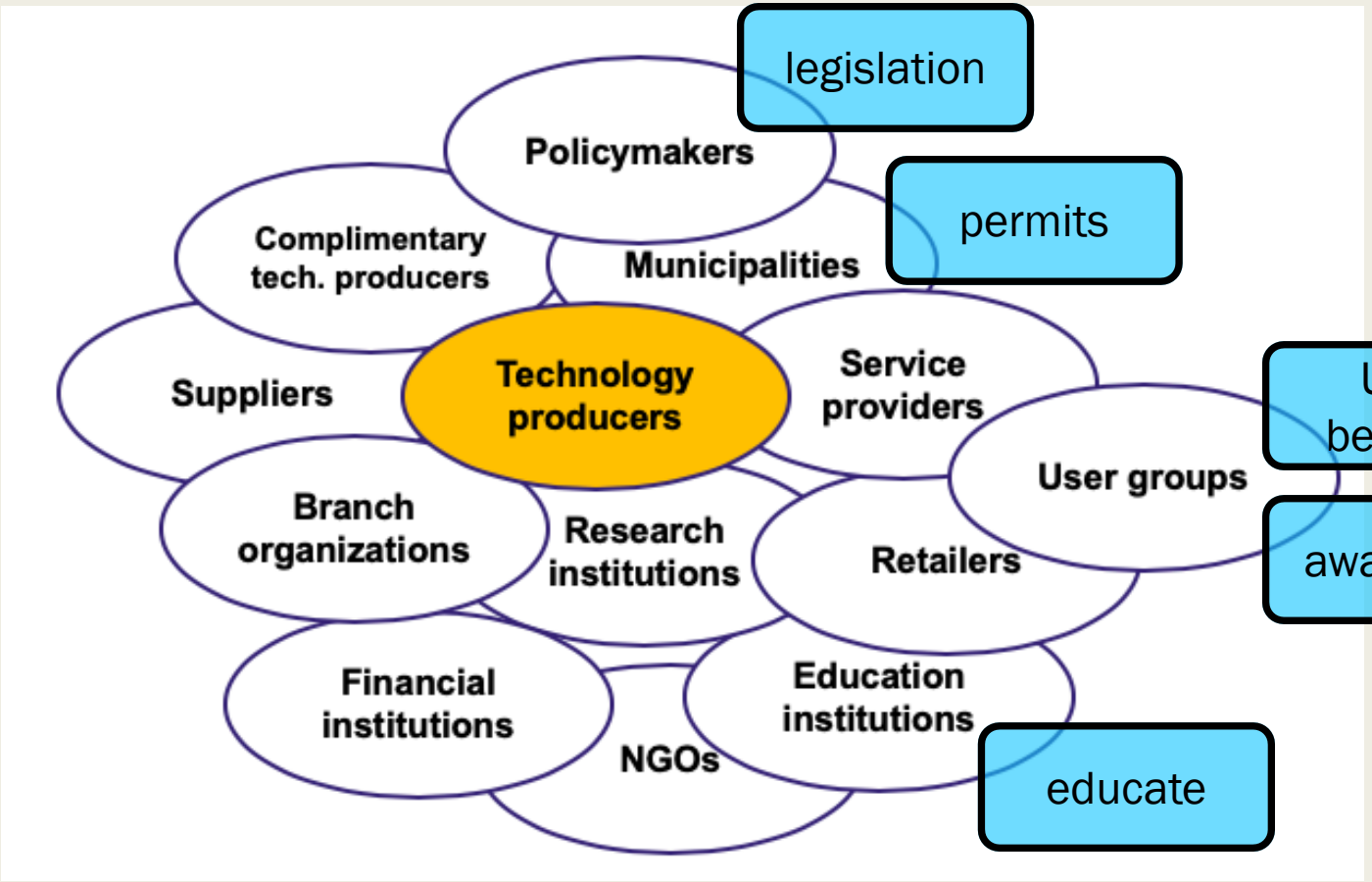
- **Sustainability transition** – restructuring systems of production and consumption to solve major sustainability problems.


For Users
Provides charging stand information, etc.
• Store information
• Local information, etc.
For Business Operators
Provides maintenance information, etc.
• Charger control
• Battery control, etc.
Charging information, storage battery information
Transportation and distribution hub
Parking
Service Operator
Food services
Convenience store
Other commercial facilities
Information service business operator
Roadside business operator
User
Electric vehicle
Car manufacturer
EV fast charger
Service station
Lithium-ion battery
Recycle
Re-use
Charging business operator
Battery-related business operator

RESERVED
PARKING
EV
ONLY

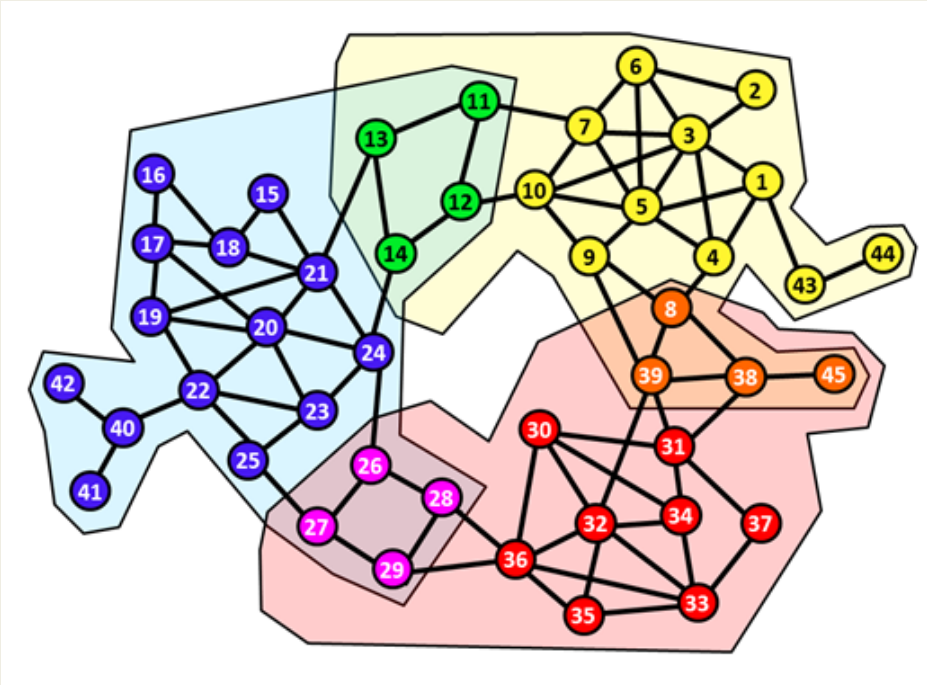
Productivist System
Low Productivity
Unsustainable
Sustainable
State support
local/indigenous knowledge and wisdom

Innovation ecosystem actors



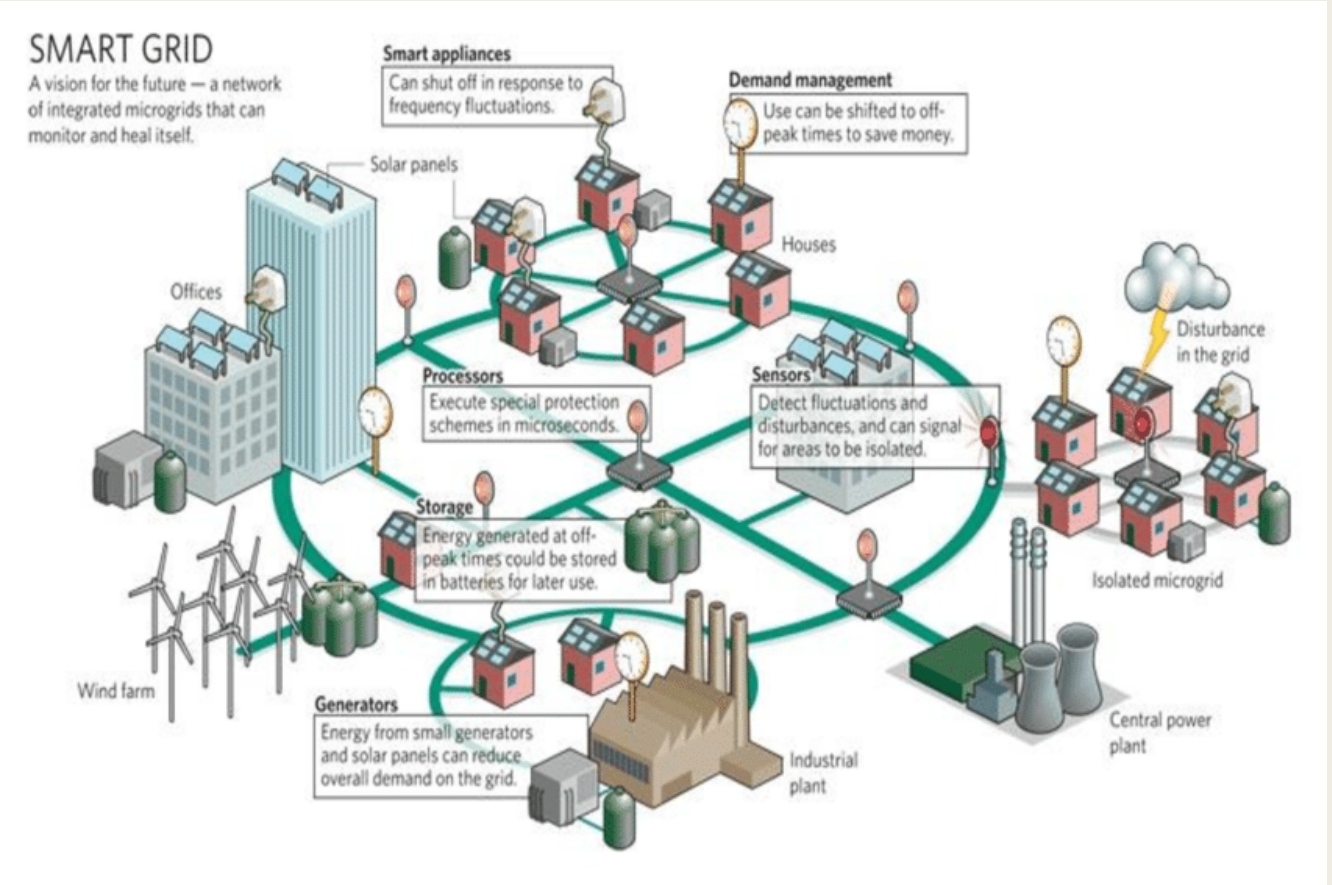
- **Innovation ecosystems** - the relationships of actors such as private firms and public organizations, that are formed with the goal to enable technology development and innovation

Innovation ecosystem actors collaborate in networks

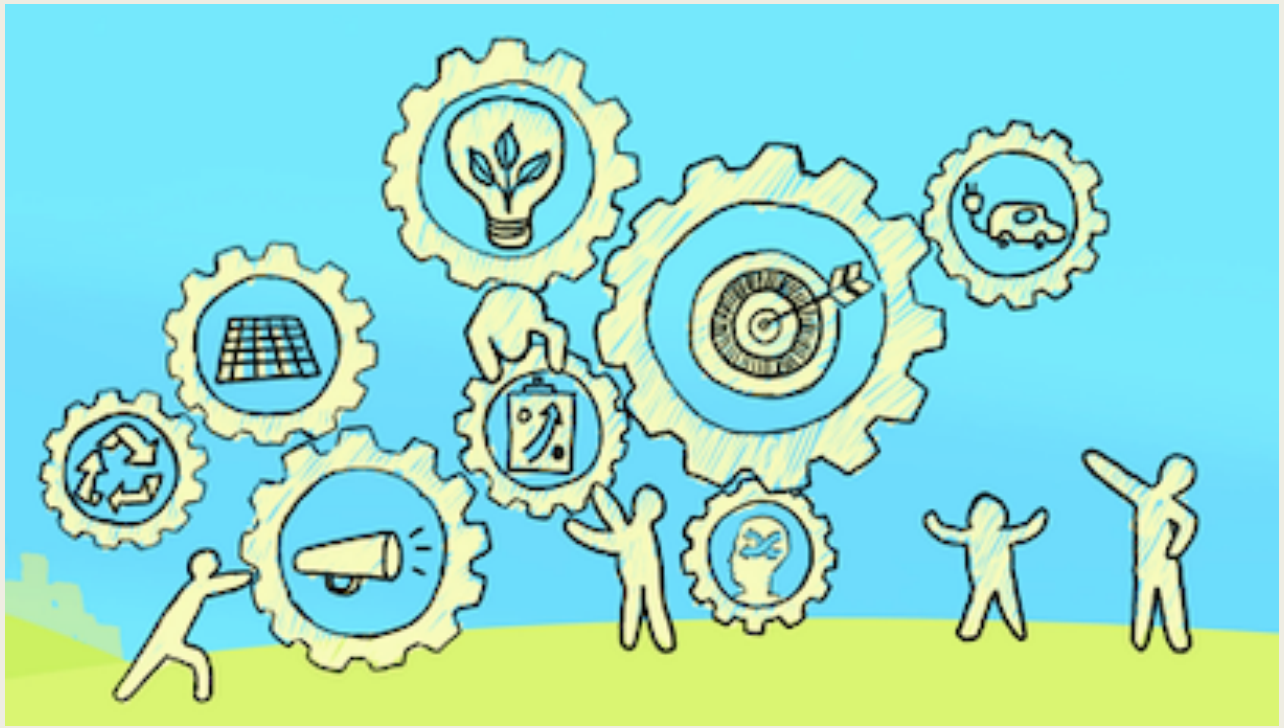


The innovation ecosystem consists of **several overlapping networks**, each with a different role in system building

Smart grids

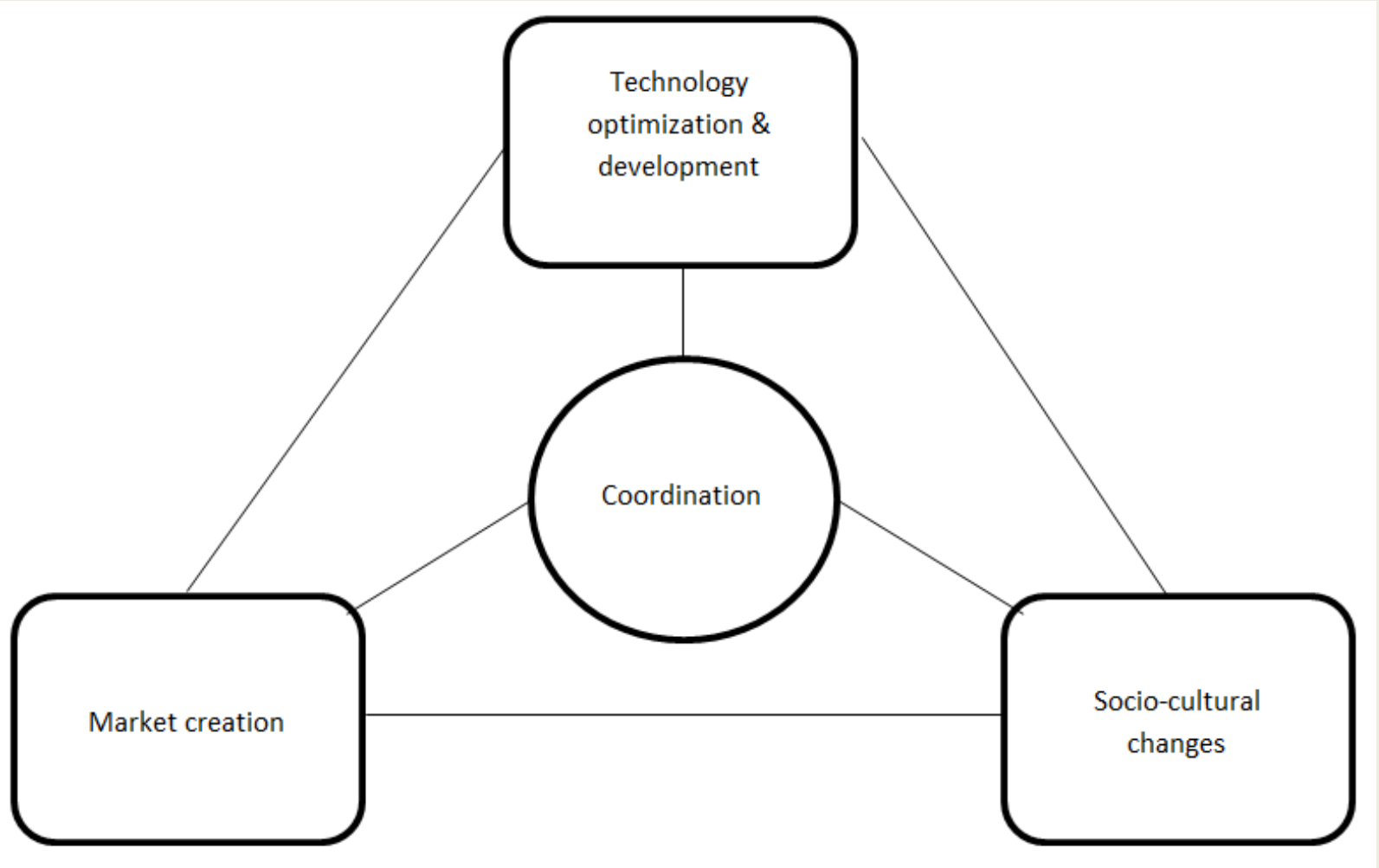

SMART GRID
A vision for the future — a network of integrated microgrids that can monitor and heal itself.
Smart appliances
Can shut off in response to frequency fluctuations.
Demand management
Use can be shifted to off-peak times to save money.
Solar panels
Houses
Offices
Disturbance in the grid
Processors
Execute special protection schemes in microseconds.
Sensors
Detect fluctuations and disturbances, and can signal for areas to be isolated.
Storage
Energy generated at off-peak times could be stored in batteries for later use.
Isolated microgrid
Wind farm
Generators
Energy from small generators and solar panels can reduce overall demand on the grid.
Industrial plant
Central power plant

Building innovation ecosystems to accelerate sustainability transitions



Collective system-building - the processes and activities that firms can conduct in networks to collectively create a favorable environment for their innovative sustainability technology

Strategy framework for innovation ecosystem building



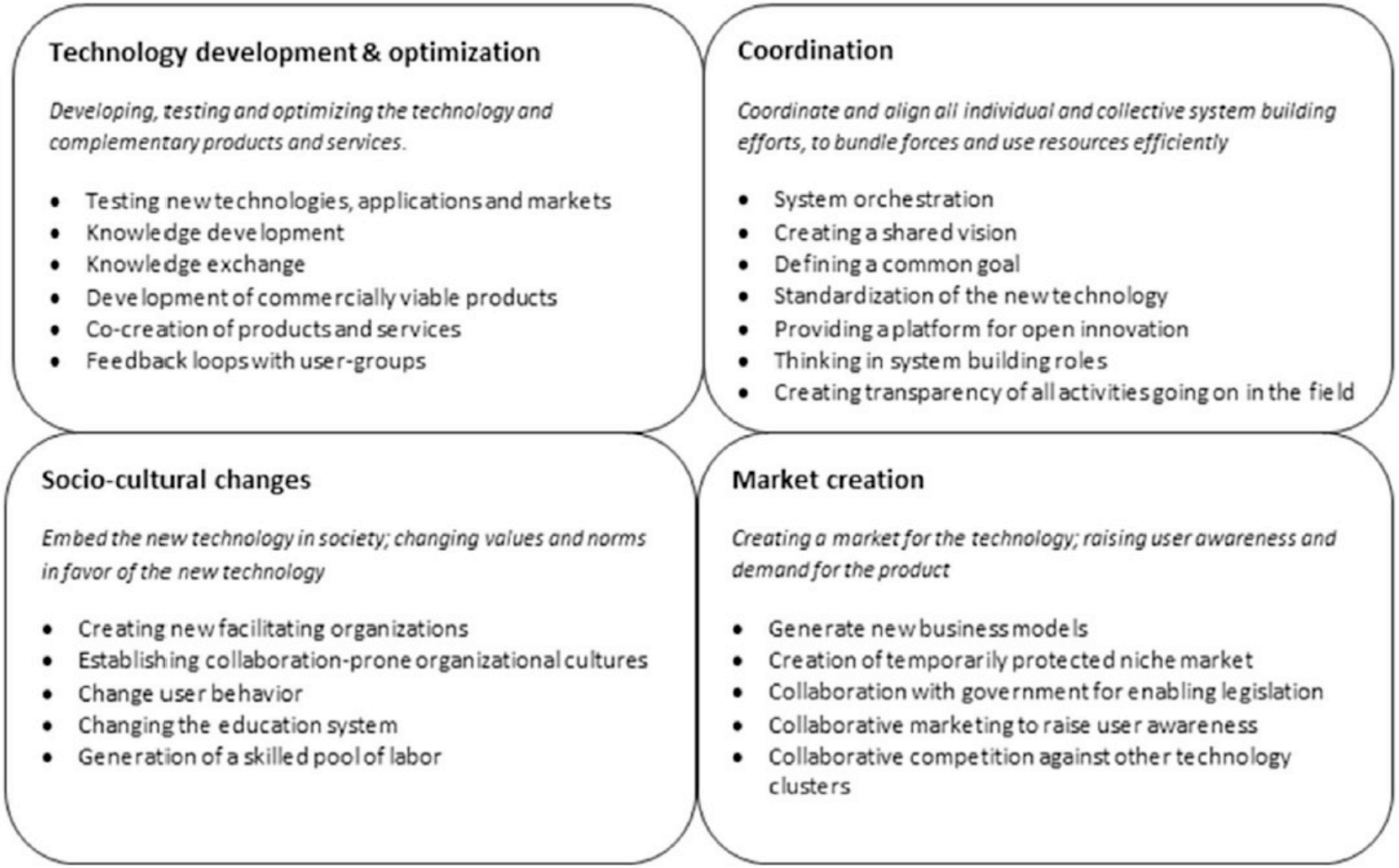
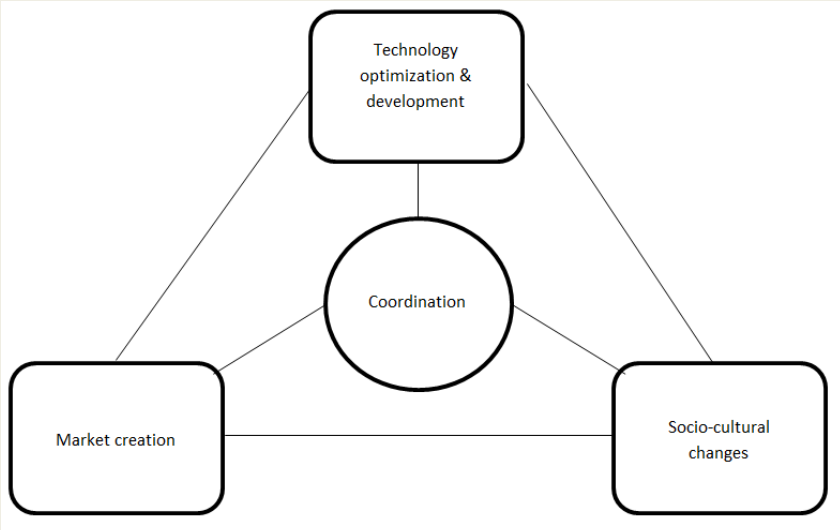


Fig. 2. Overview of the strategy framework for system building and its system-building activities.

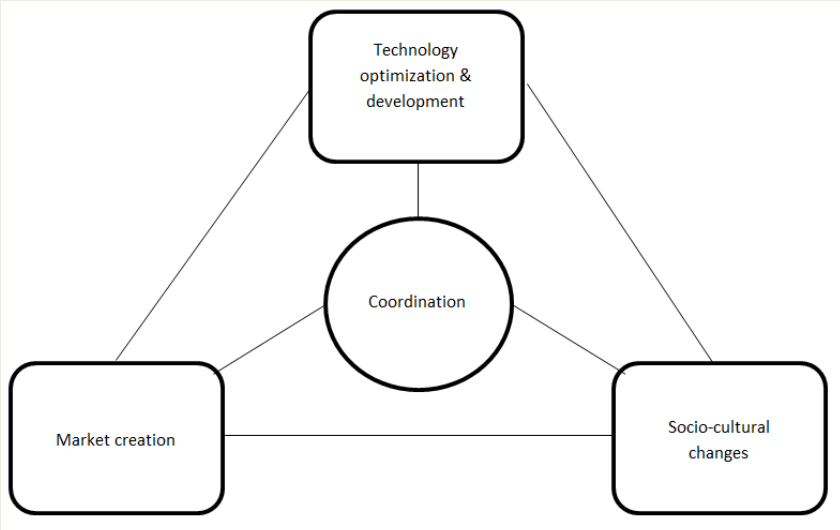
Technology development & optimization

- Testing new technologies, applications and markets
- Knowledge development
- Knowledge exchange
- Co-creation of products and services
- Development of commercially viable products
- Feedback loops with user groups



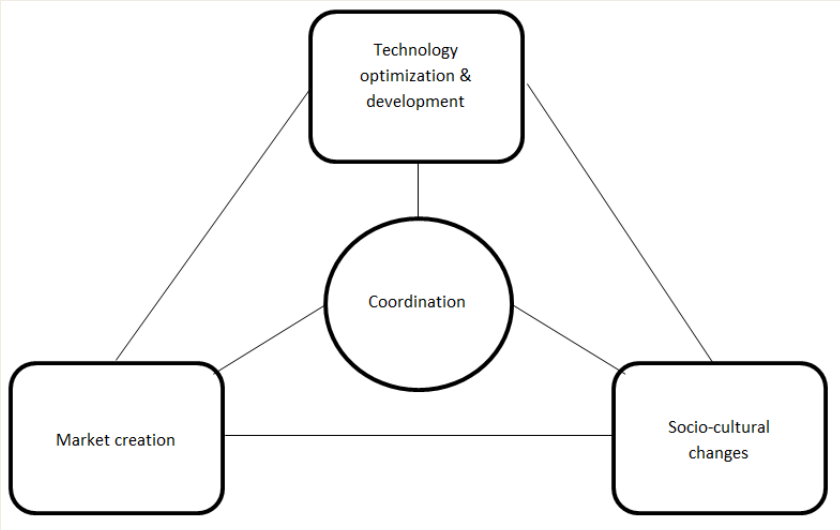
Market creation

- Generate new business models
- Creation of temporarily protected niche market
- Collaboration with government for enabling legislation
- Collaborative marketing to raise user awareness
- Shared infrastructure



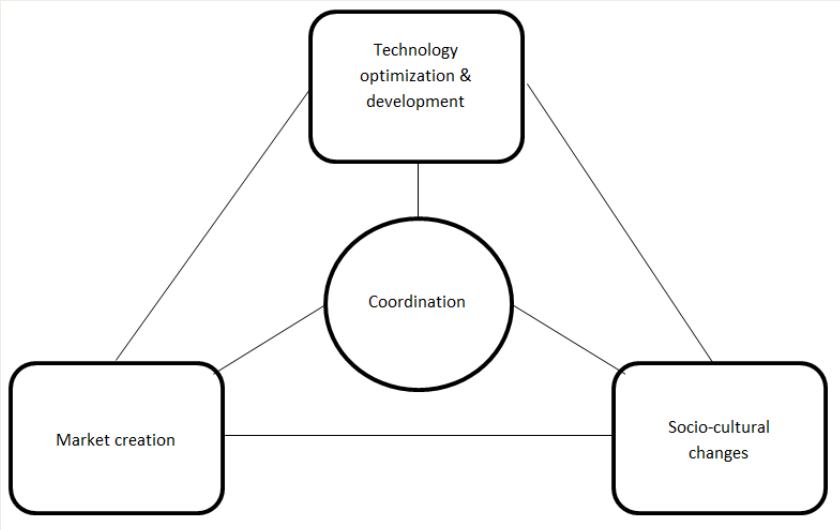
Socio-cultural changes

- Changing user behavior
- Changing perception of the new technology
- Changing the education system
- Generating a pool of skilled labor
- Creating new facilitating organizations



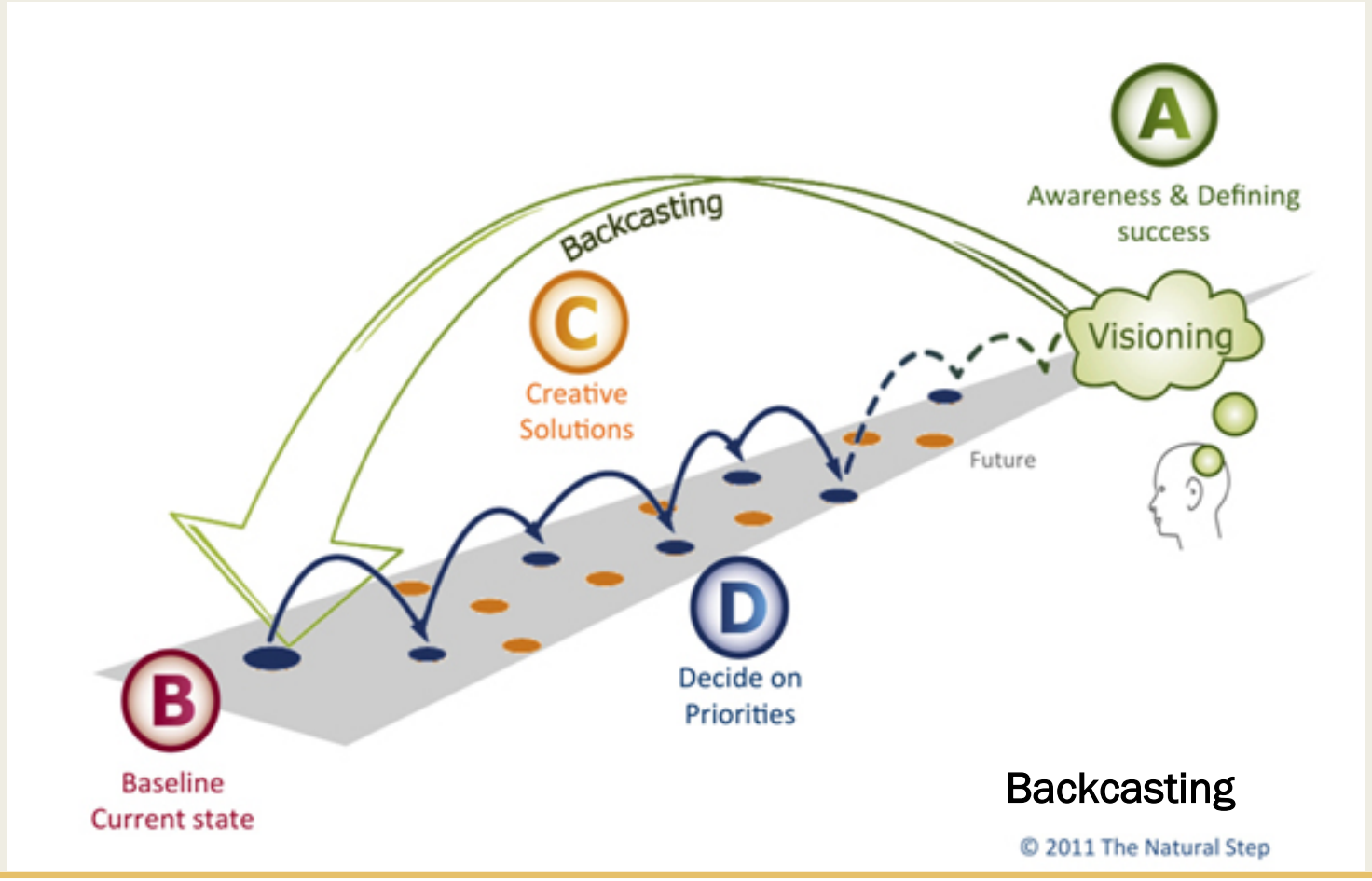
Coordination

→ Coordinate and align all individual and collective system building efforts, to bundle forces and use resources efficiently



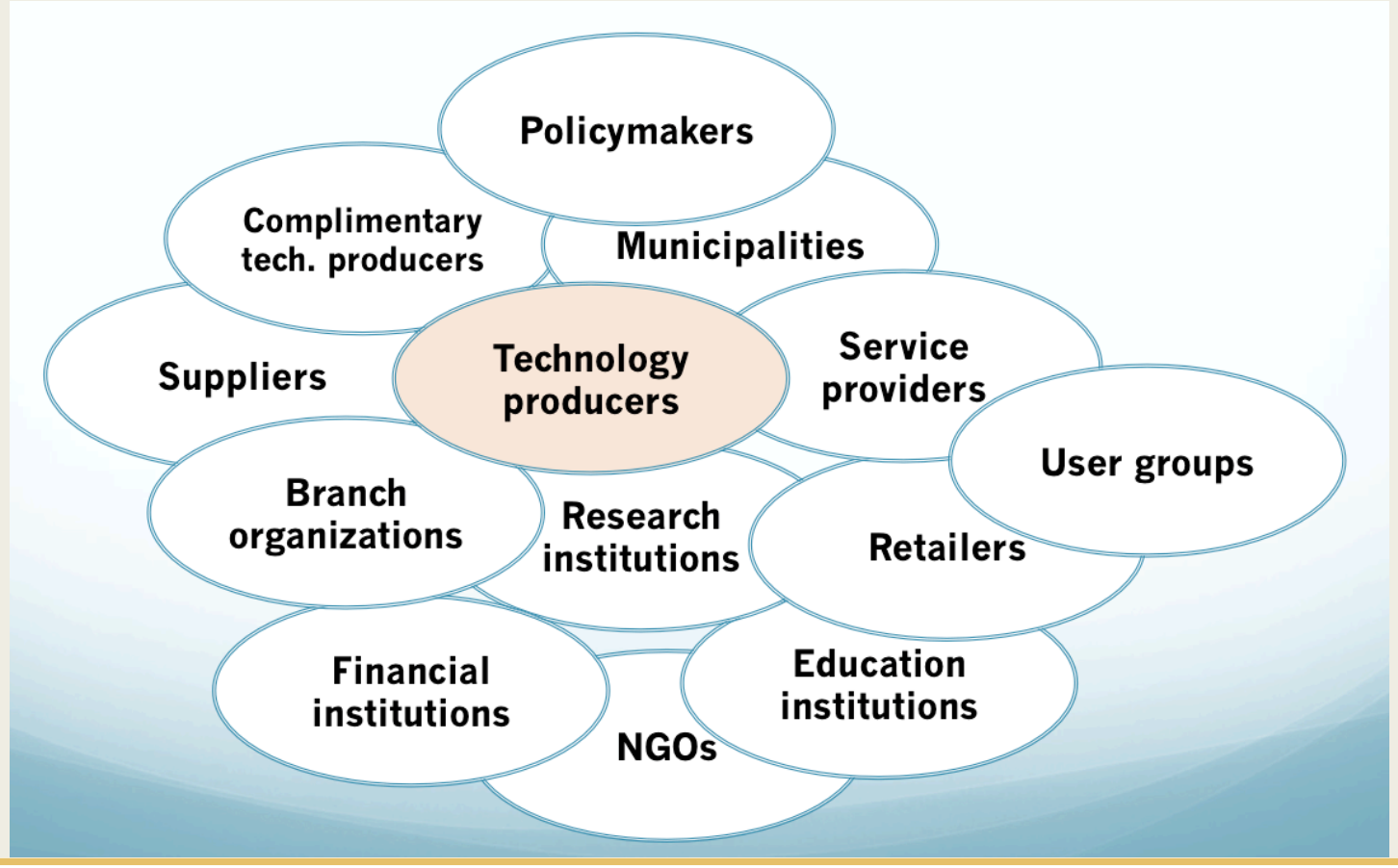
- System orchestration
- Creating a shared vision
- Defining a common goal
- Standardization of the new technology
- Providing a platform for open innovation
- Thinking in system-building roles
- Creating transparency of all activities going on in the field

Mapping the innovation ecosystem



- What would the ideal innovation ecosystem look like?
- Which systemic changes do we need to achieve to realize it?
- Which actors do we need to create these changes?

Mapping the innovation ecosystem



- What would the ideal innovation ecosystem look like?
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