topsector energie

Mission-driven Human Capital for the energytransition

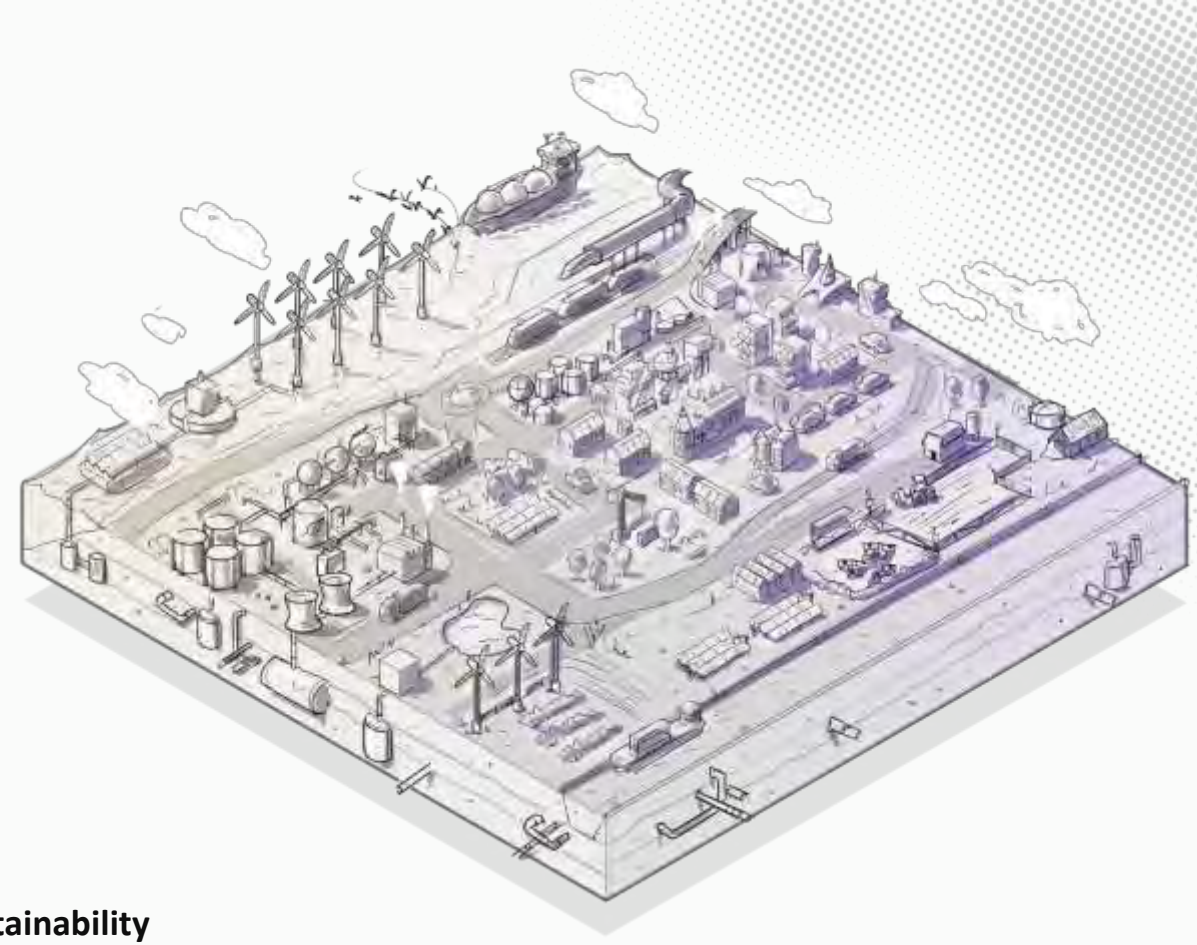
Innovate and accelerate by investing in the human capital of the Netherlands

Erwin HW Niedeveld

Programme manager Human Capital

LeAD GLocal

Energy Innovation NL, the driving force behind innovation.

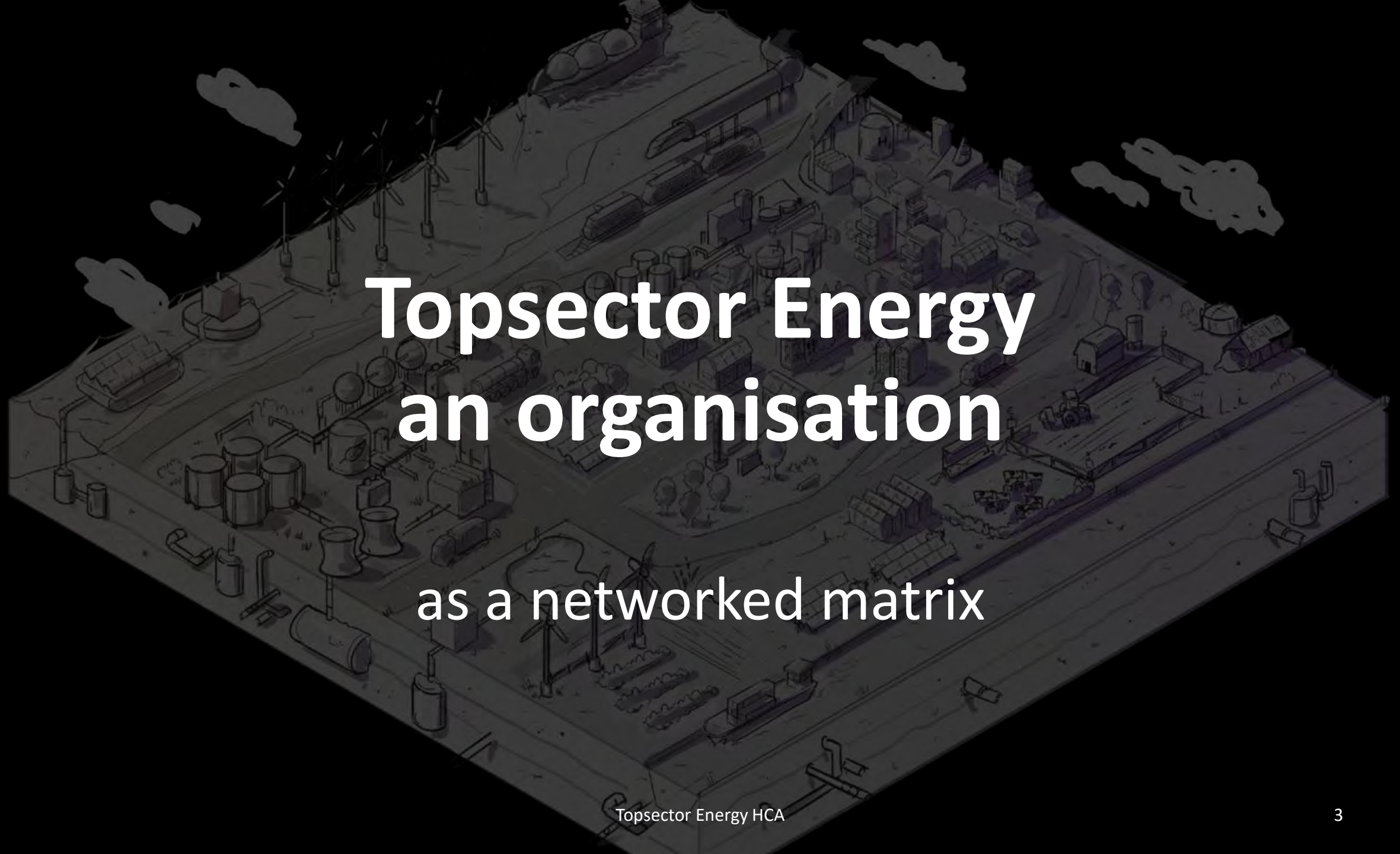


Netherlands has an ambitious sustainability challenge

- **49% CO_2-reduction in 2030**
- **95% CO_2-reduction in 2050**

Top Sector Energy

- **Pivotal role in the innovation ecosystem around energy transition and sustainability**
- **Collaboration** between entrepreneurs, researchers, education, civil society organisations, special interest group and governments strengthens our innovation power.
- **Mission-driven Innovation Programmes (MMIPs)**
- Driver of the **Integral Knowledge and Innovation Agenda** for Climate and Energy **(IKIA)**



Topsector Energy an organisation

as a networked matrix

Top Consortia for Knowledge & Innovation

TKI Offshore Energy

Sustainable energy generation in the North Sea is essential for a successful transition to an affordable, reliable, and...

Read more →

TKI Urban Energy

Our built environment needs to be rapidly and extensively transformed to become more sustainable. Innovation is essenti...

Read more →

TKI New Gas

Towards a climate-neutral energy and resource system with green molecules

Read more →

TKI Energy & Industry

Towards a climate-neutral industry as part of a circular economy in 2050

Read more →

Themes

Human Capital Agenda

Driving innovation and acceleration by investing in the human capital of the Netherlands.

Read more →

System integration

The energy system is becoming increasingly complex. This means that a transition process is needed that works from a sy...

Read more →

Digitalization

Through agenda setting, knowledge development, and driving innovation and knowledge sharing.

Read more →

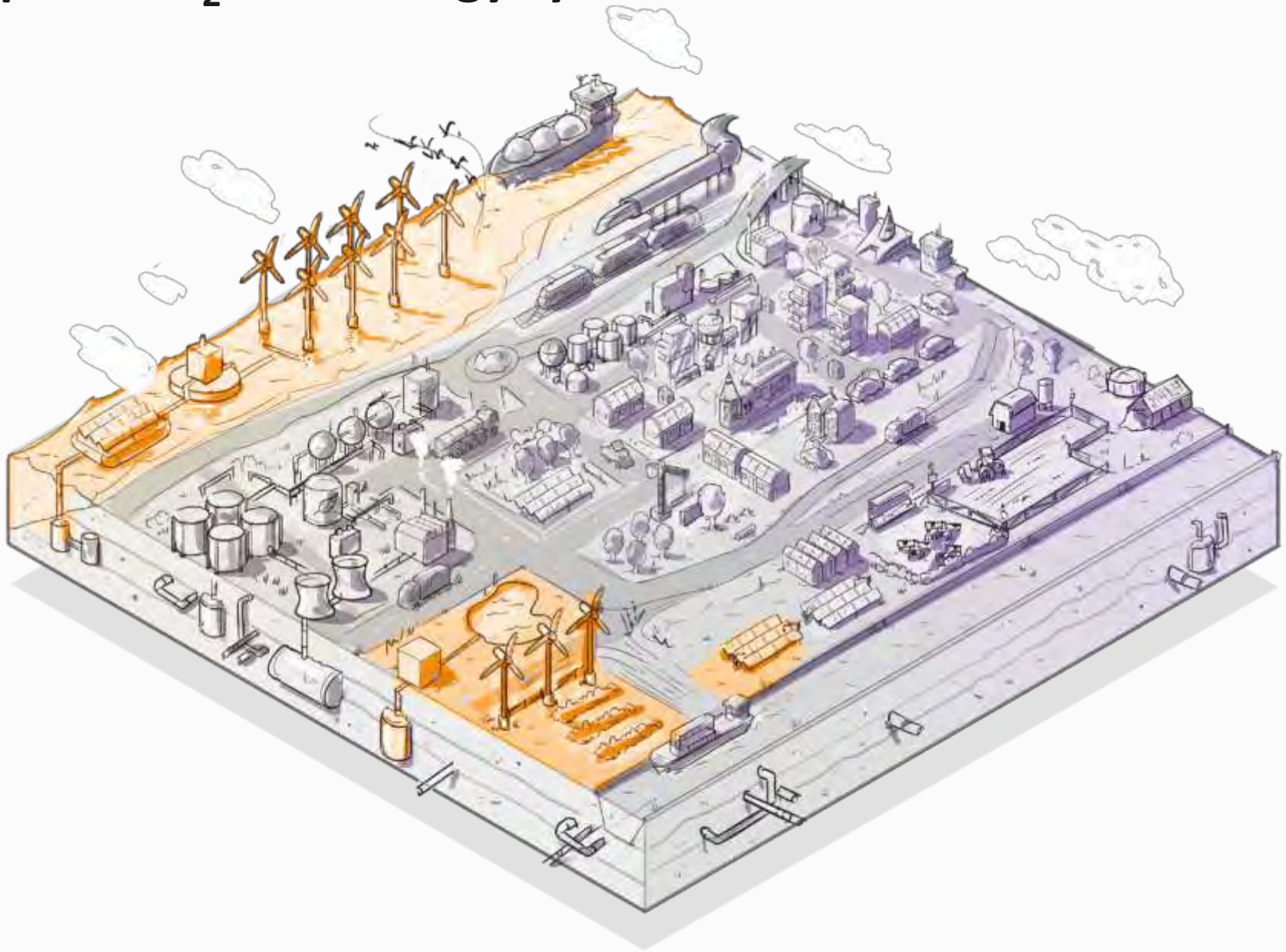
Socially Responsible Energy Innovation

To realize the energy transition, knowledge and innovation are required that go beyond our current thinking and actions...

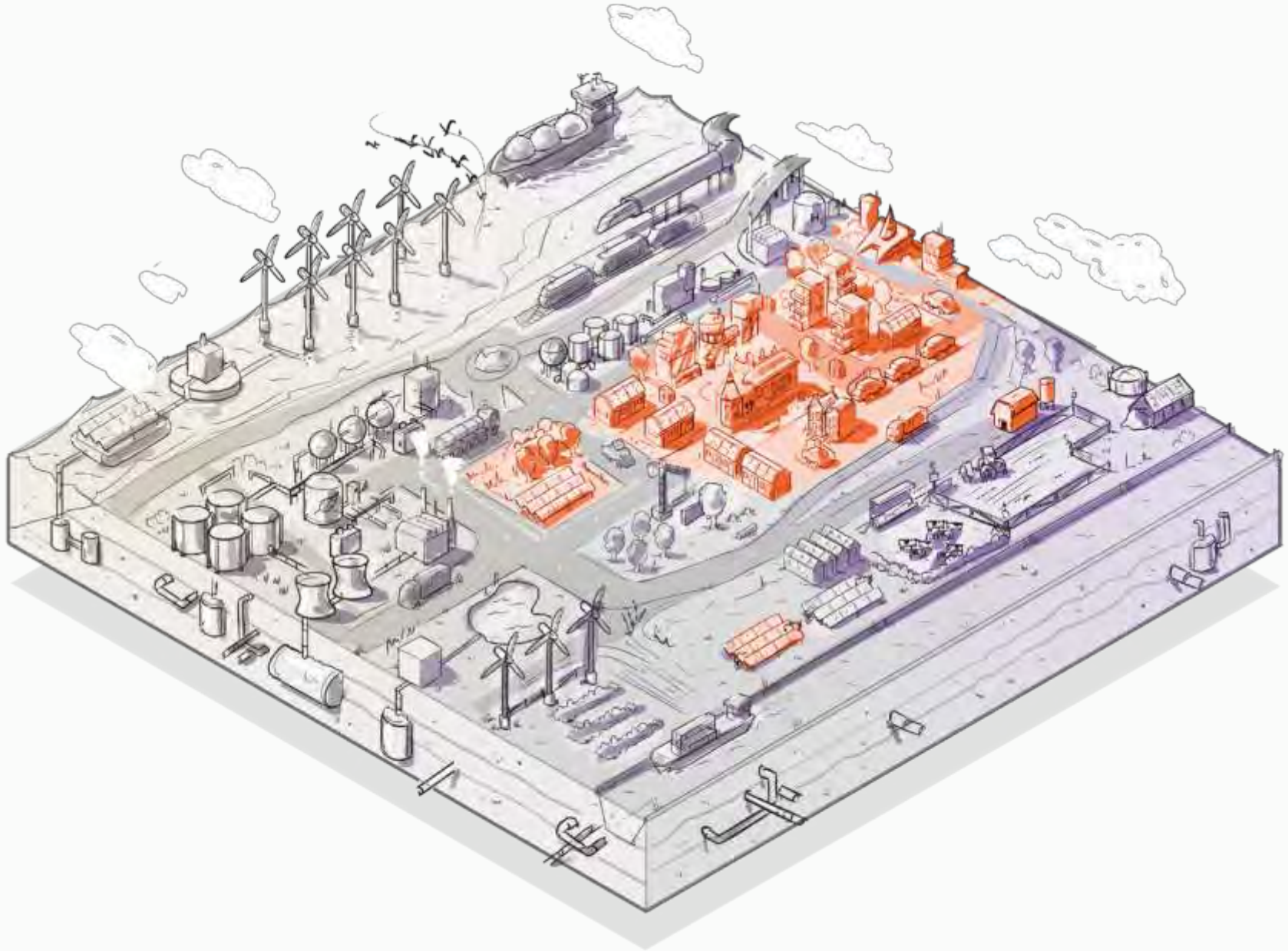
Read more →

Let’s take a look at our landscape of challenges

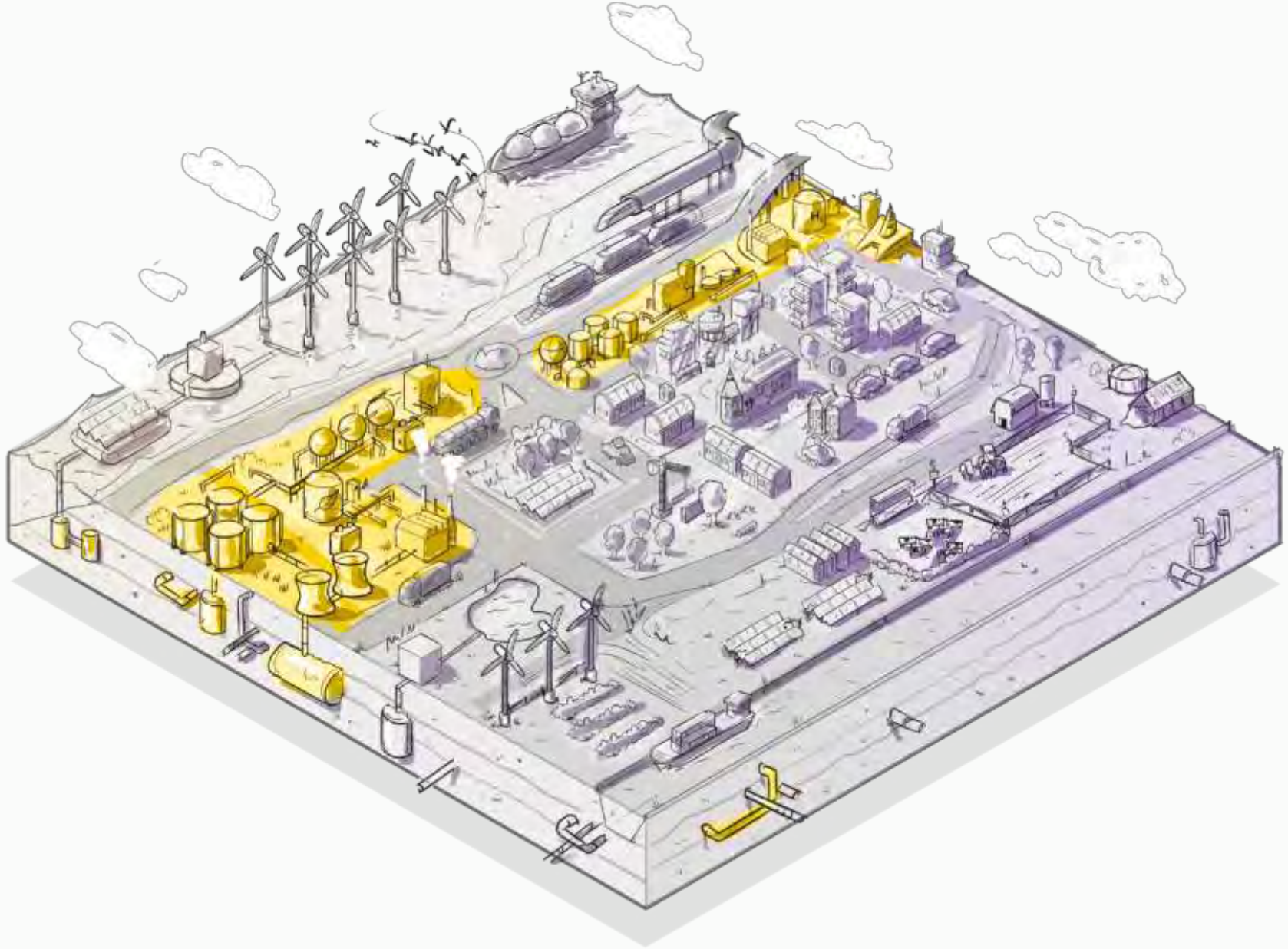
A complete CO_2-free energy system



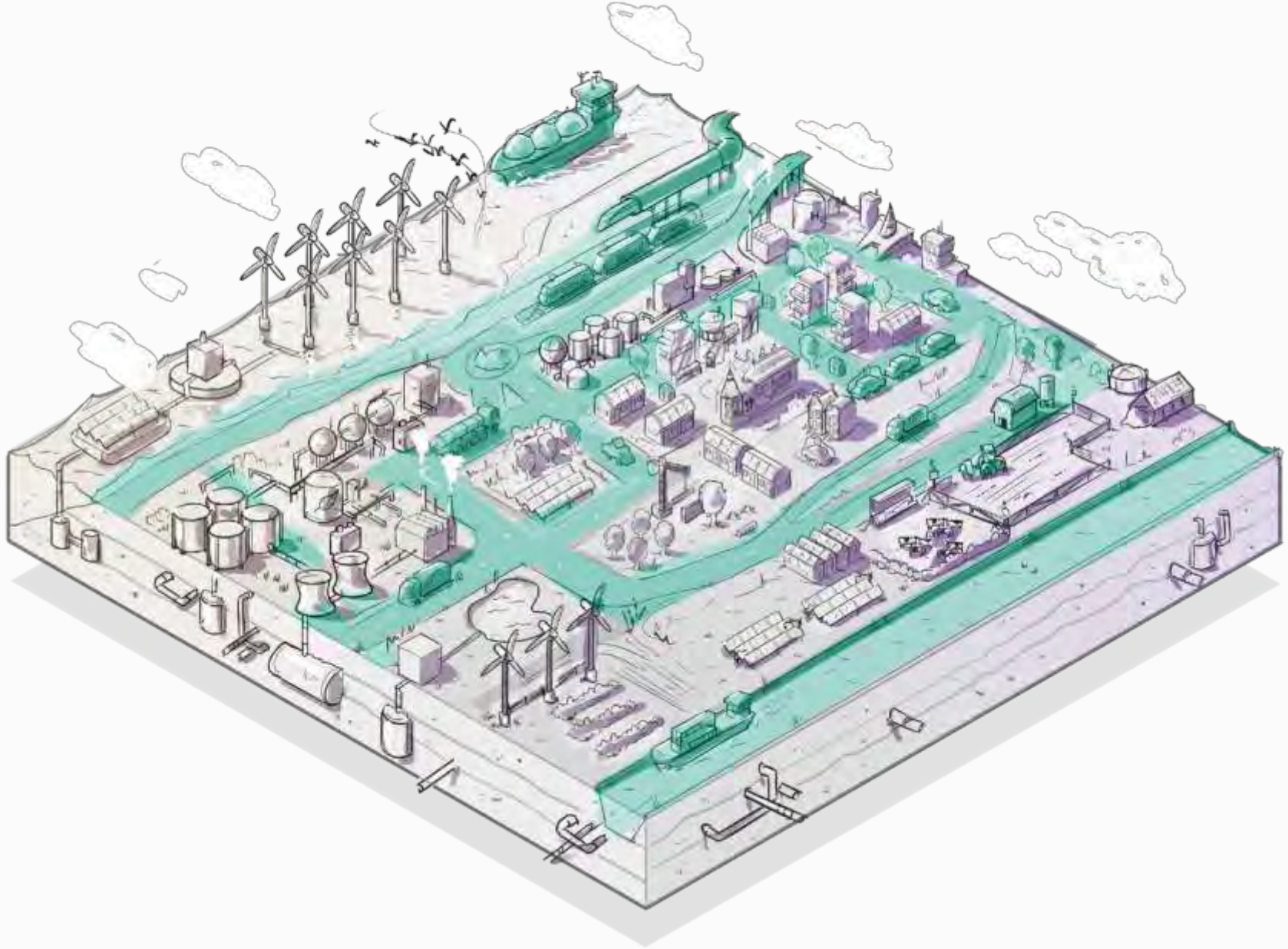
A CO_2-free build enviroment



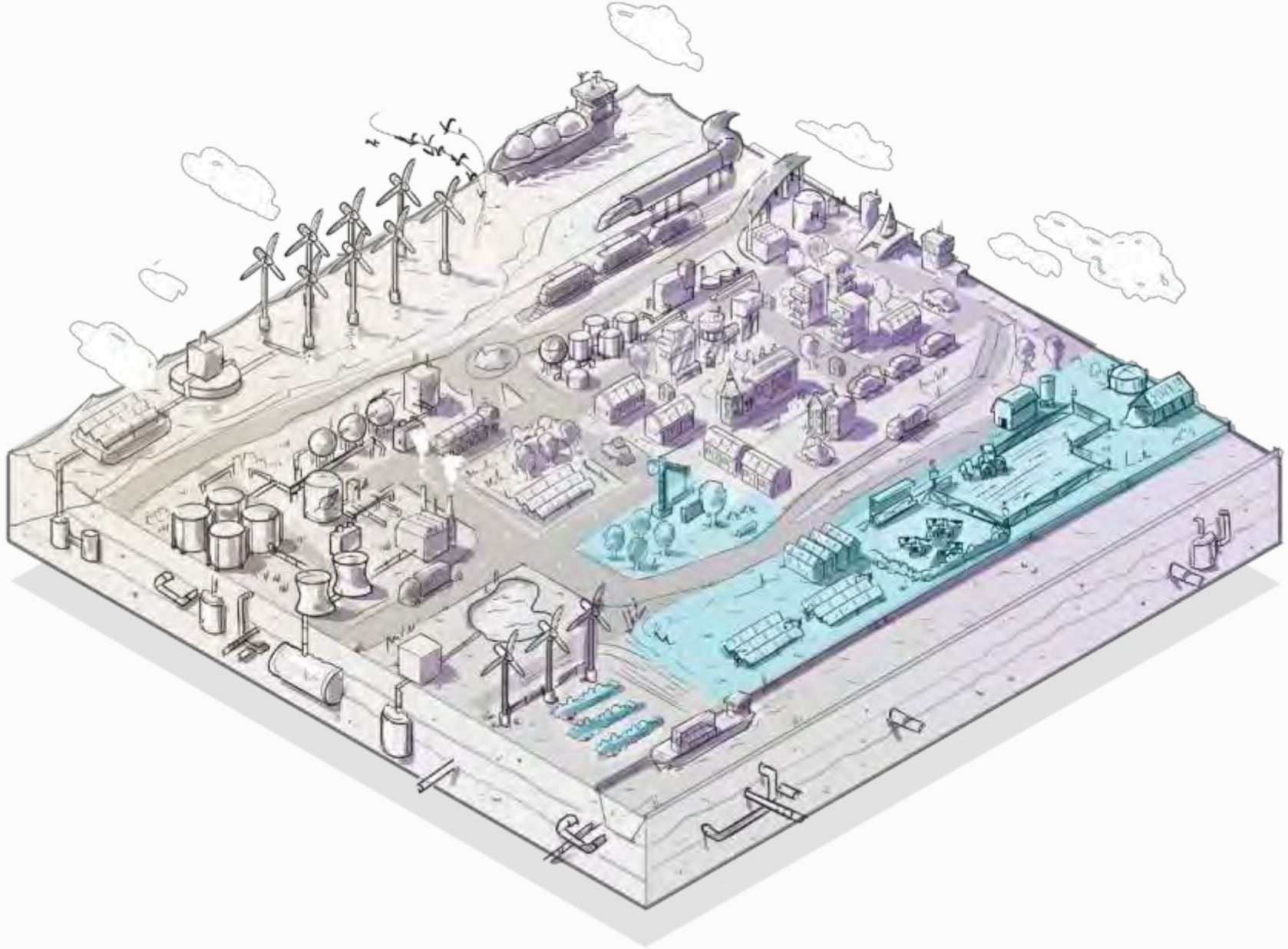
A climate-neutral industry with recycling of raw materials and products



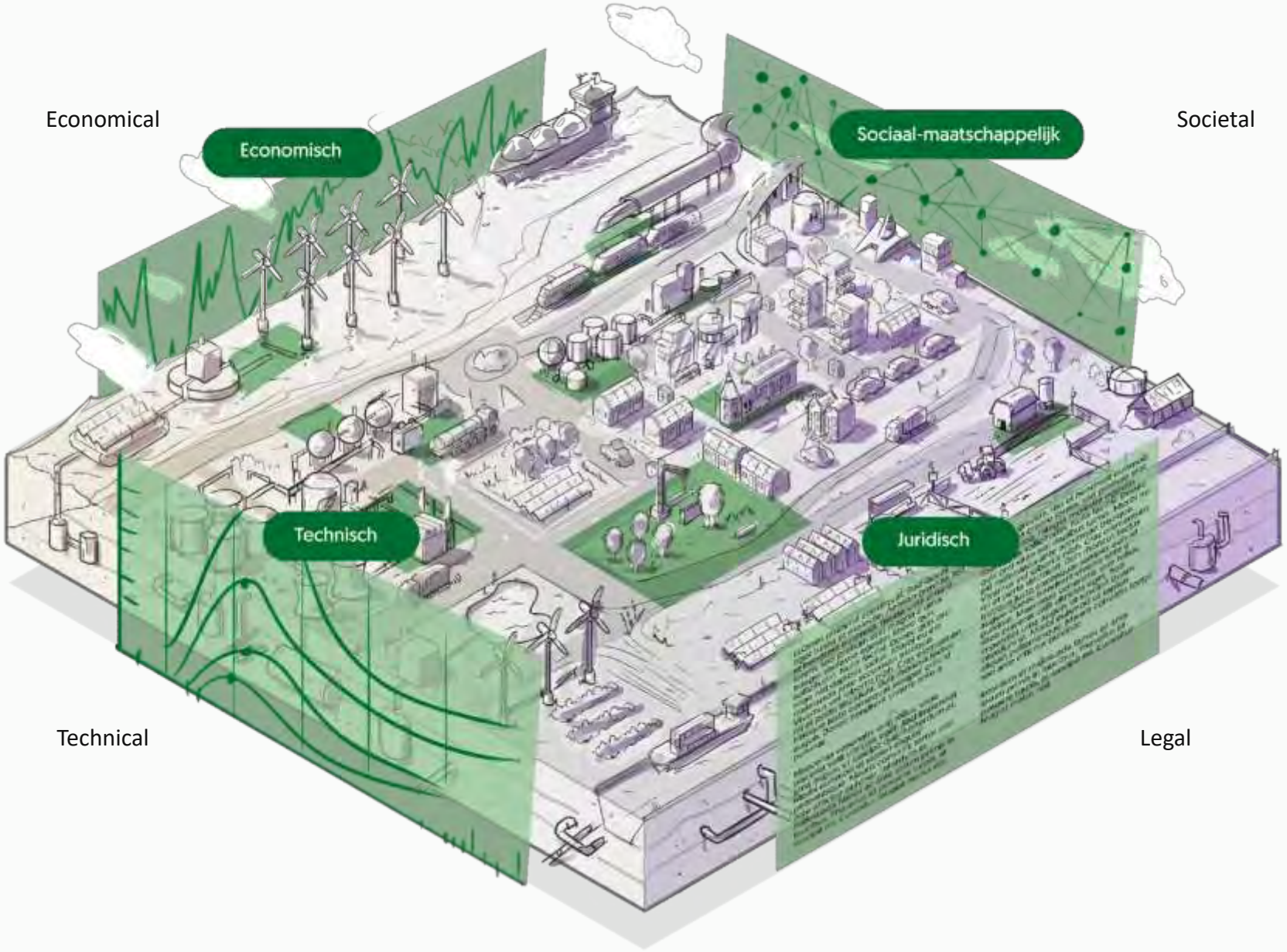
Emission-free and future-proof mobility for people and goods



Agriculture and nature system to become net climate neutral



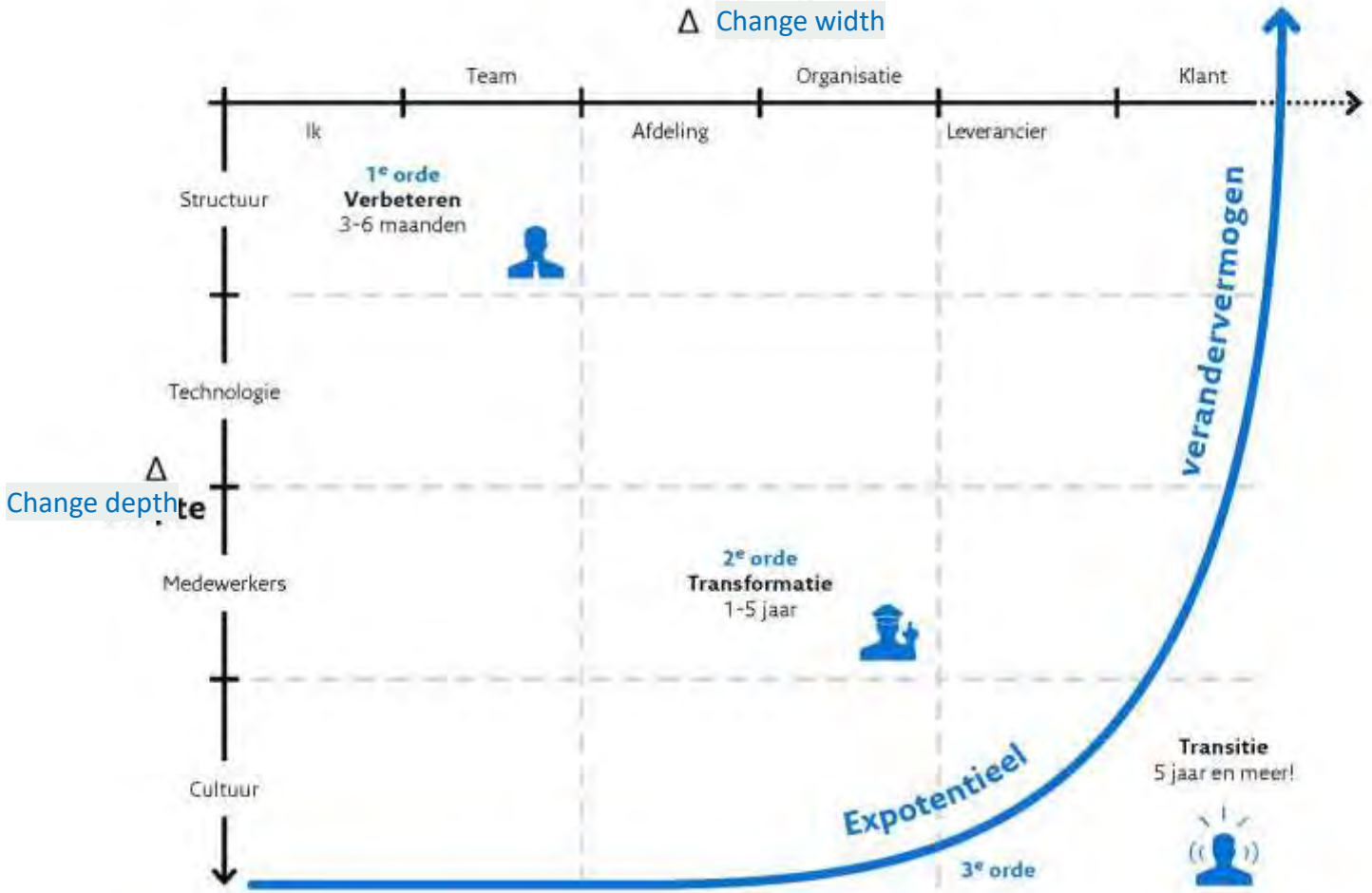
System integration



Before running, we need to stand still... What's the problem?

Change width

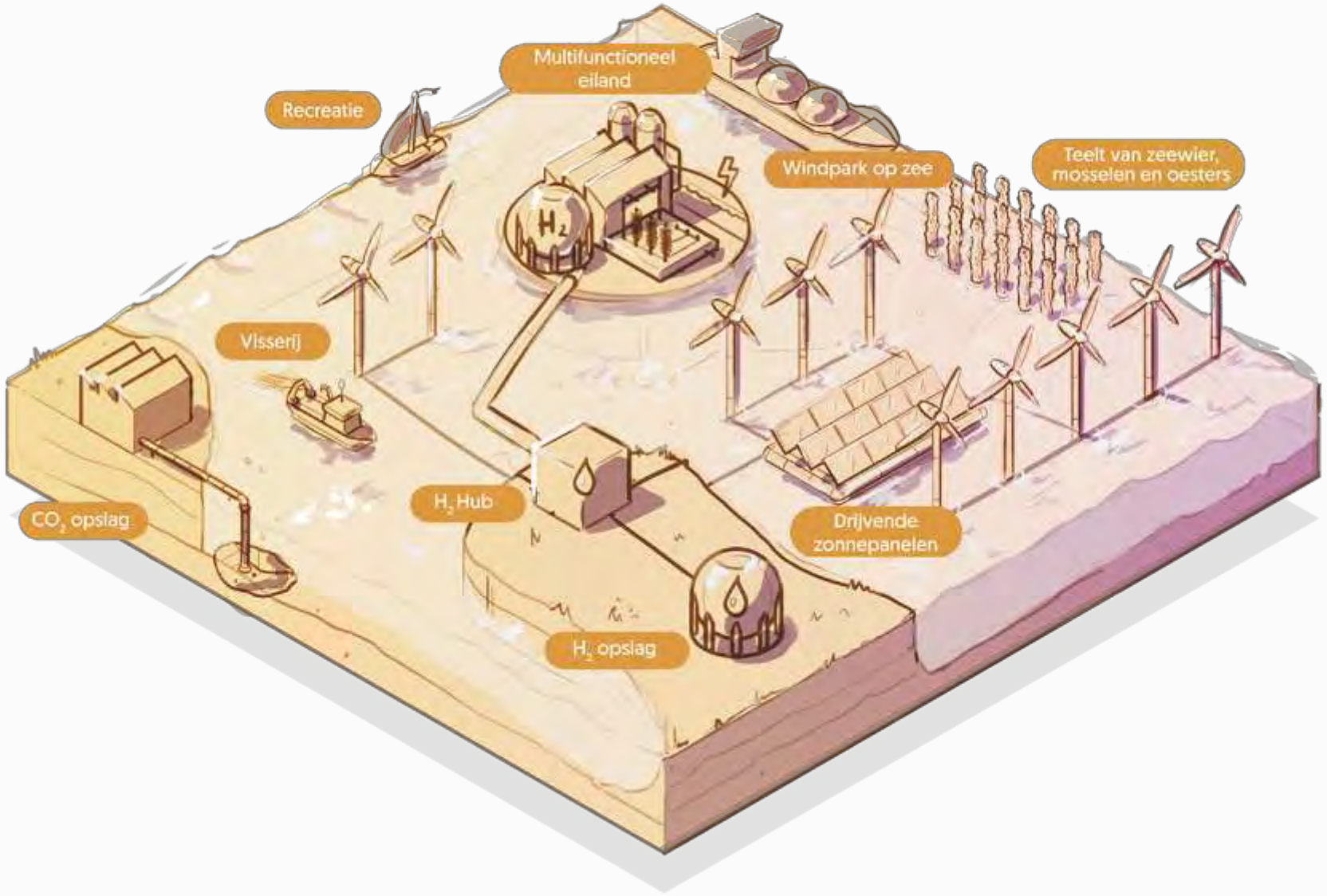
Change depth



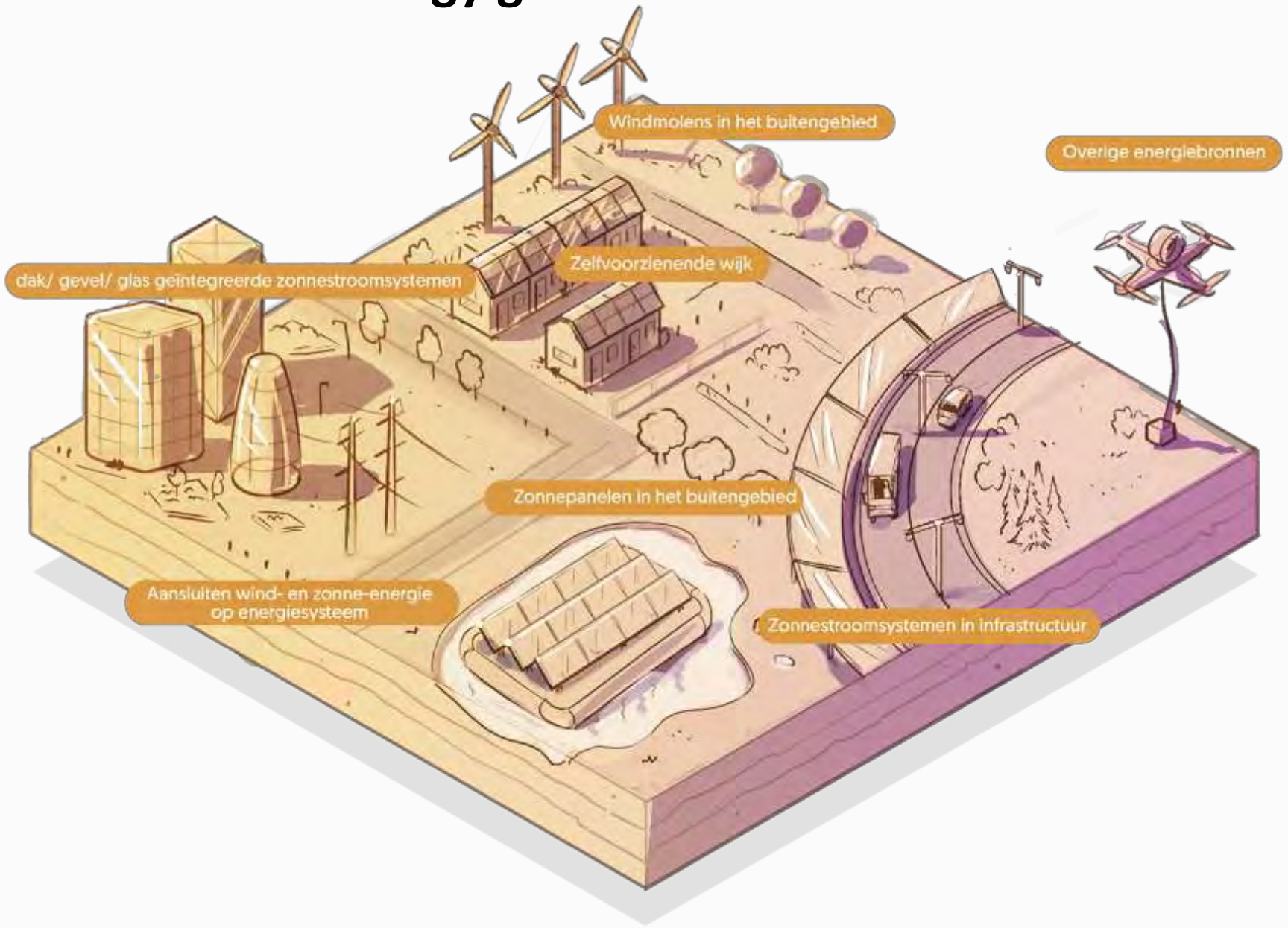
We work with Multi-Year Mission-driven Innovation Programmes

…let’s run through the 13 MMIP’s…

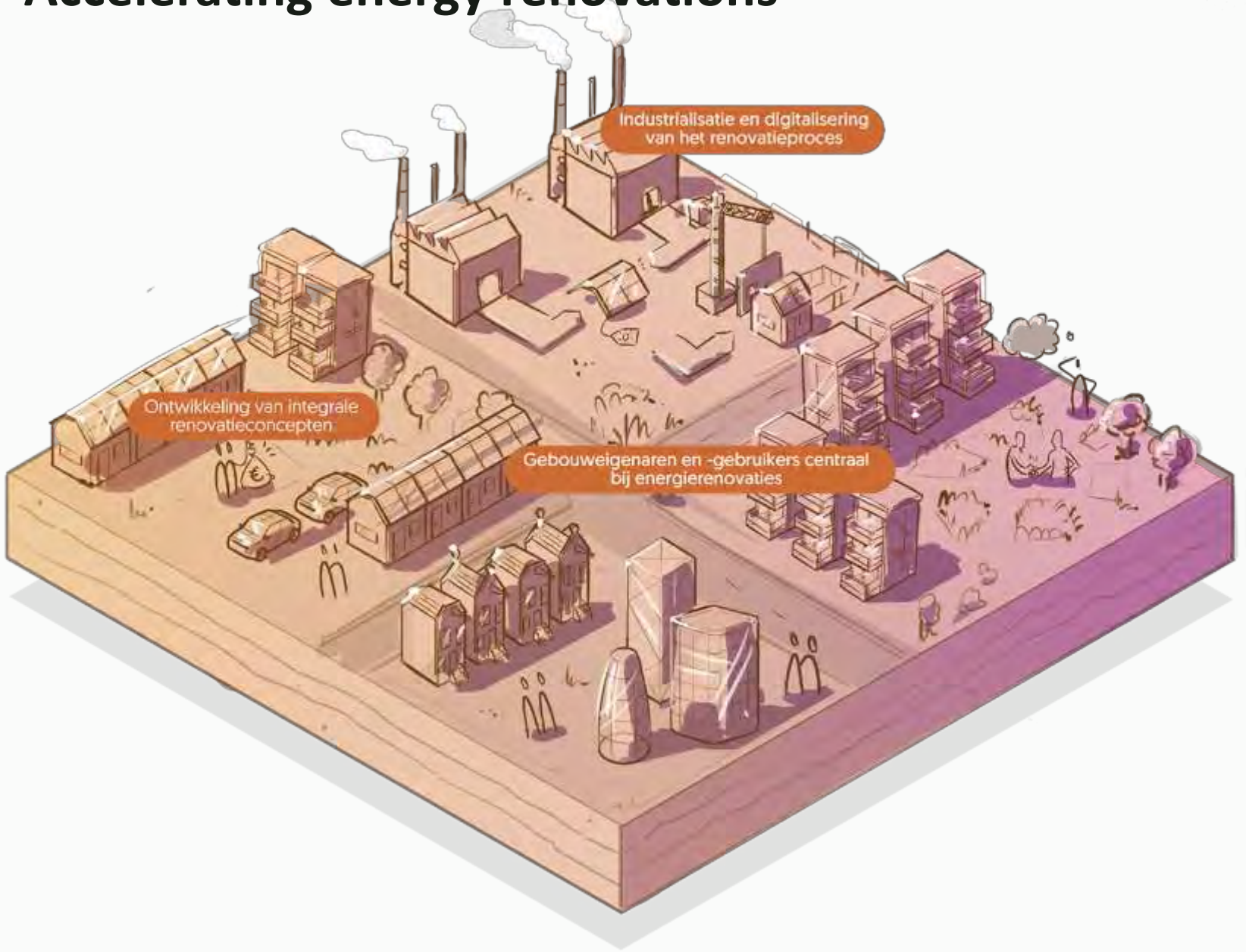
MMIP - Renewable energy at sea



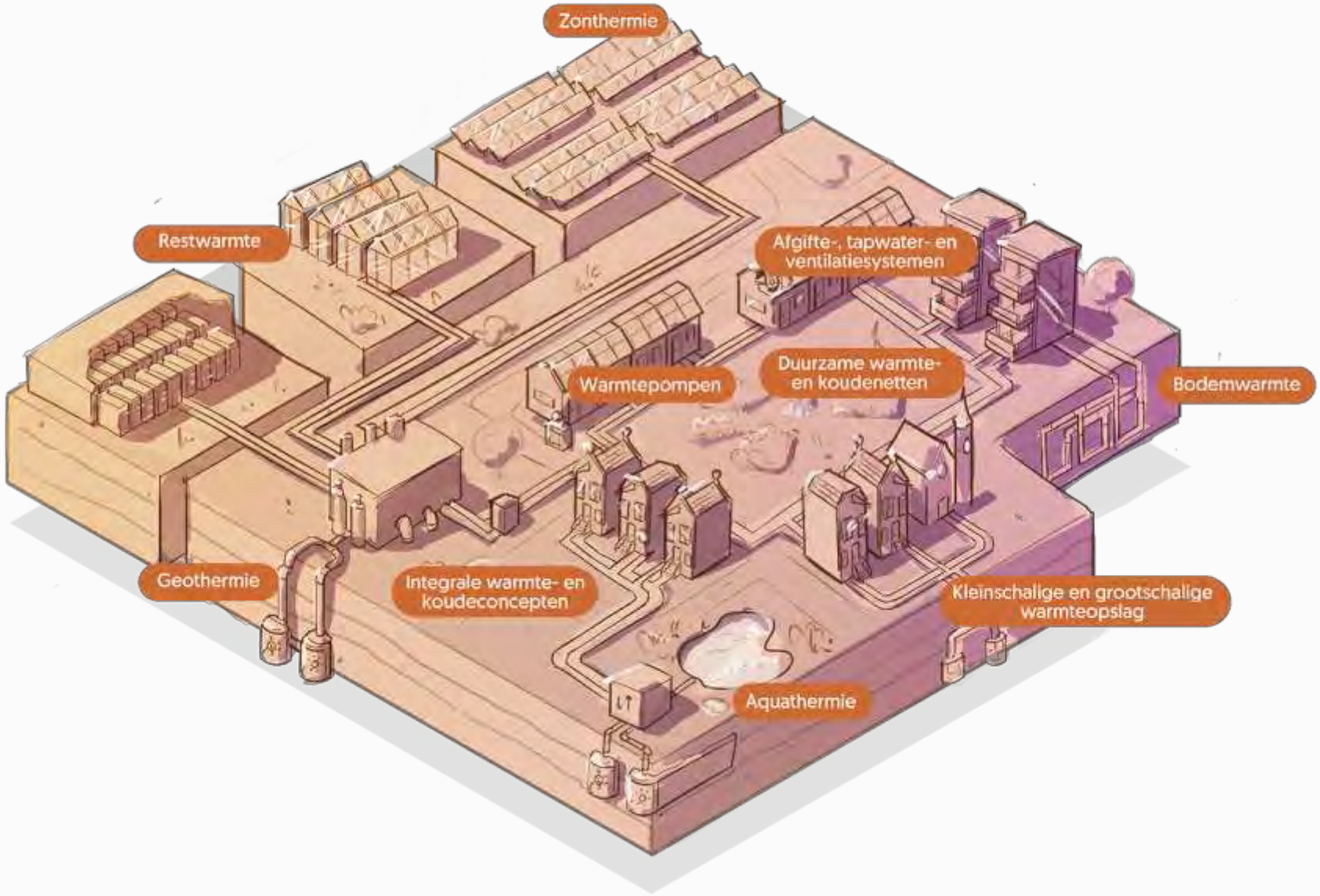
MMIP - Renewable energy generation on land



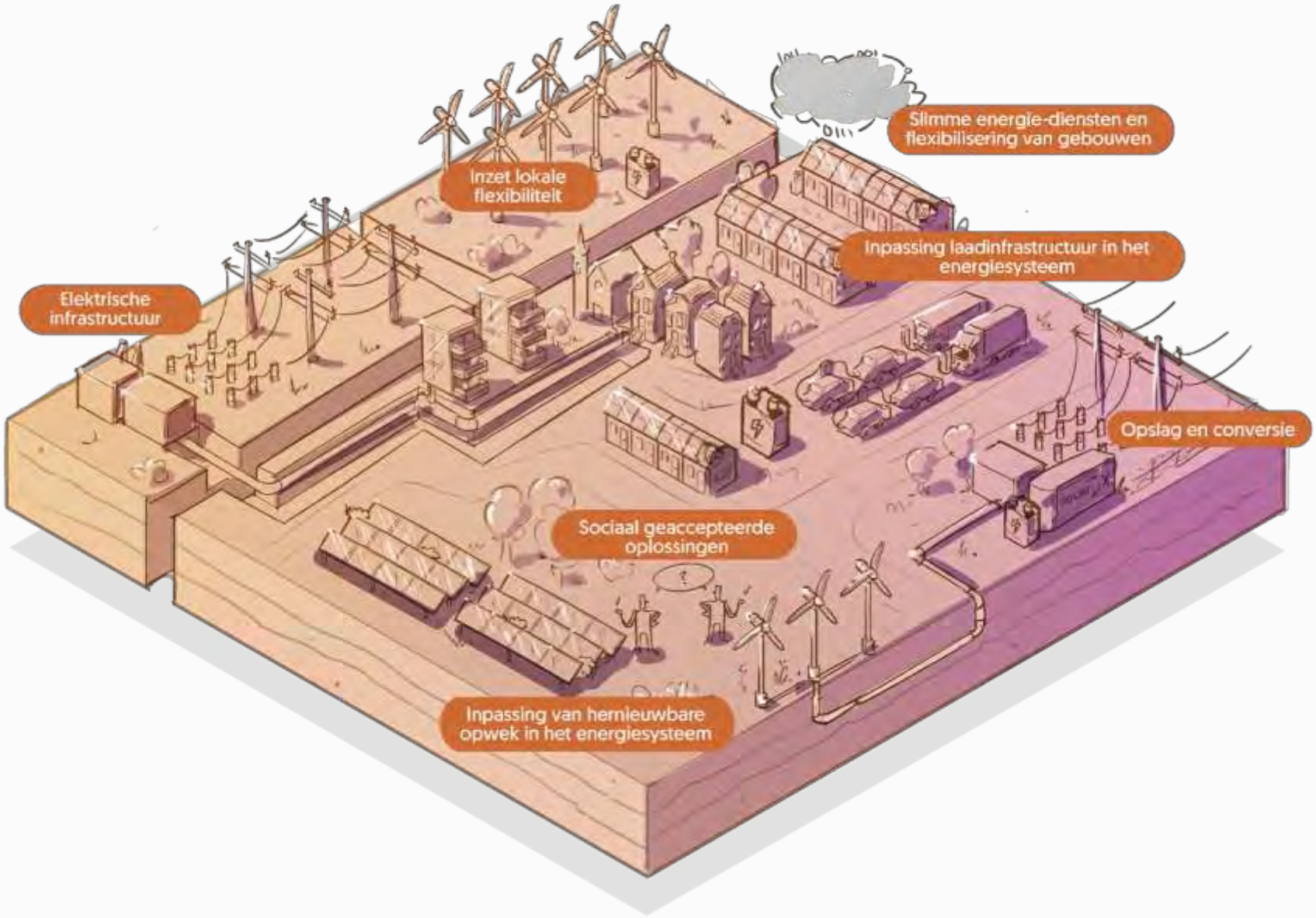
MMIP - Accelerating energy renovations



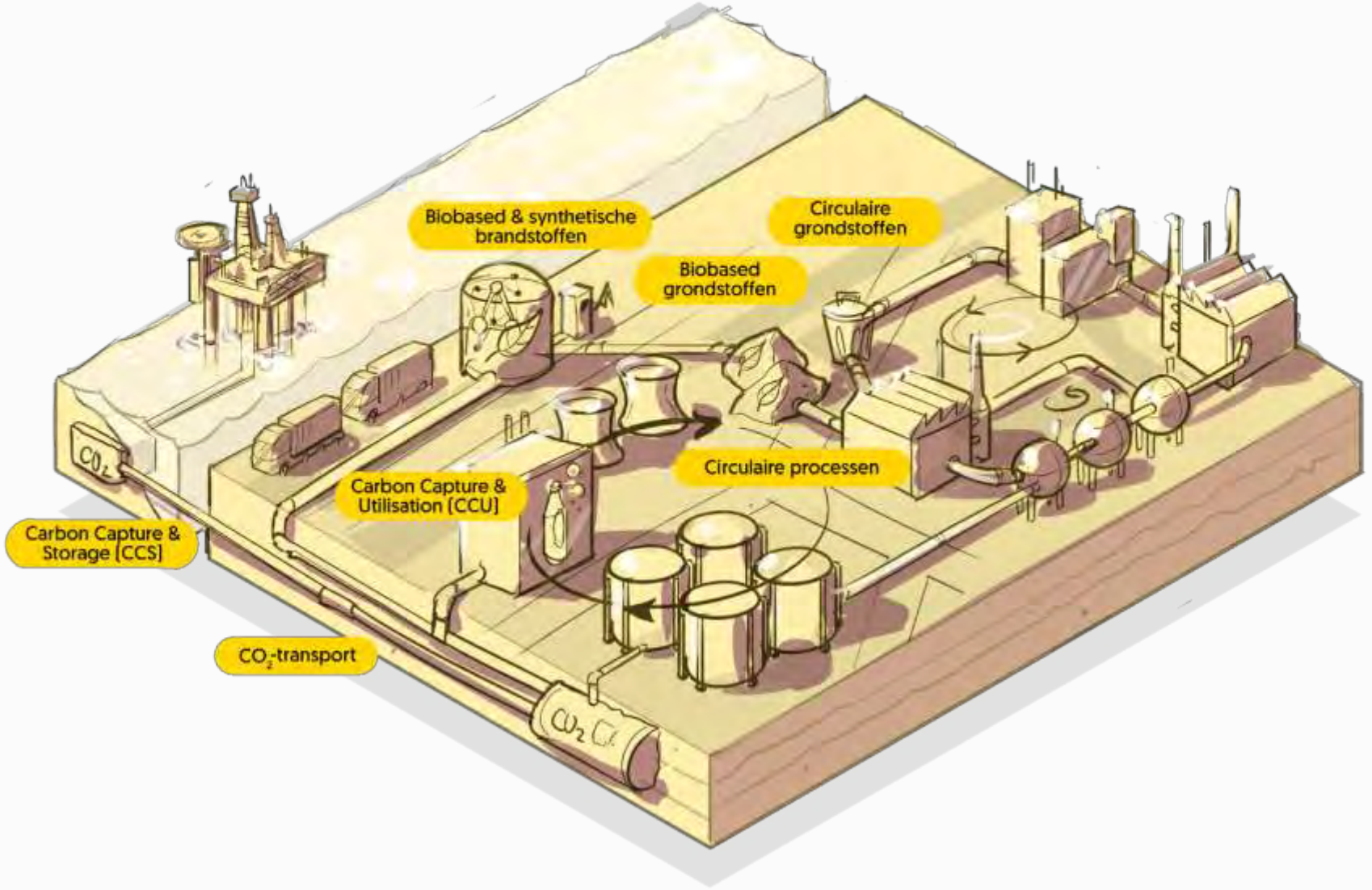
MMIP - Sustainable heating and cooling



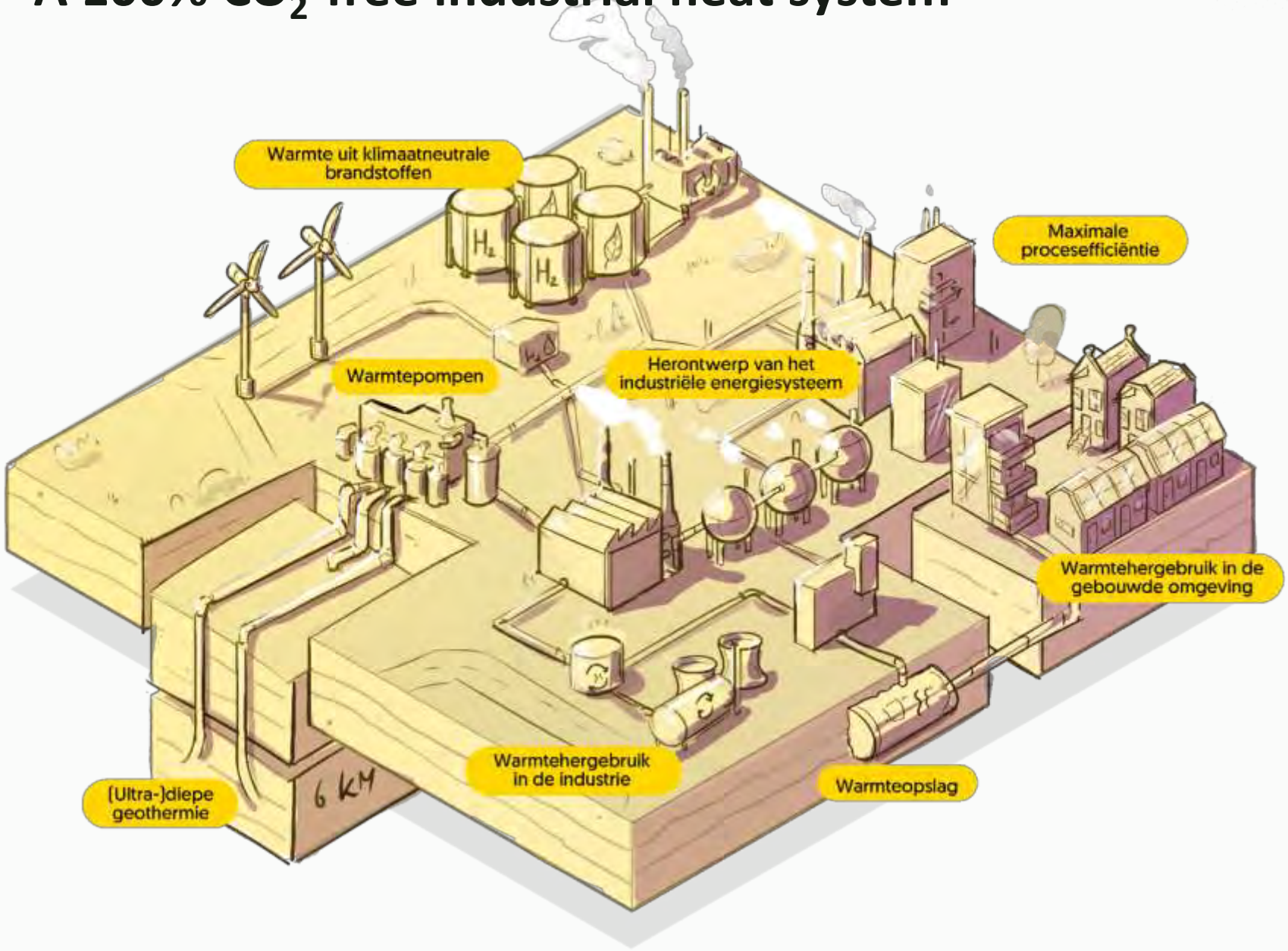
MMIP - Electrification of the energy system



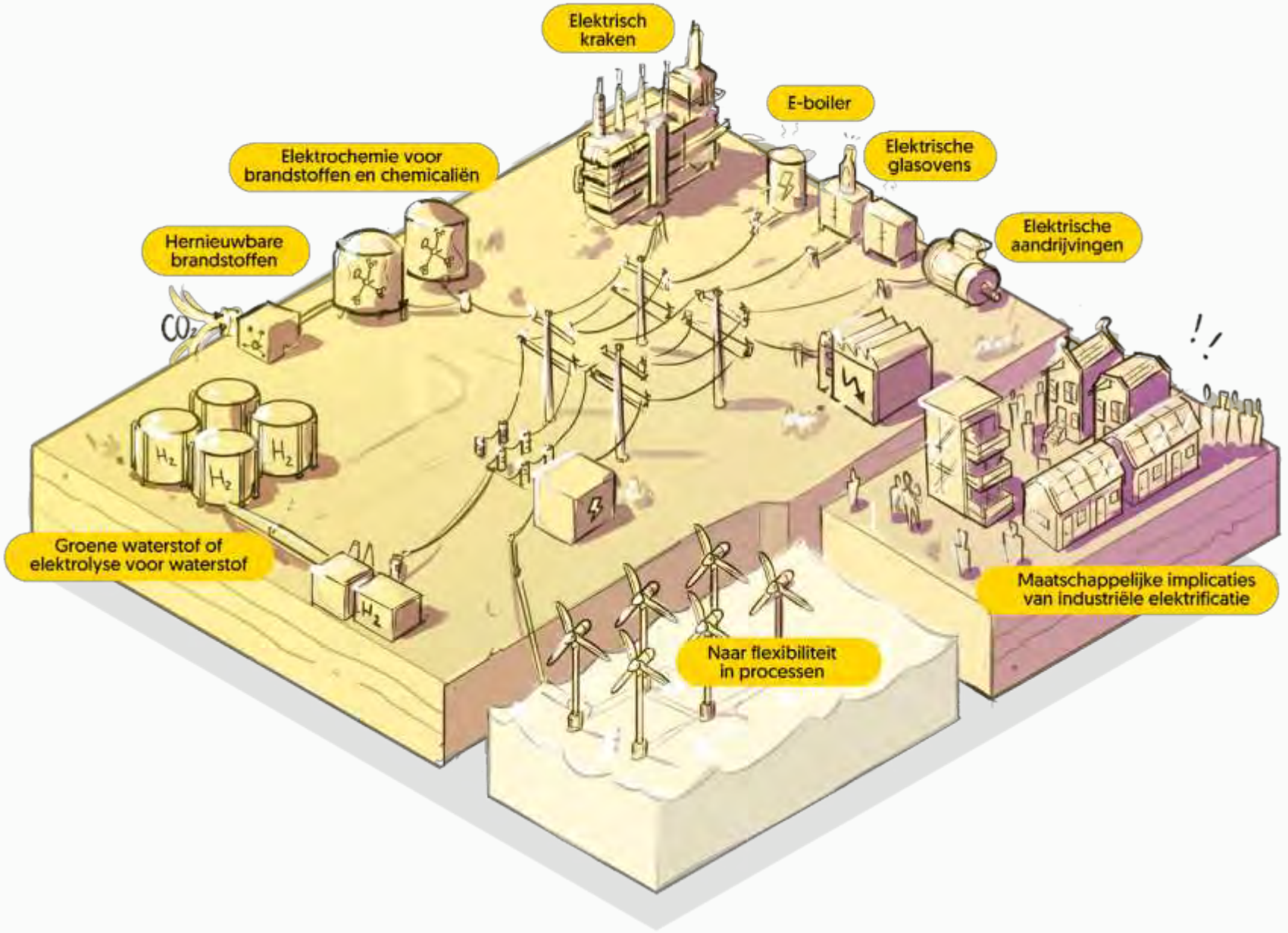
MMIP - Closing industrial supply chains



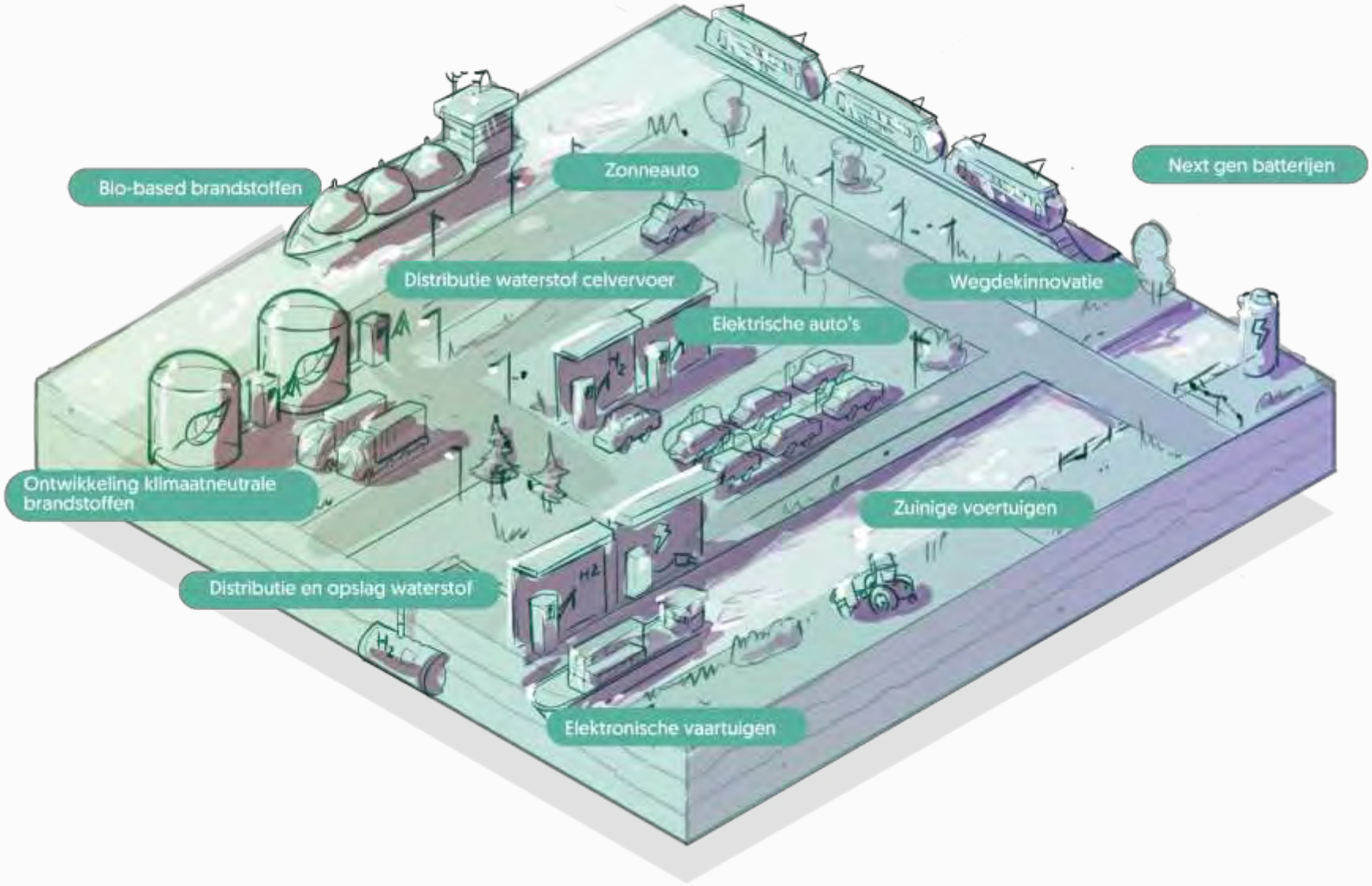
MMIP - A 100% CO_2-free industrial heat system



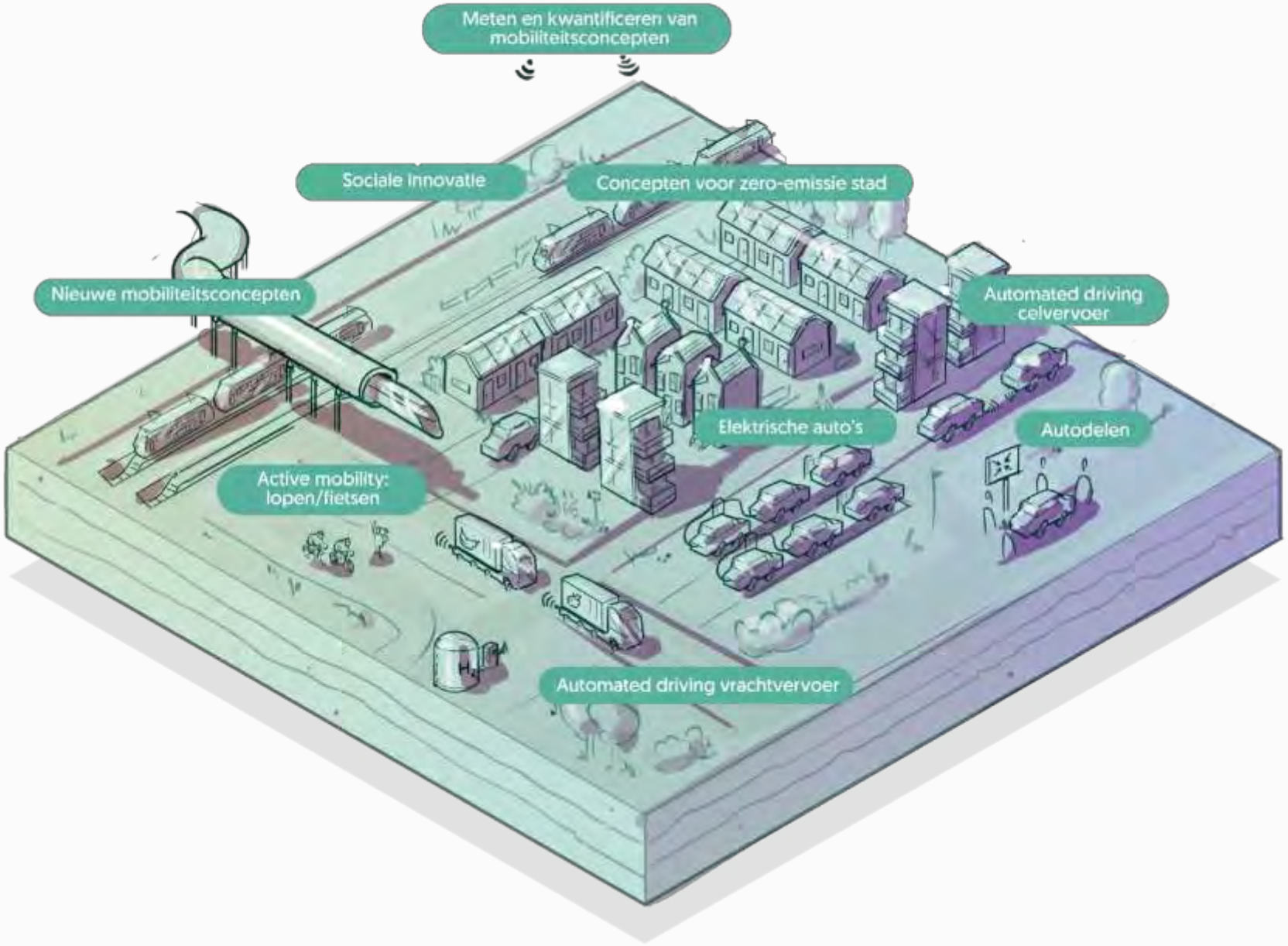
MMIP - Maximum electrification and radically renewed processes



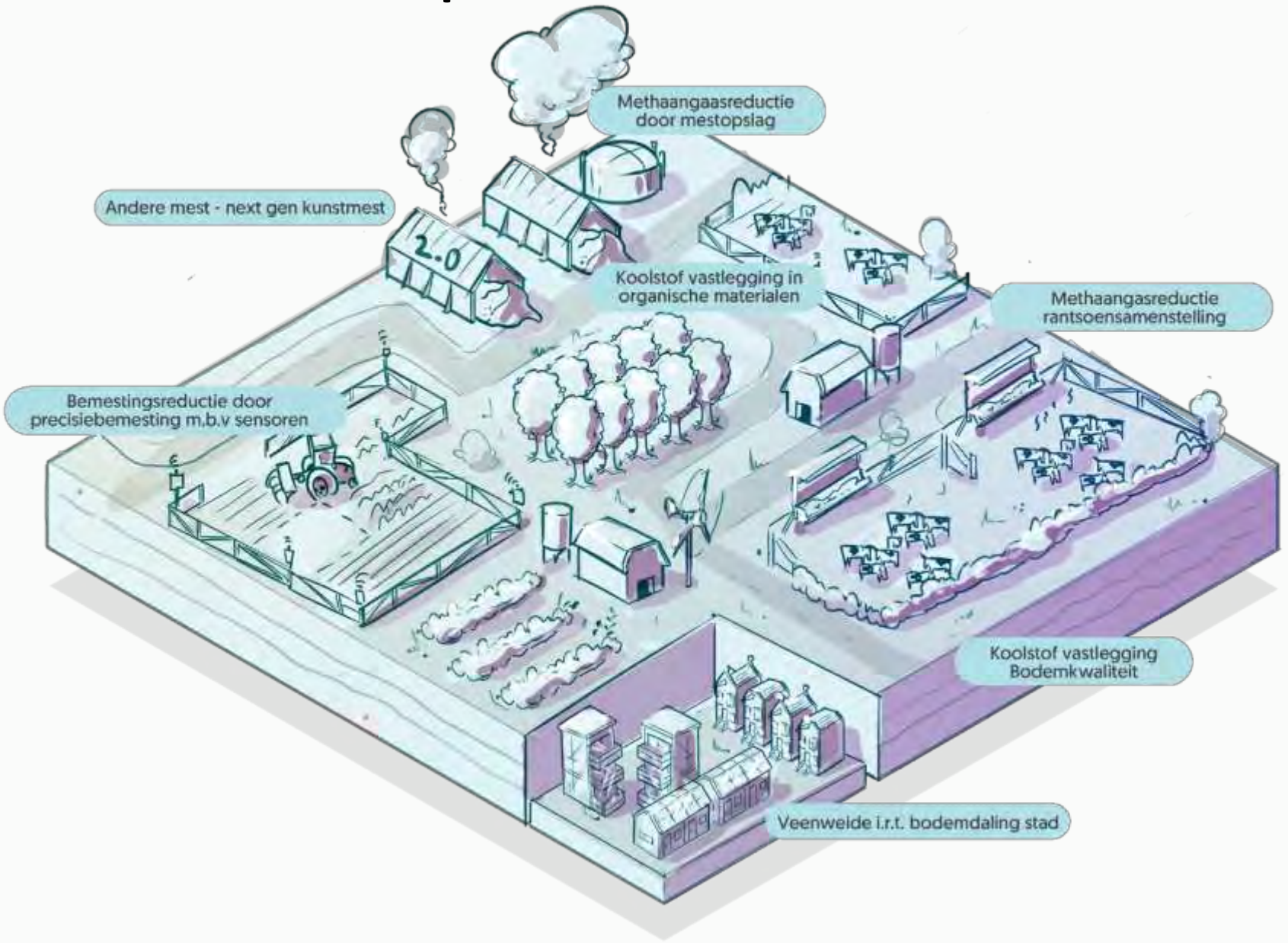
MMIP - Sustainable energy carriers for mobility



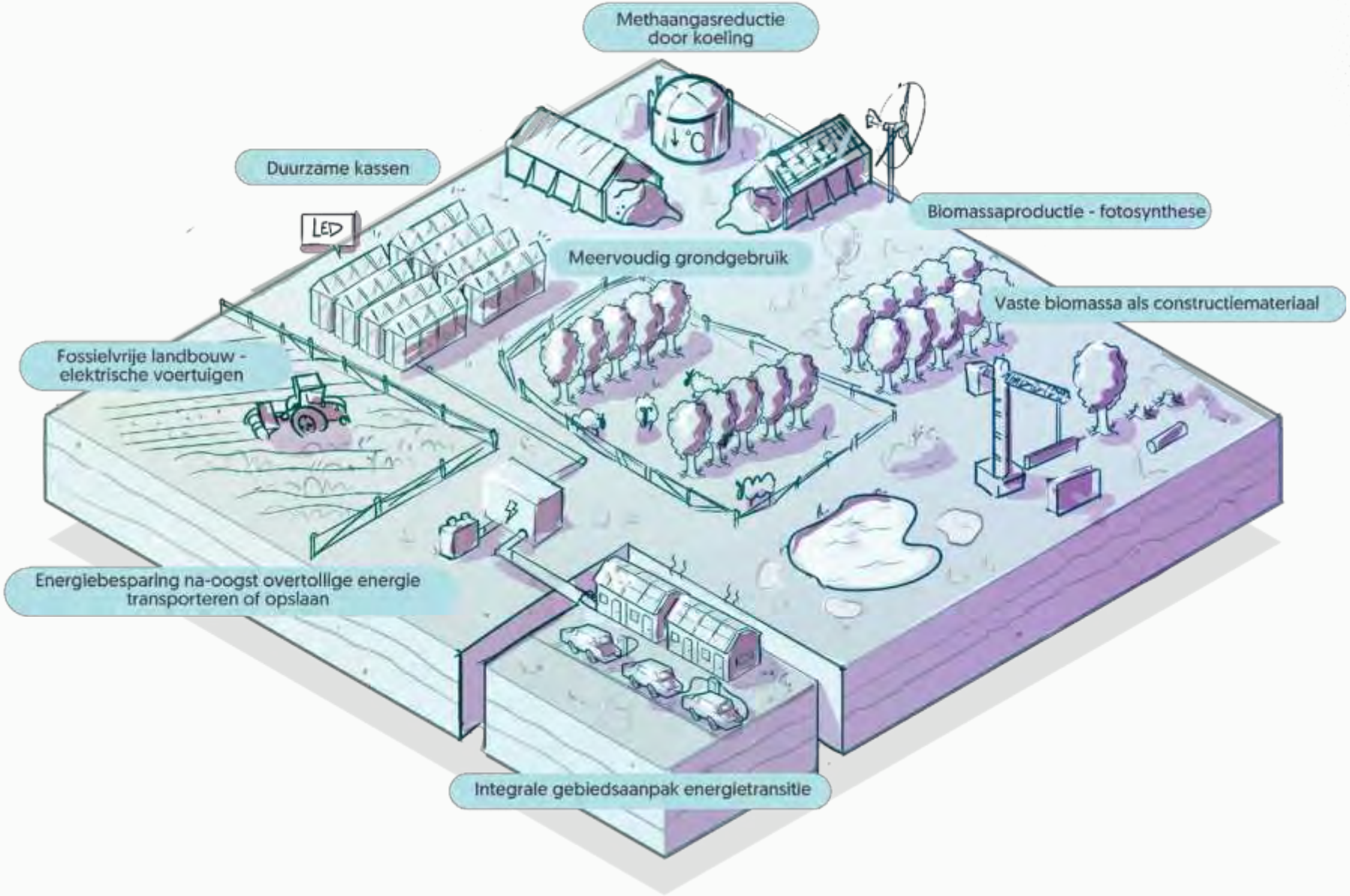
MMIP - Efficient transport movements for people and goods



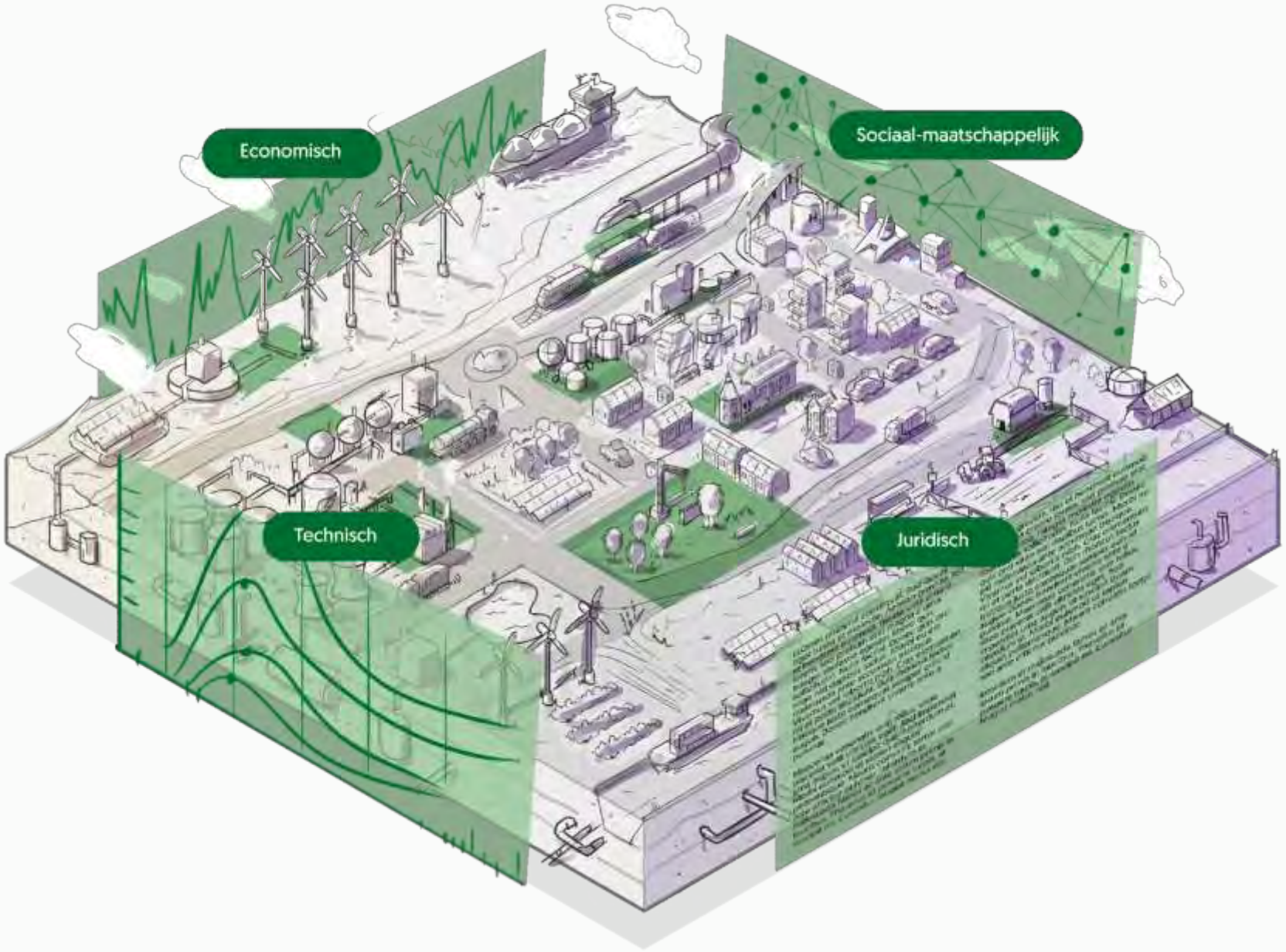
MMIP - Climate neutral production food and non-food



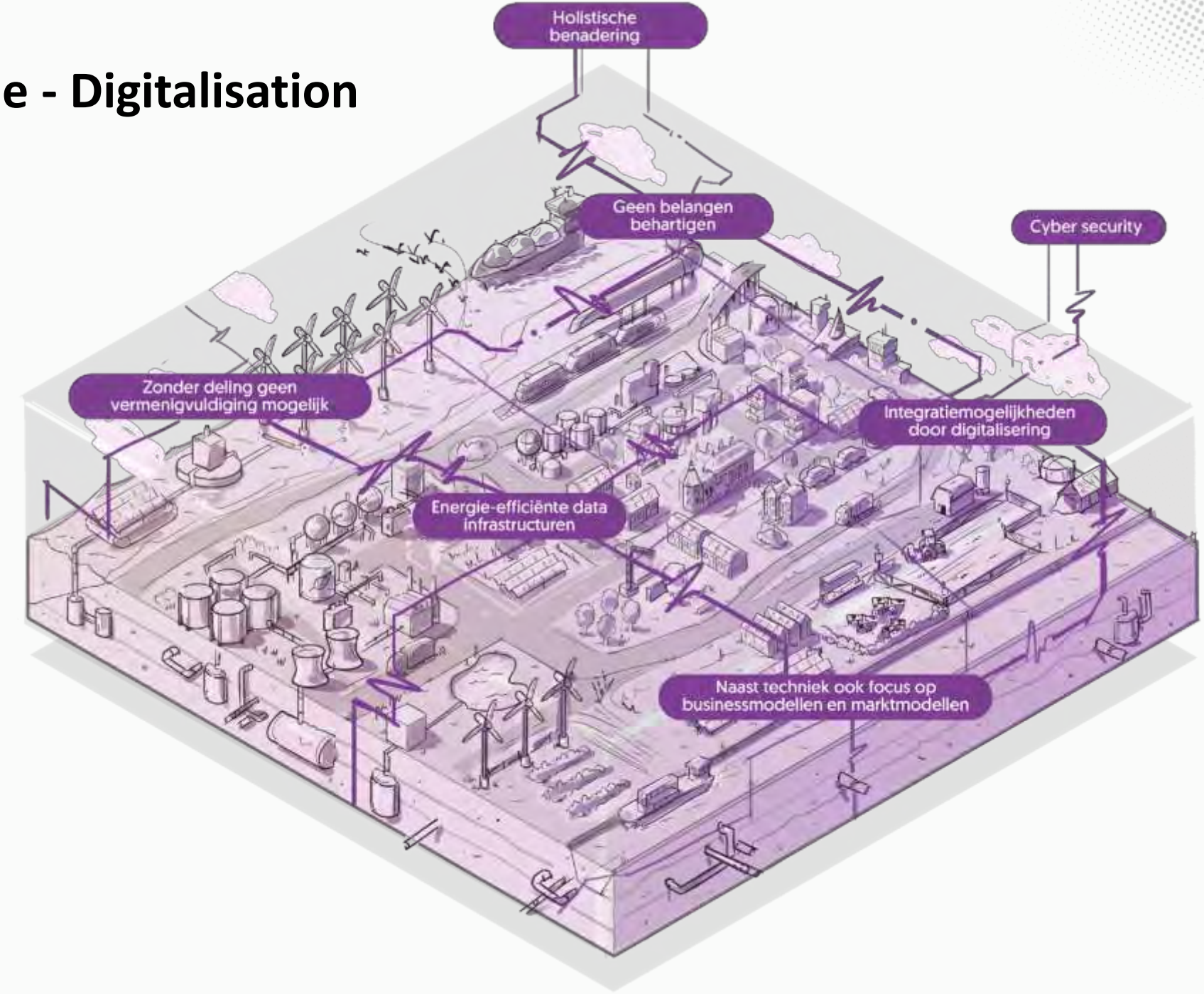
MMIP - Land and water optimised for CO_2 capture and use



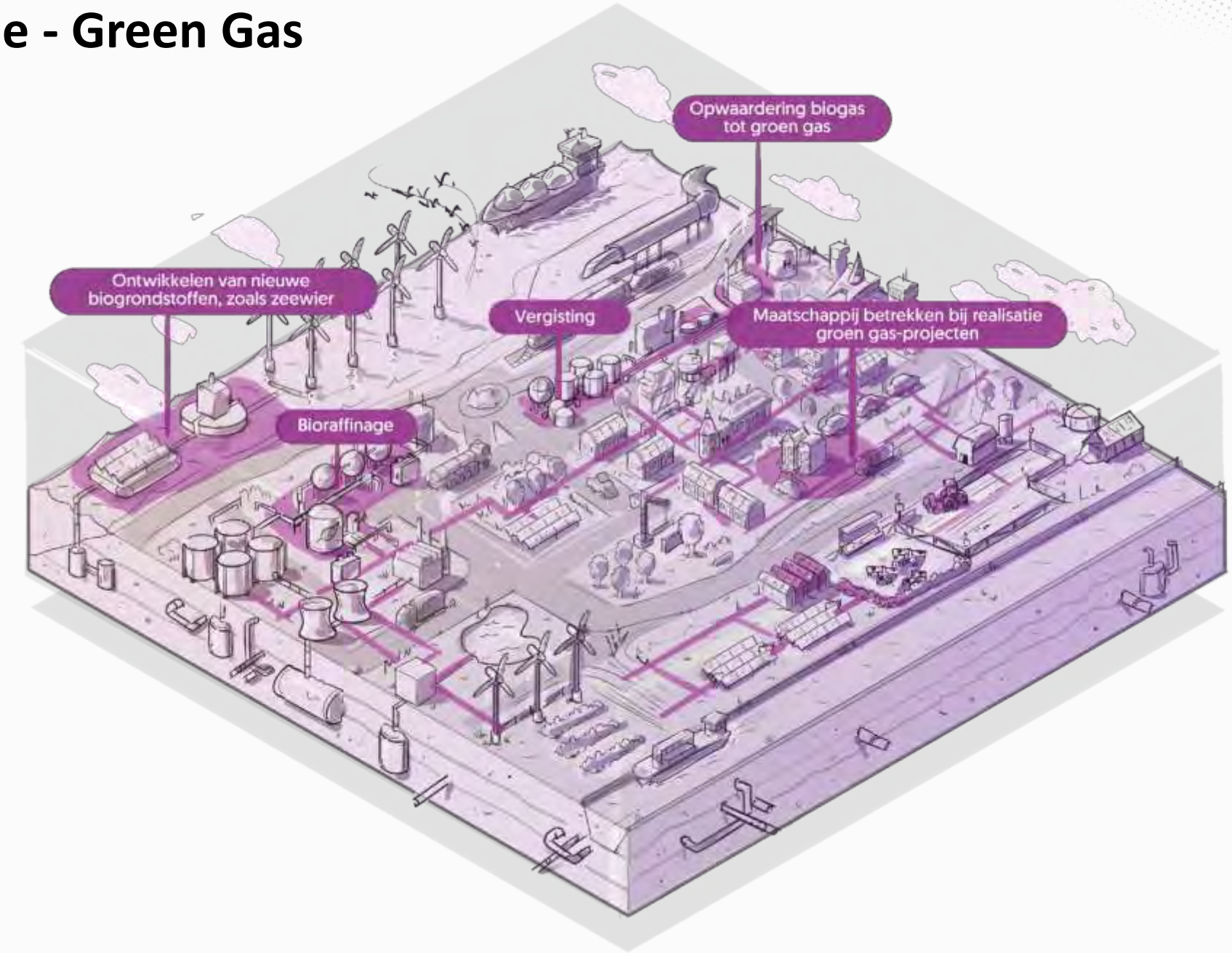
MMIP - Robust and societal supported energy system



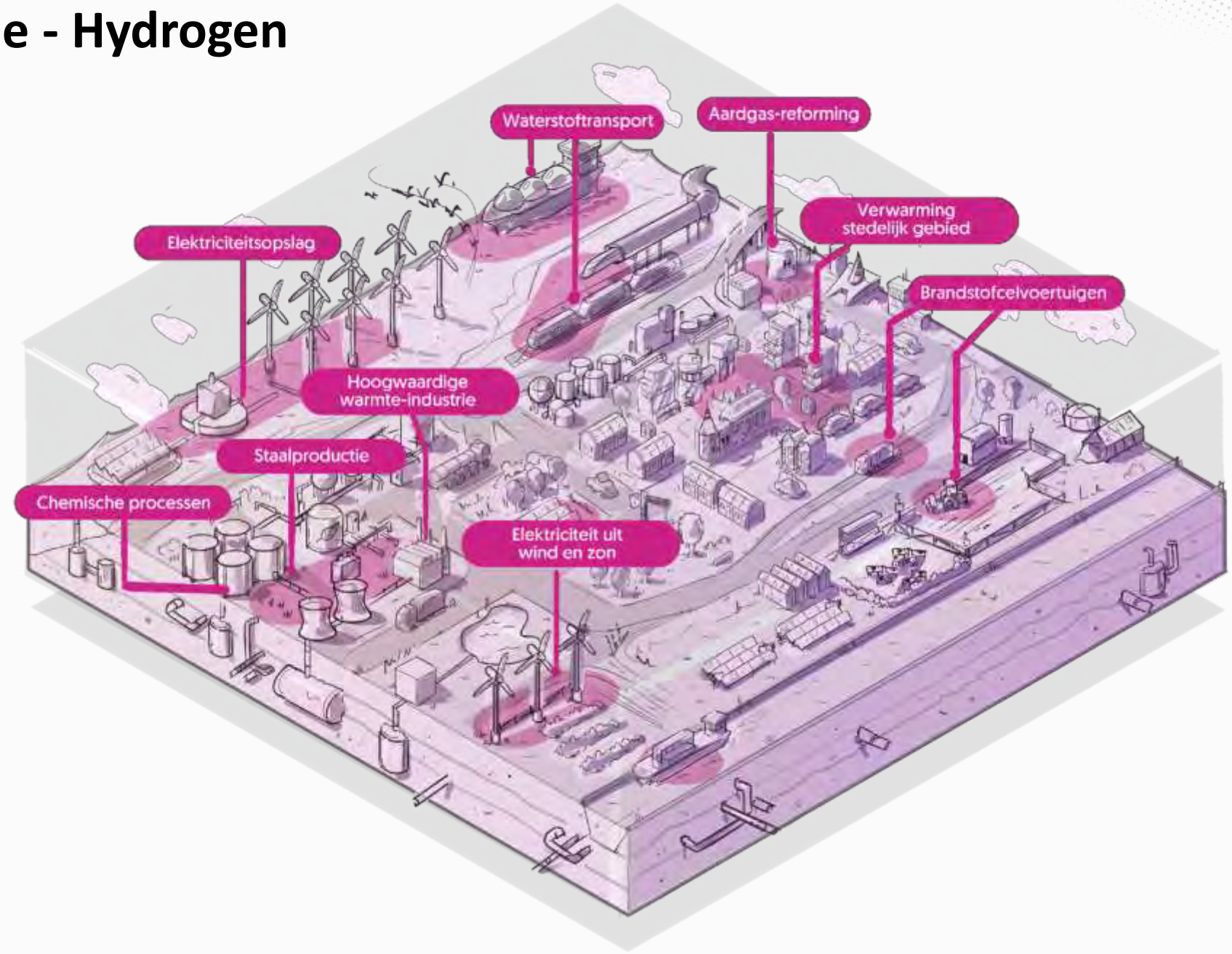
Theme - Digitalisation



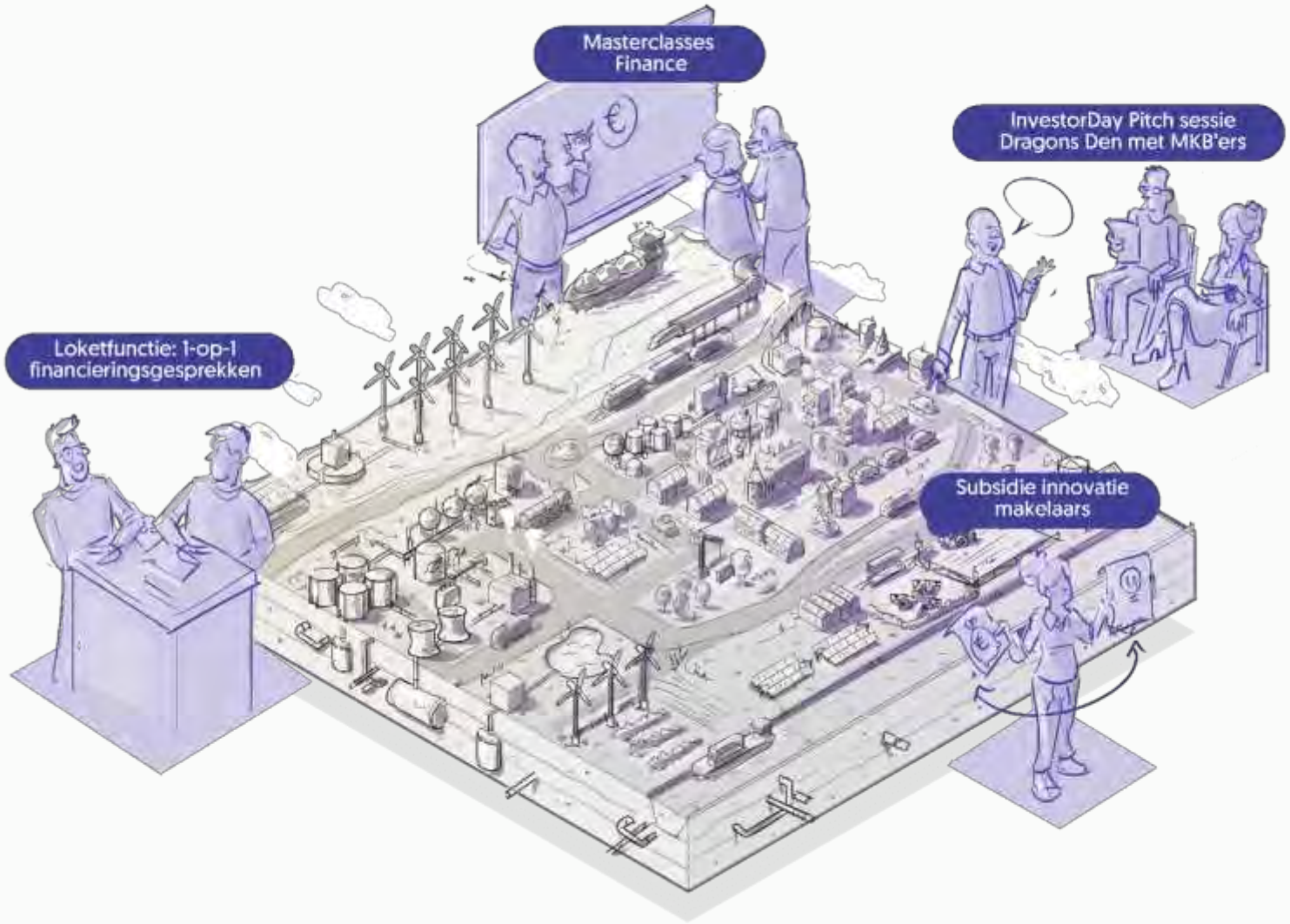
Theme - Green Gas



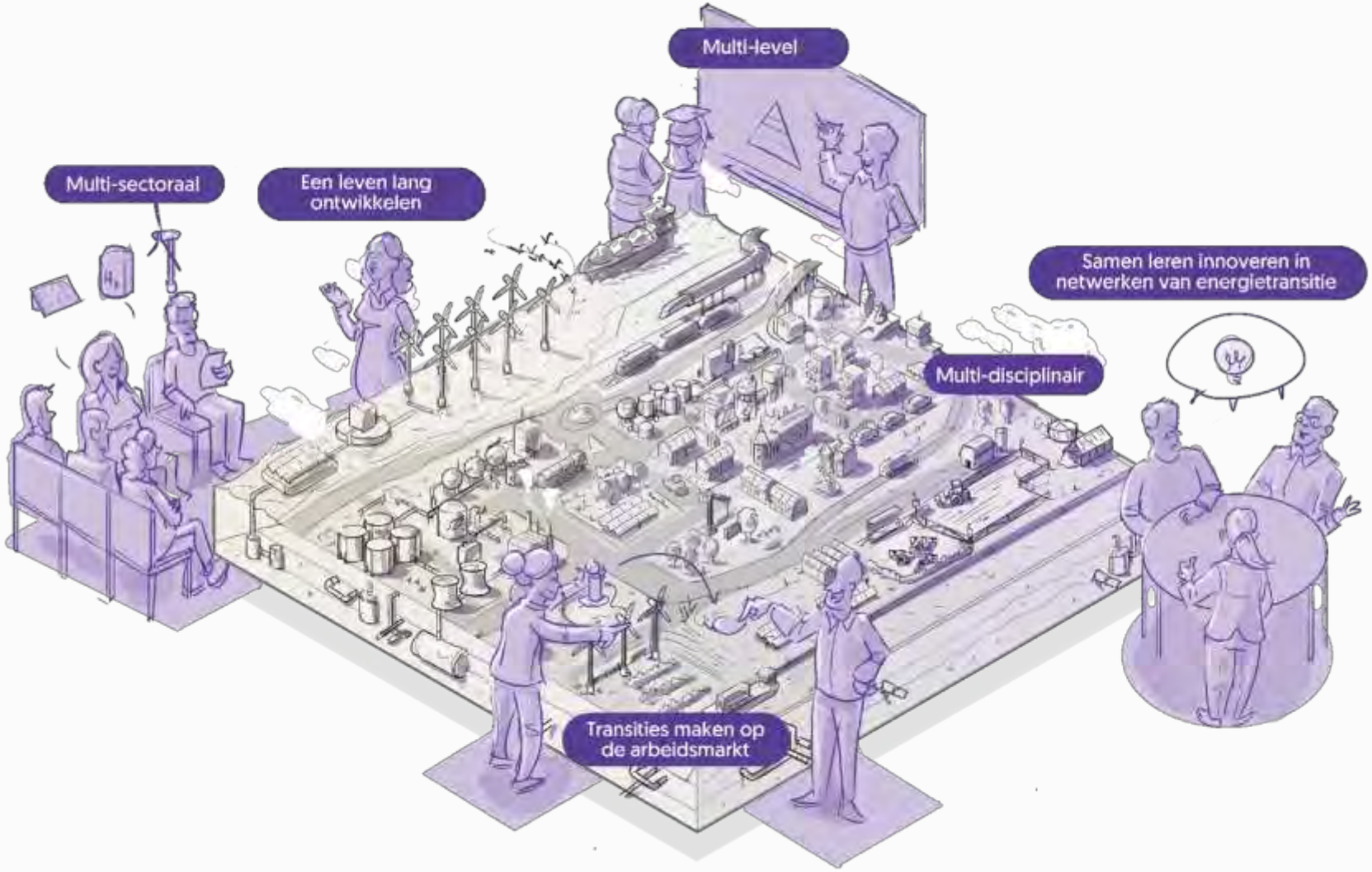
Theme - Hydrogen



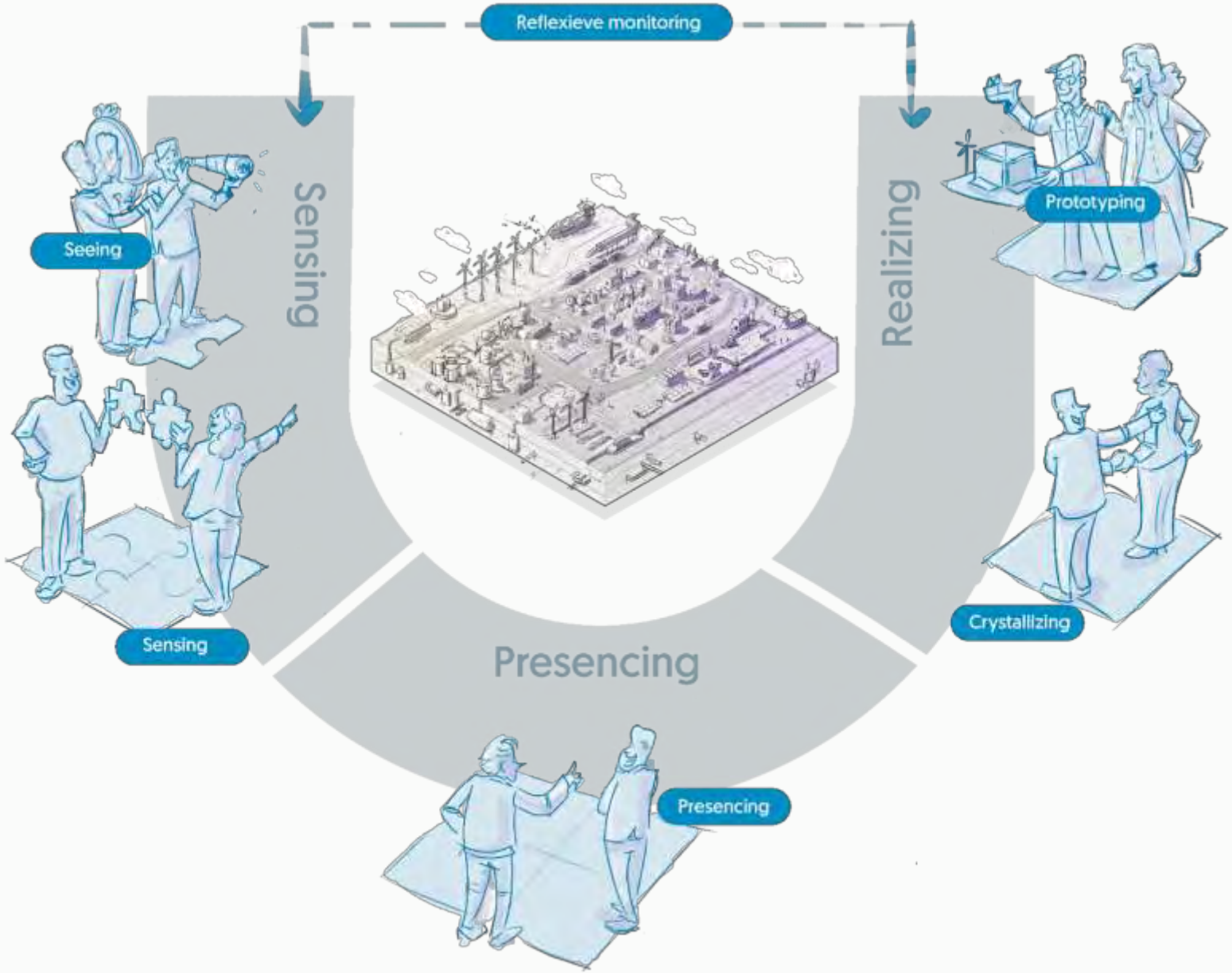
Theme - Financing



Theme - Human Capital

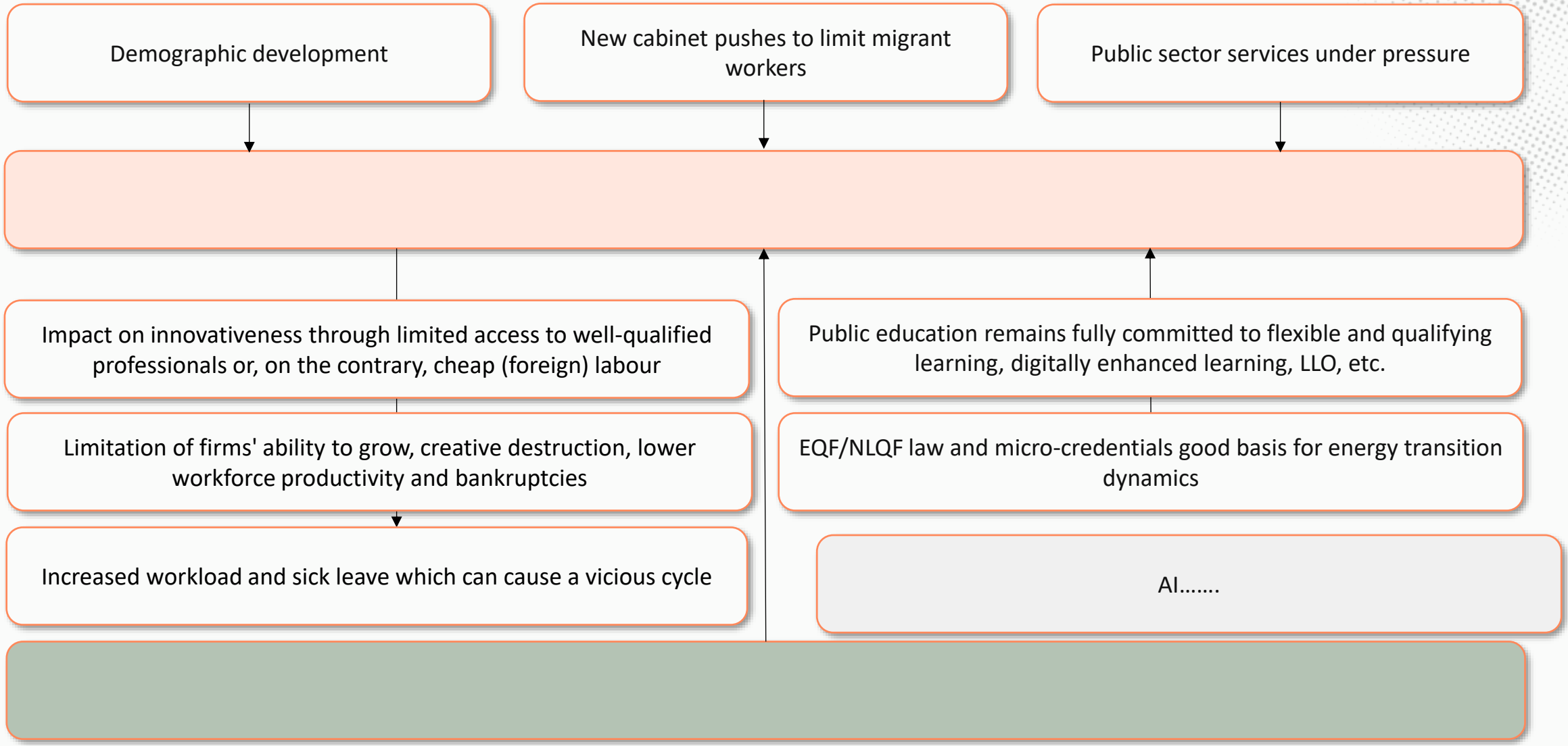


Theme - Socially Responsible Innovation



Human Capital

Trends and developments in Dutch society



Networked LCs strengthen regions and prevent fragmentation

Reduced innovation subsidies require new financing strategies for energy transition

Flexibilisation of learning and qualification in vocational education crucial for energy transition

Continuing labour market tightness and increasing regional pressure on technical shortages

Policy shift to nuclear requires new competences

Adaptive education crucial for promising technical professions

Leadership development and entrepreneurial skills essential for circular innovations

Integration of circular economy and multidisciplinary learning for sustainable innovation

Strategic and chain-based regional education requires acceleration

EQF/NLQF law and micro-credentials good basis for energy transition dynamics

HCA must respond to labour migration restrictions by developing domestic talent

HCA tailoring essential due to regional discrepancies

Programme line 1: Coherent approach

- Continue activities aimed at **synergy between national programmes and regional projects** (consultations, regional portraits, good practices, network map, regional network meetings)
- Conduct in-depth research and Think Tank (2024-2025), bring into dialogue with regions and national programmes, share insights and bring into discussion. Vb. Green&Digital Jobs action plan

Programme line 2: Labour-saving innovations

- Take the first insights on operation and potential of **labour-saving innovations into practice** and include the practical obstacles in doing so.
- **Subsidy scheme to stimulate labour-saving innovations** by LCs, practorates, lectorates, researchers and industry.
- Ecosystem inspiration, dialogue and community building.

Programme line 3: Innovating and learning the ET

- Increasing **innovation maturity** and capacity 118 **Learning Communities**, 1200 **e-HUBS** and embedding within ecosystems TSE *(Action Scans, FollowUps, increasing adaptive capacity and interdisciplinarity, cross-sectorality, and 'do' agendas)*
- Increasing **knowledge creation, circulation, adoption LCs** (linking MOOI scheme & LCs, development agenda PractorenPlatform/TSE-HCA, networking and cross-sectoral working, learning and innovation in and between LCs, grants RVO/NWO
- Follow-up **regional dialogue sessions**, linking innovation agenda Practorates/LectoratesPlatforms

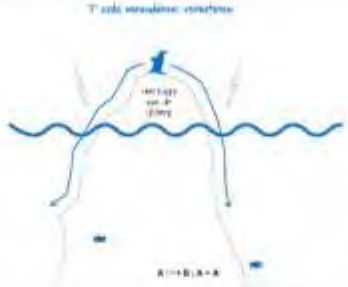
- Explore **connection** with **Energy Justice programme** around theme of energy poverty, labour market tightness and untapped potential
- Monitoring **impact digitalisation on labour market and translation** to LCs for energy transition
- **TKIs/DSTs** specific labour market explorations/surveys/network meetings

Change perspective Working, Innovating & Learning

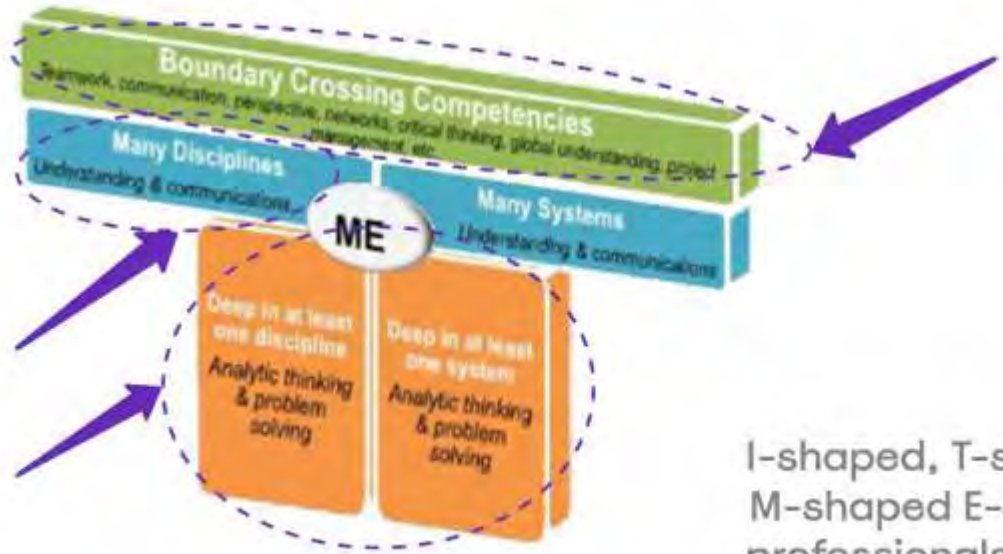
Learn to anticipate fluidity and interdependence

The 'dis'order of things

- natural orders
- 3rd order
- 2nd order
- 1st order



Required competences in complexities



I-shaped, T-shaped,
M-shaped E-shaped
professionals/teams

Vision on work & innovation, learning & development

learning & development

working & innovating,
adapting to change

from ego to ecosystem meaning

whole ecosystem approach
lifelong learning
#ecosophy

meta competences

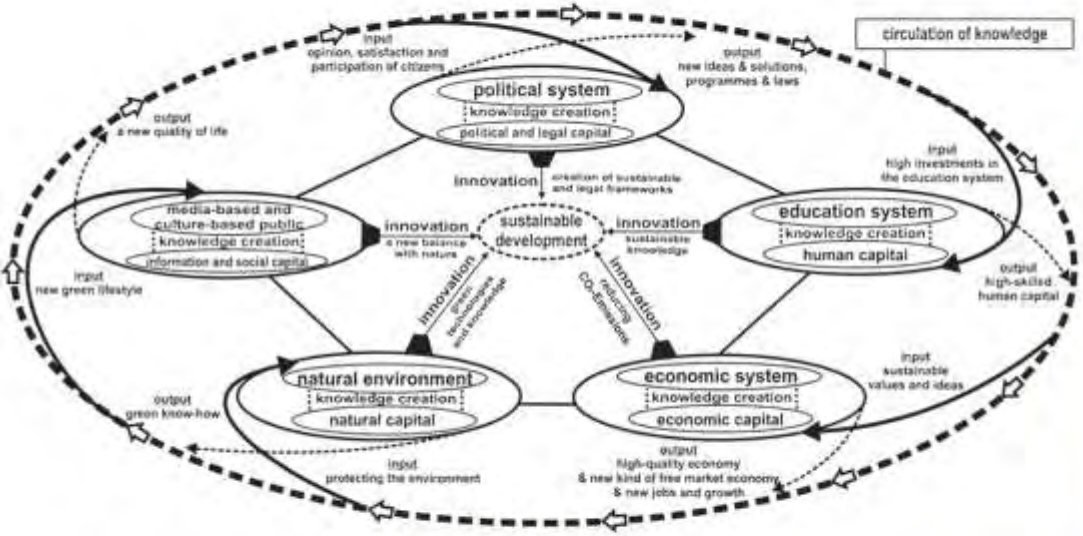
domain competences

transformative competences

whole people's approach

whole school approach

Gaps in knowledge and skills infrastructure



When the latest new knowledge, information and innovations are not or cannot be known and implemented by **education**and **entrepreneurs** and **governments** are not sufficiently involved, **DAN....**

Learning Communities

Is there an active presence/involvement of entrepreneurs, government, education, knowledge institutions and end-users in the LC?

- Openness
- Accessibility
- Availability
- Inclusiveness and diversity
- Usability
- Findability
- Sustainability
- Agility/ adaptability

What is the level of 'knowledge' circulation in the LC based on the missions and issues?

- How quickly does the latest knowledge, information and innovations succeed each other?
- Degree of task maturity (push/pull)

What is degree of adoption of 'knowledge', information and innovation in the LC?

- We know what it takes to apply the latest knowledge, information and innovations
- To what extent do we apply new knowledge, information and innovations in our daily work?
- What added value does the available knowledge, information and innovation bring to our daily practice?

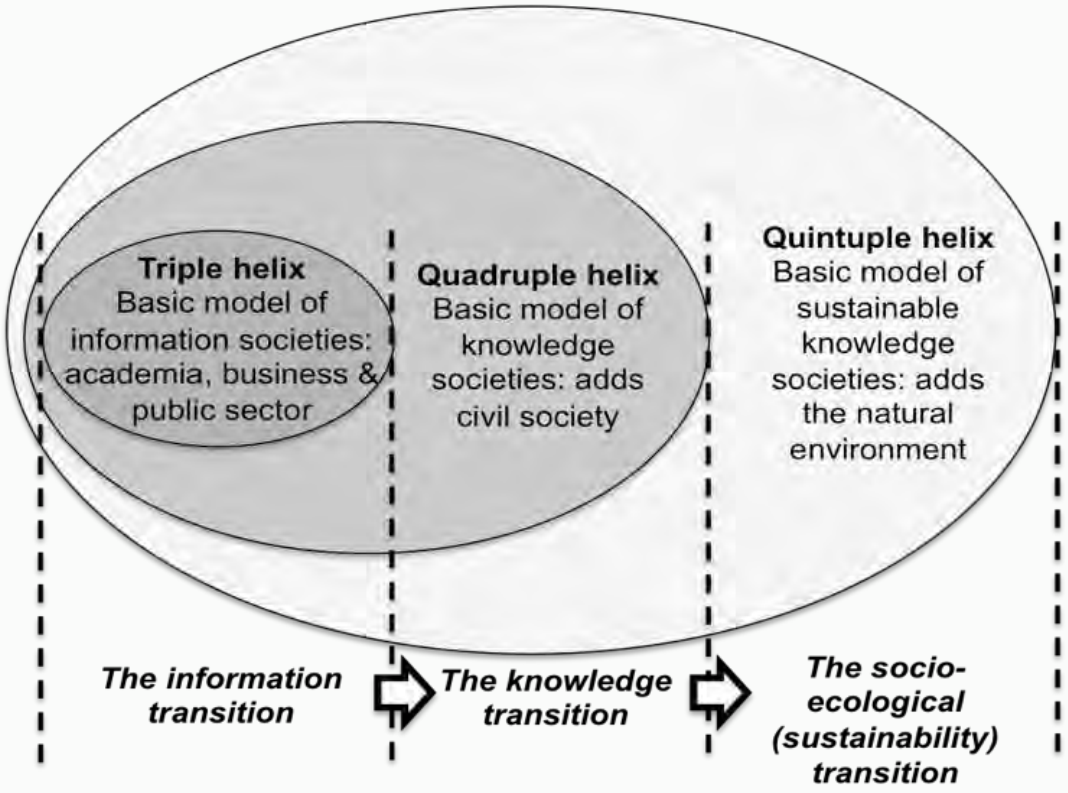
What is the degree of learning, innovation and problem-solving capacity within the LC?

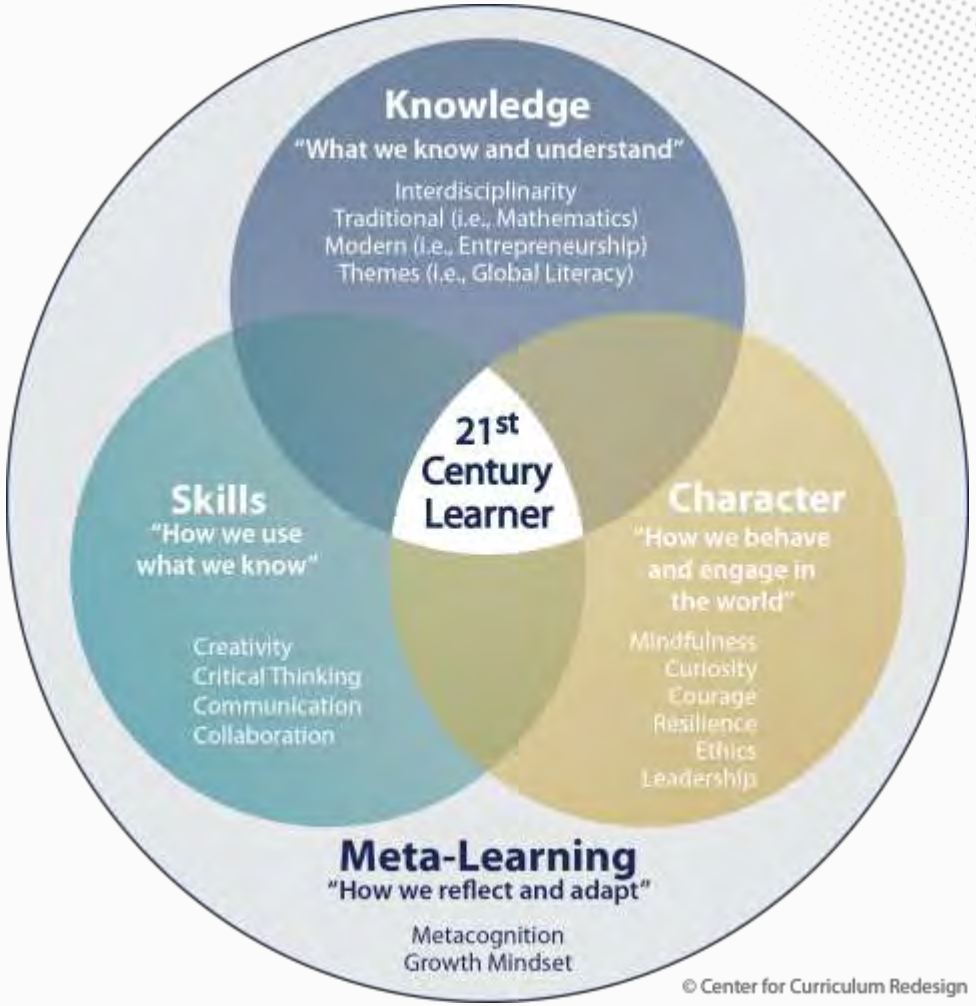
- To what extent does the adopted knowledge, information and innovations contribute to (new) business models?
- To what extent do we ourselves contribute to the creation of new knowledge, information and innovations?

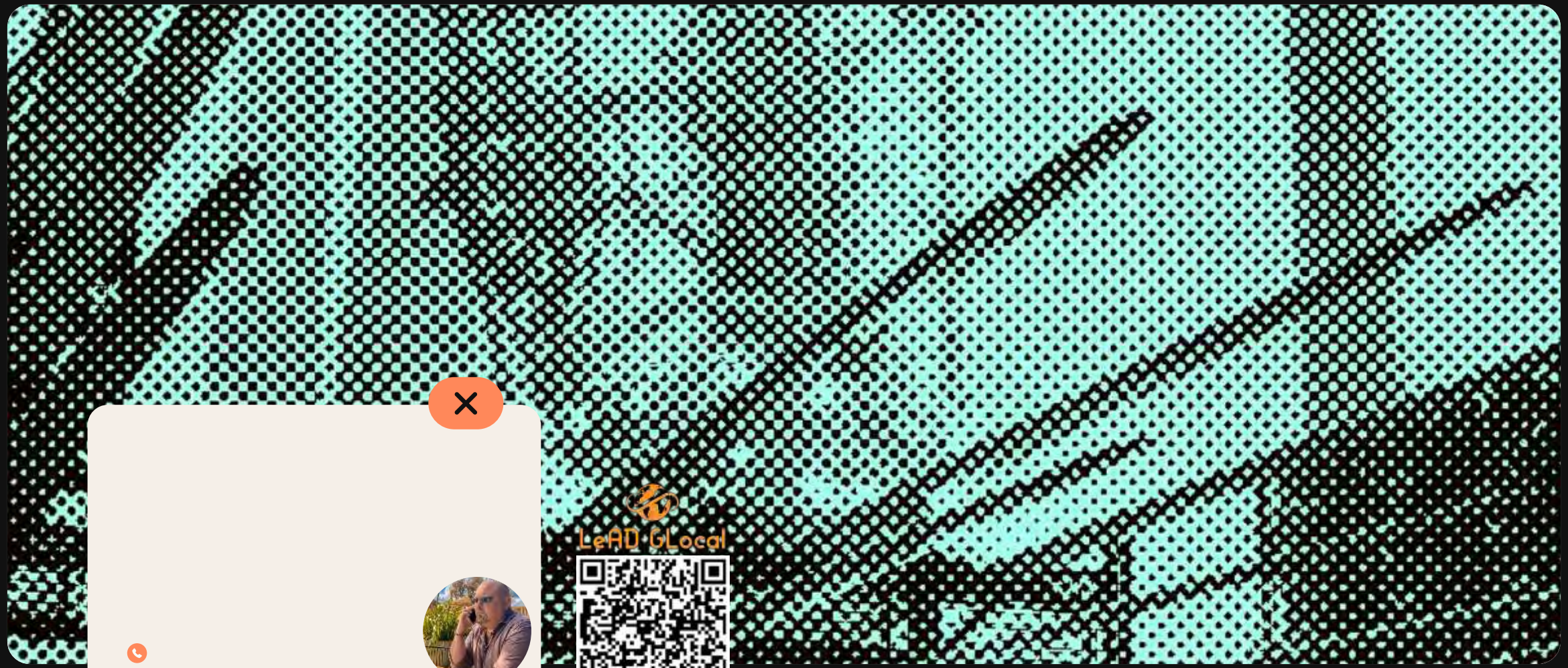
Ecological Readiness Levels

Societal/Stakeholder Readiness Levels

Sustainability Skills Readiness Levels


Triple helix
Basic model of information societies: academia, business & public sector
Quadruple helix
Basic model of knowledge societies: adds civil society
Quintuple helix
Basic model of sustainable knowledge societies: adds the natural environment
The information transition
The knowledge transition
The socio-ecological (sustainability) transition


Knowledge
"What we know and understand"
Interdisciplinarity
Traditional (i.e., Mathematics)
Modern (i.e., Entrepreneurship)
Themes (i.e., Global Literacy)
21st Century Learner
Skills
"How we use what we know"
Creativity
Critical Thinking
Communication
Collaboration
Character
"How we behave and engage in the world"
Mindfulness
Curiosity
Courage
Resilience
Ethics
Leadership
Meta-Learning
"How we reflect and adapt"
Metacognition
Growth Mindset
© Center for Curriculum Redesign



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