

# The Energy Challenge



Sarvin Sarabi | Thomas Bollen | Yara Ibrahim | Ann Eapen

**Oosterhoff**  
consultants & engineers

**Quake**

**abt** / adviseurs in  
bouwtechniek

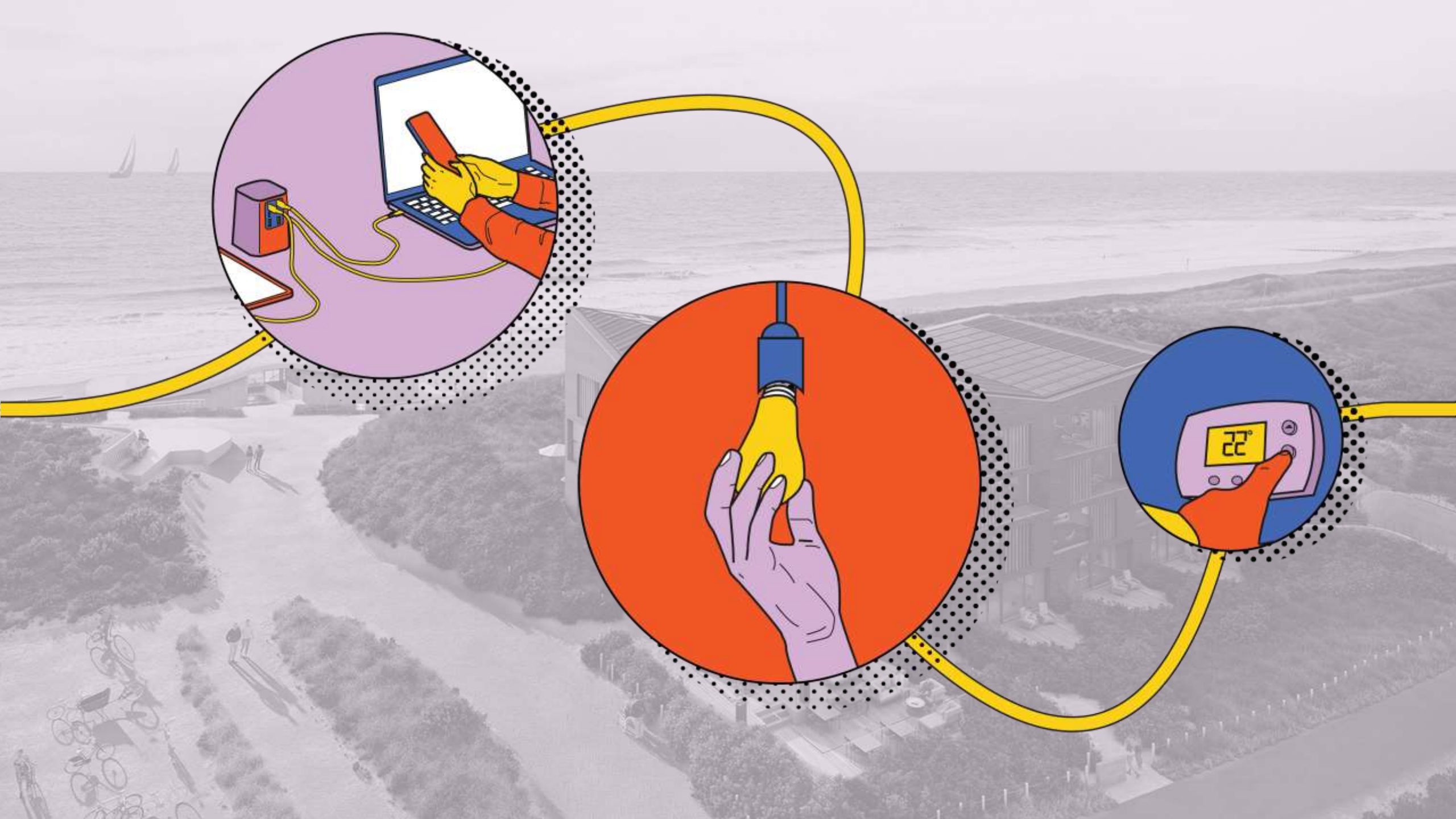


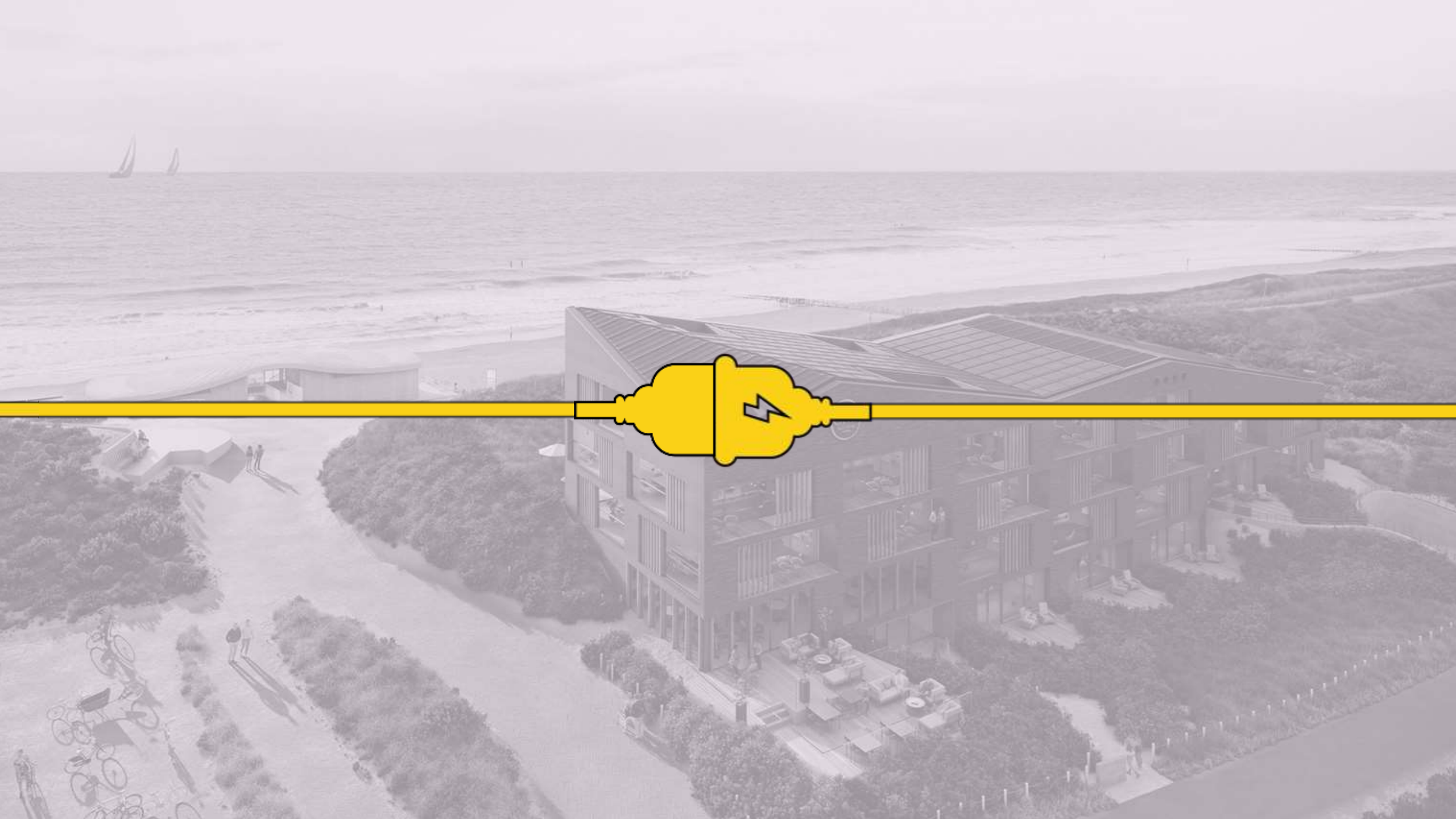
"What is your innovative idea to future-proof accessibility at a regional level?"



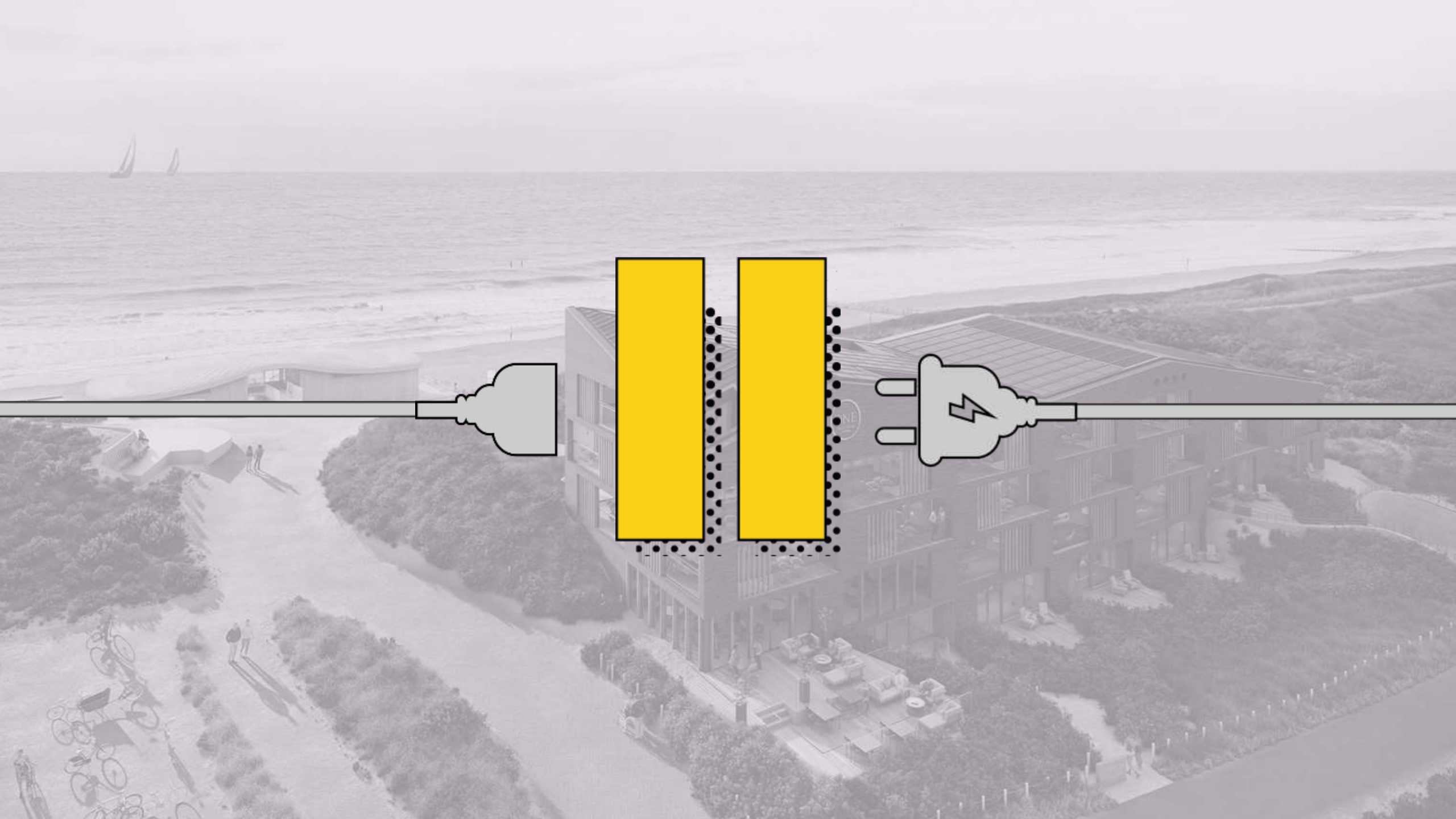
Source: One Villahotel Domburg

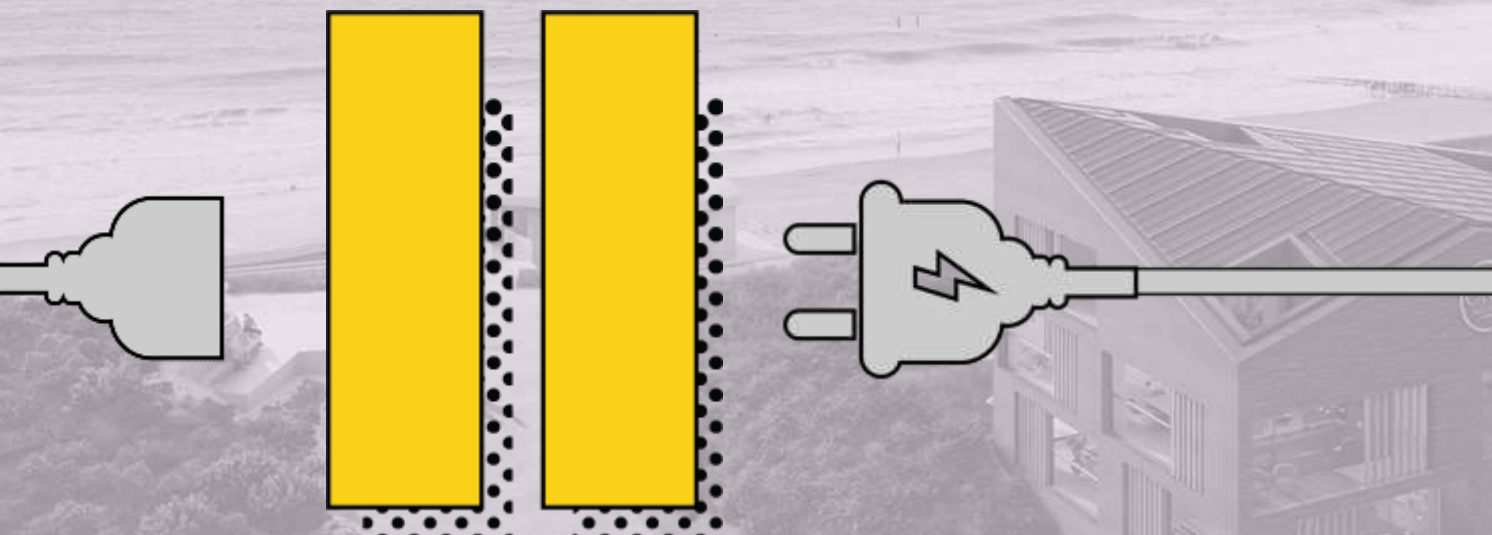














Maarten Bouwhuis • 2nd

Dagvoorzitter – Debatleider – Presentator  Presentator BNR ...

1d • 

[+ Follow](#)



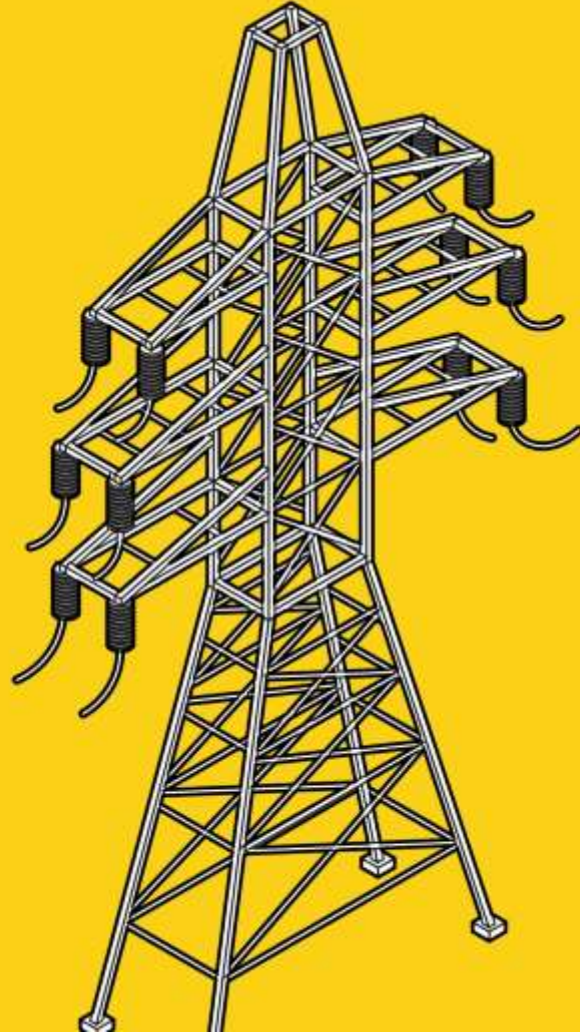
Uw presentator waait een paar dagen uit in Zeeland. Hoewel maar 300.000 inwoners loopt het ook hier vast.

Deze hotel ondernemer in [#domburg](#) laat het dan maar zien 👍.

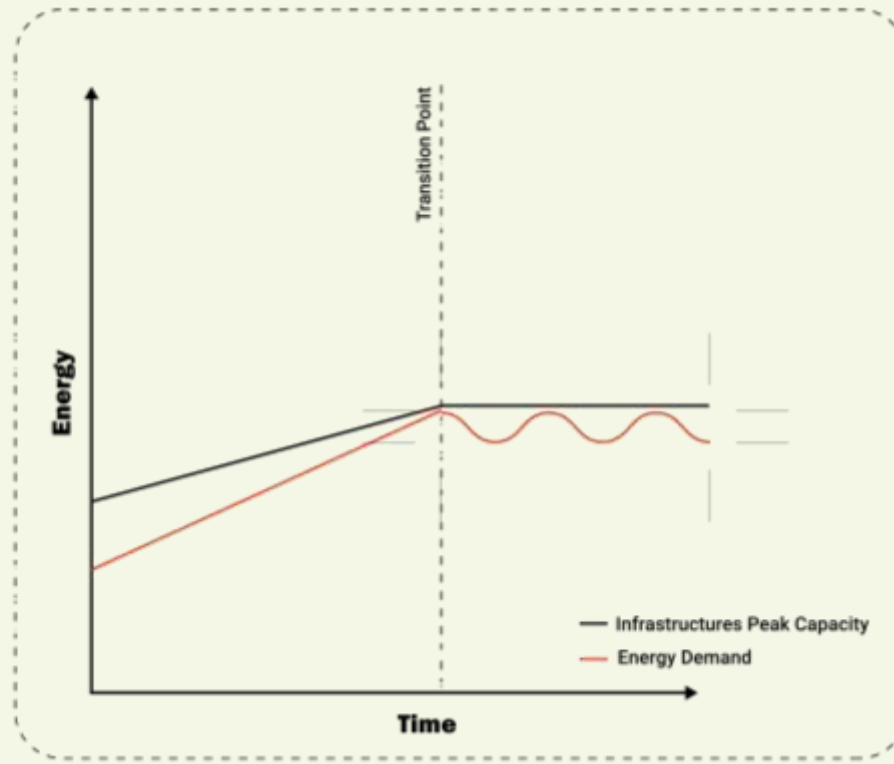
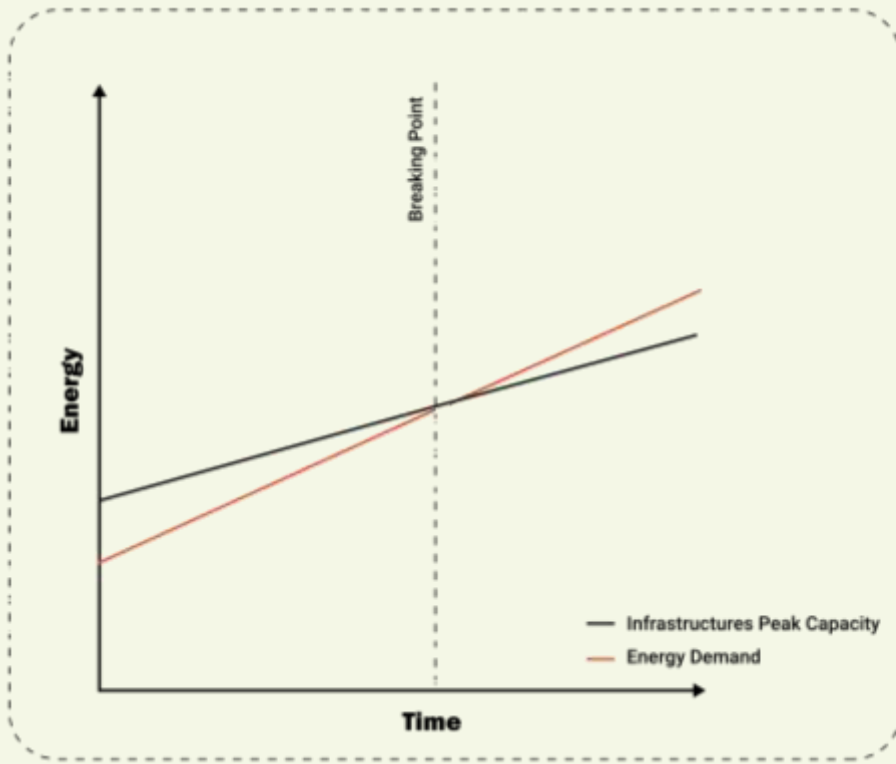
Als de bouwcrisis menes is, grijp dan in! Voorbij aan rapporten en bezwaren. Doe iets.

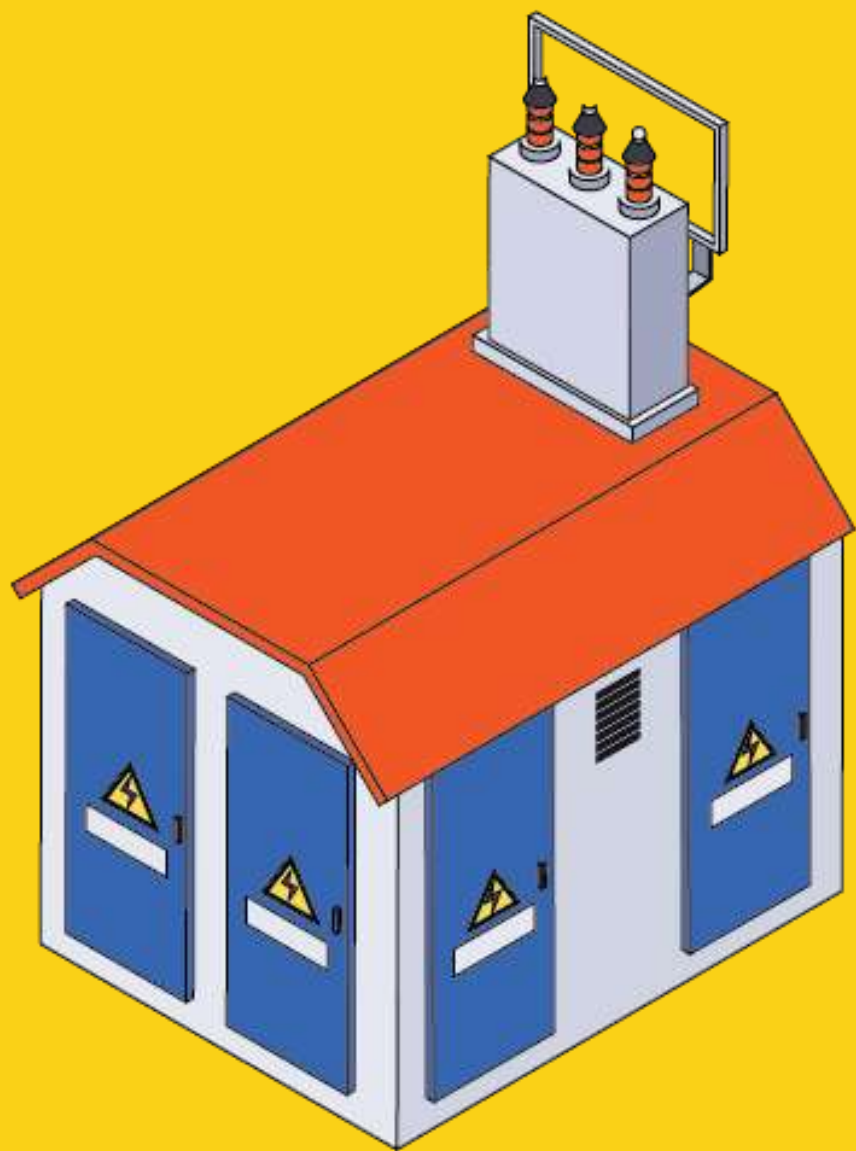
[#vastgoed](#) [#netcongestie](#) [#wooncrisis](#) [BNR Nieuwsradio Maarten De Gruyter](#)  
[Christie's International Real Estate](#) | [r365 Makelaarskantoor Wisse Vastgoed BV](#)



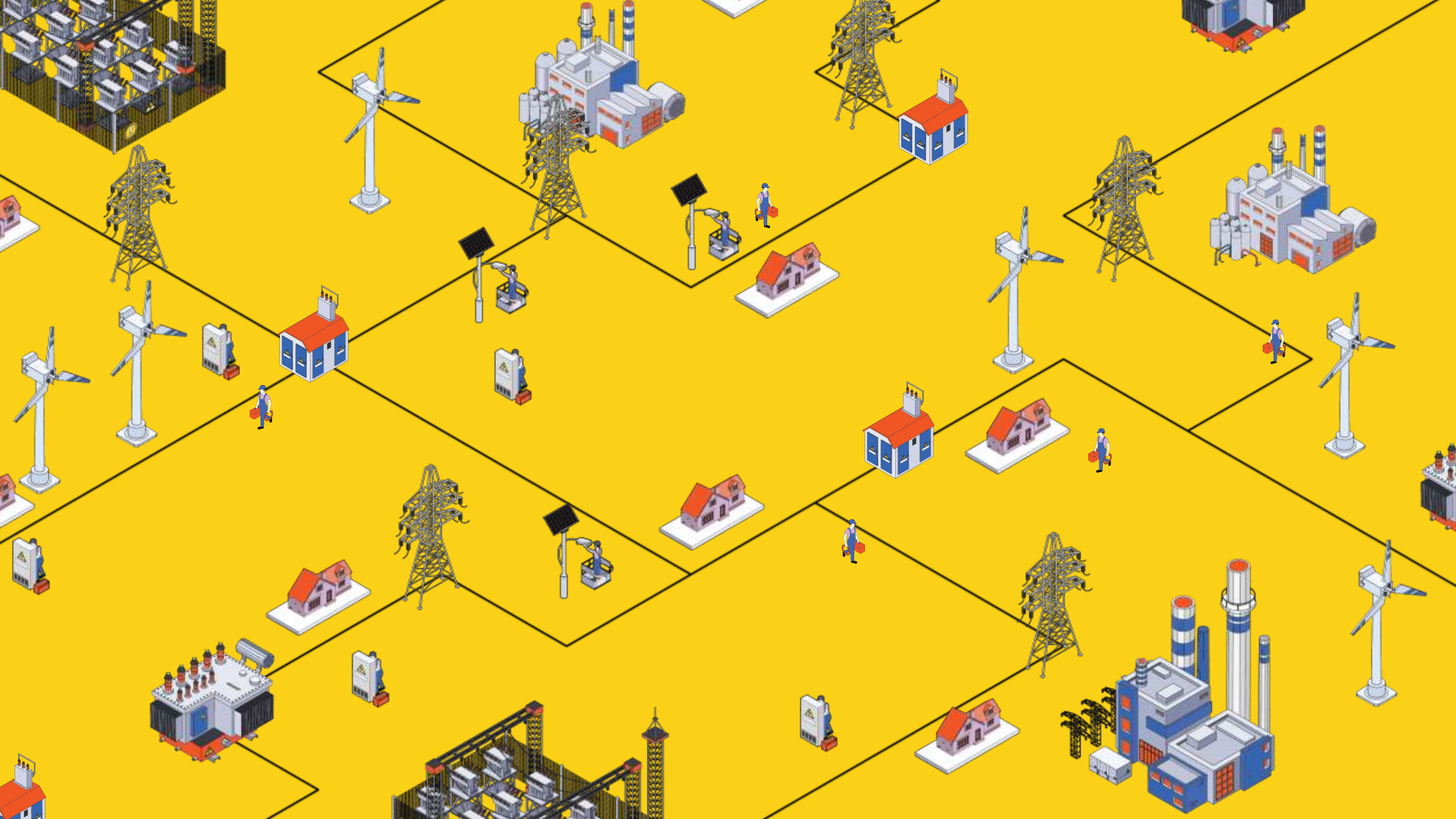




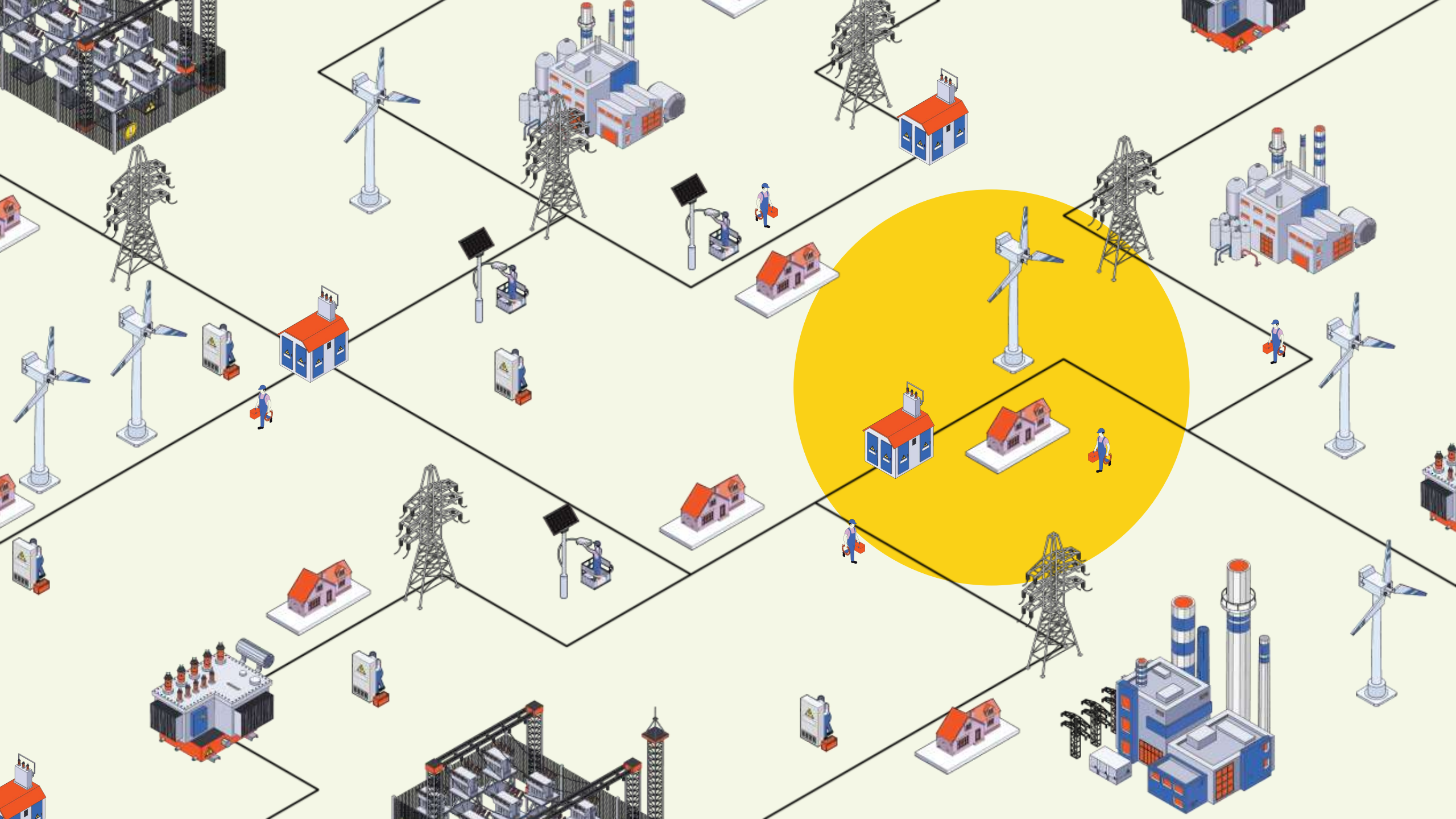






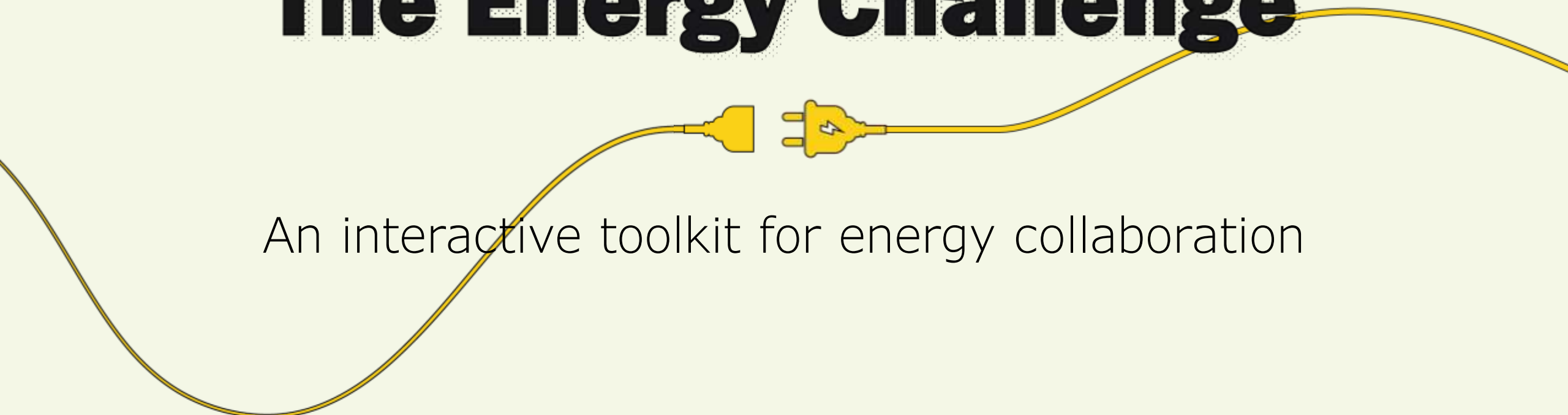






# The Energy Challenge

An interactive toolkit for energy collaboration

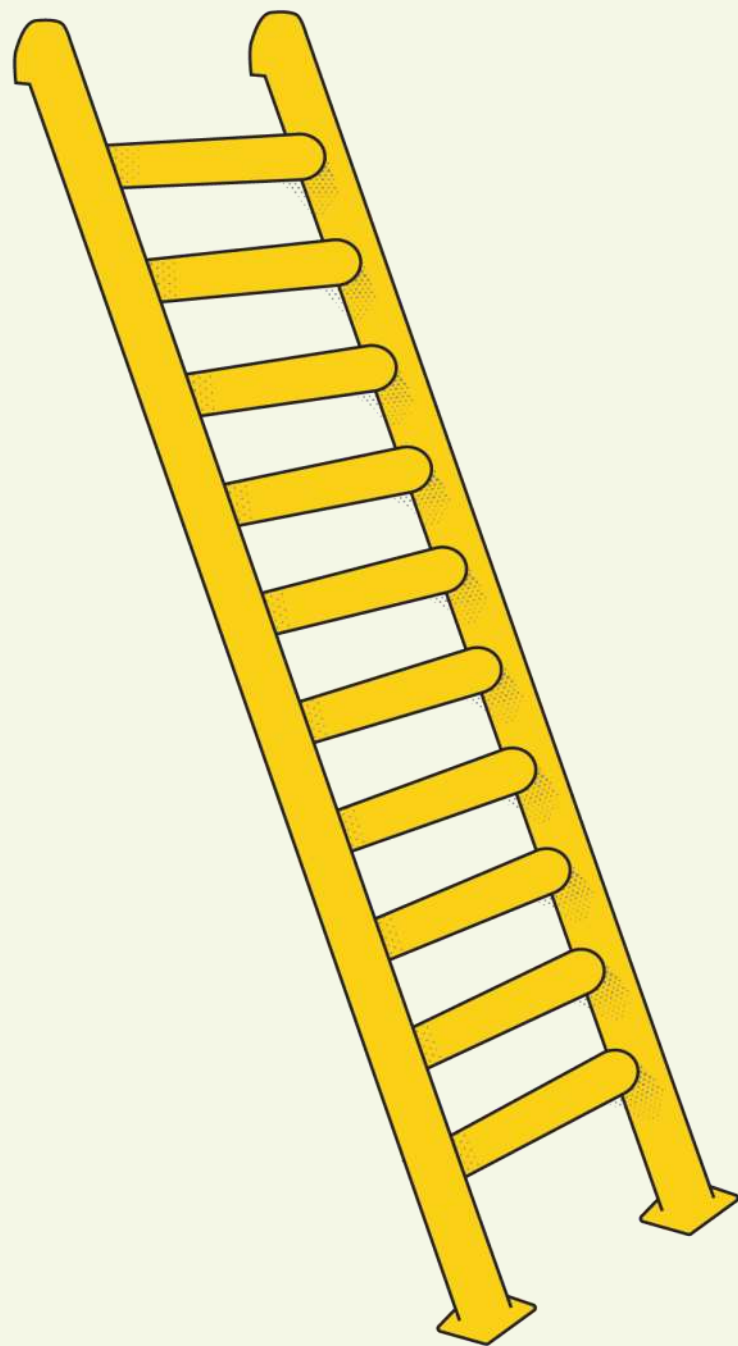


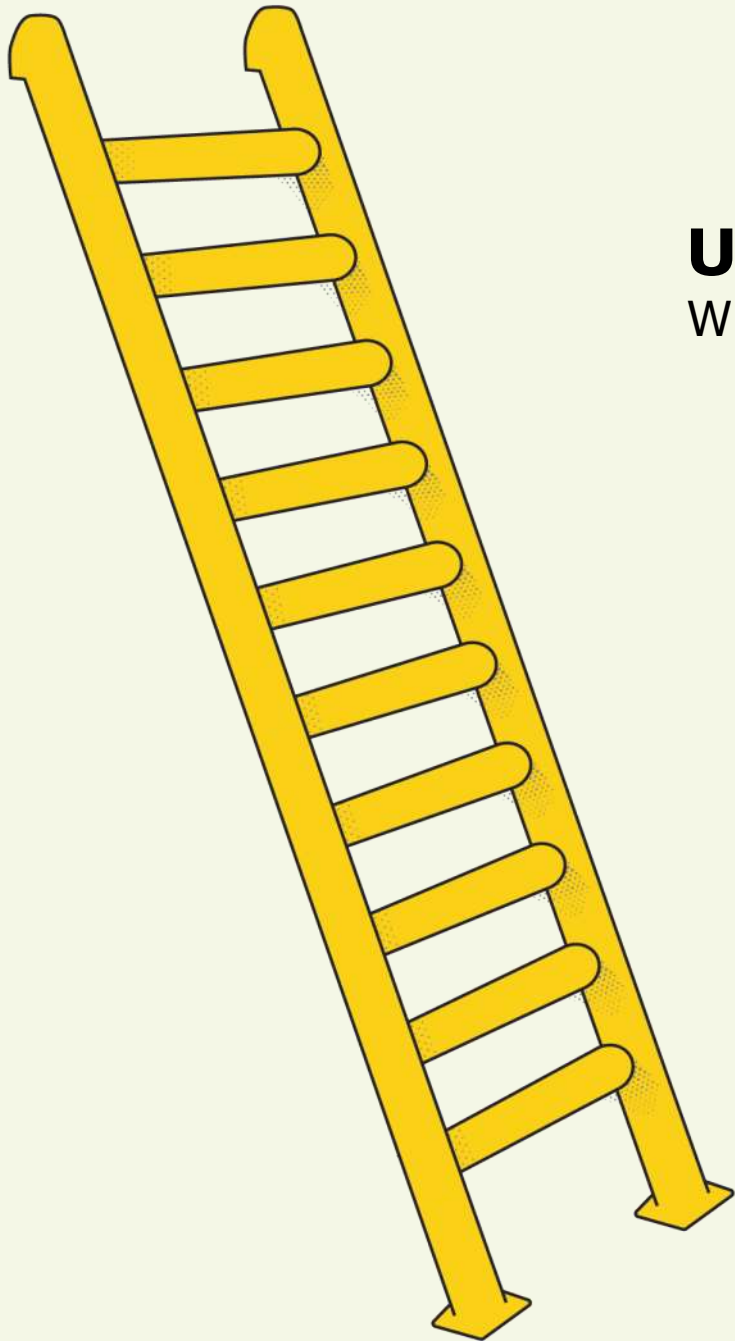
# The Energy Challenge



An interactive toolkit for energy collaboration







## **Underlying Pains**

Why are these problems?

## **Types of problem**

Why is it not working?

## **Concrete issues**

What is not working?

A yellow ladder with black outlines, leaning against a light green background. The ladder is positioned on the left side of the frame, with its rungs and legs clearly visible.

# **Concrete issues**

What is not working?



# Uncertain Futures in the Energy Transition



## Legal Uncertainties

- Paris Climate Agreement Mid Century Phase out of Non-Renewable Energy
- Changes to Net Metering Law



## Power Generation

- New Energy Sources like Hydrogen
- Physical Location of new Energy Sources
- Uncertain Weather



## Future Energy Pricing

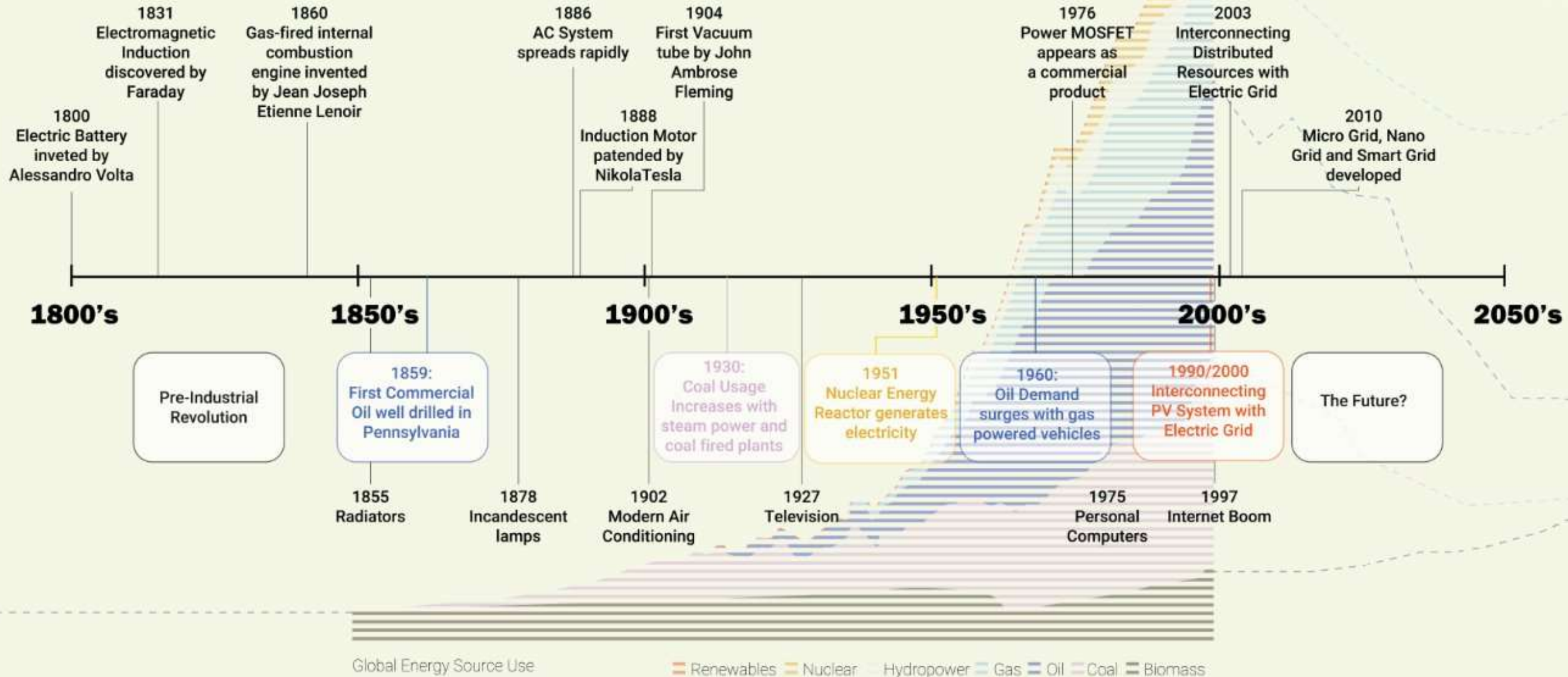
- Volatile Energy Market



## Steering Consumption Profiles

- Industrial Decarbonisation
- Influence of Smart Metering and AI
- Integrating Electric Vehicles into the Grid

# Significant Events in the Evolution of the Energy Grid





## Concrete issues

What is not working?



Peer2Peer energy is not allowed



The energy market is volatile



Many stakeholders are involved



Solutions require integral knowledge





## Types of problem

Why is it not working?



~~Lack of Technical Solutions~~



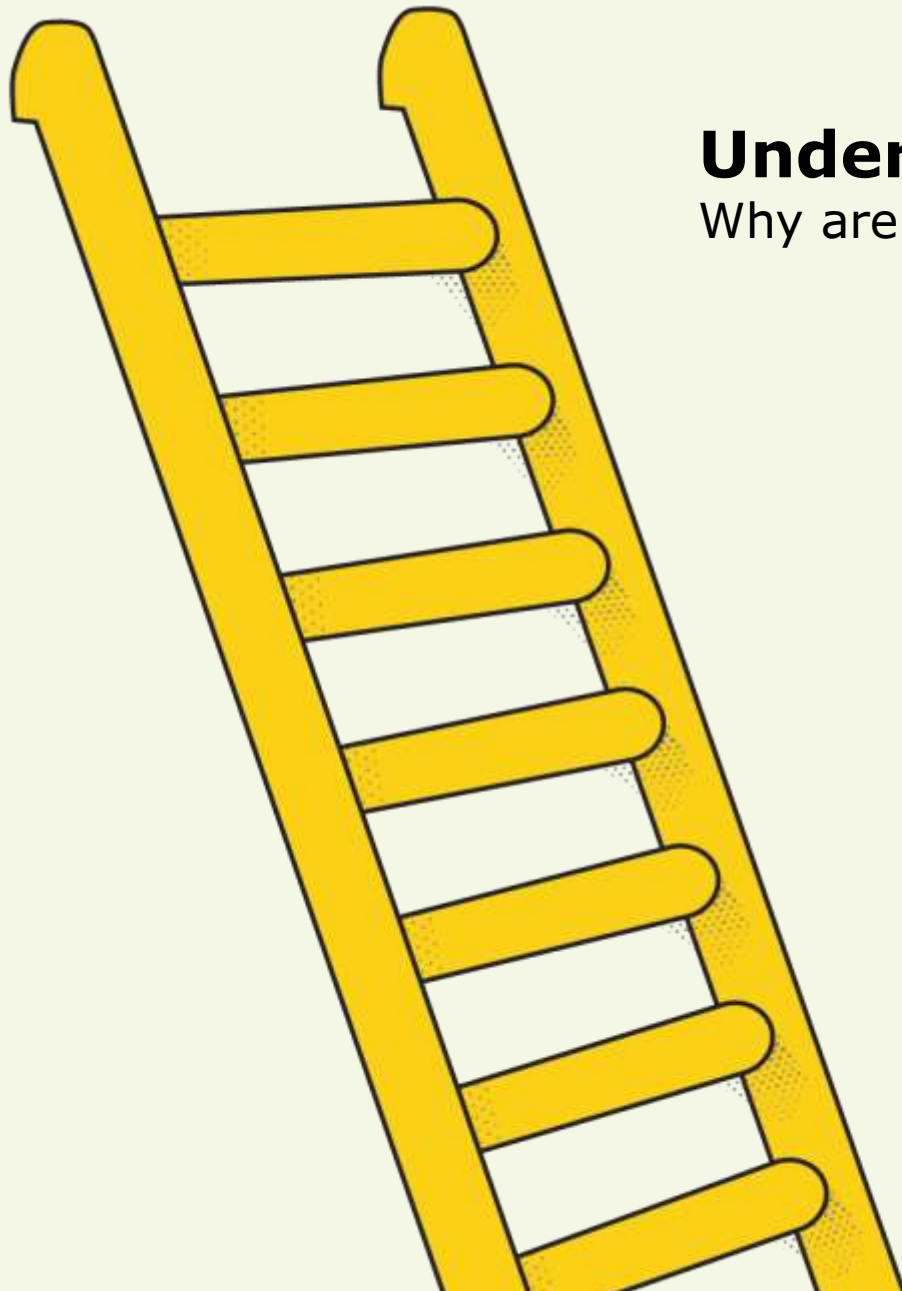
Laws & Contracts



Conflicting Interests



Contextual Uncertainties



## Underlying Pains

Why are this problems?



Complex Issue



Solutions require cooperation



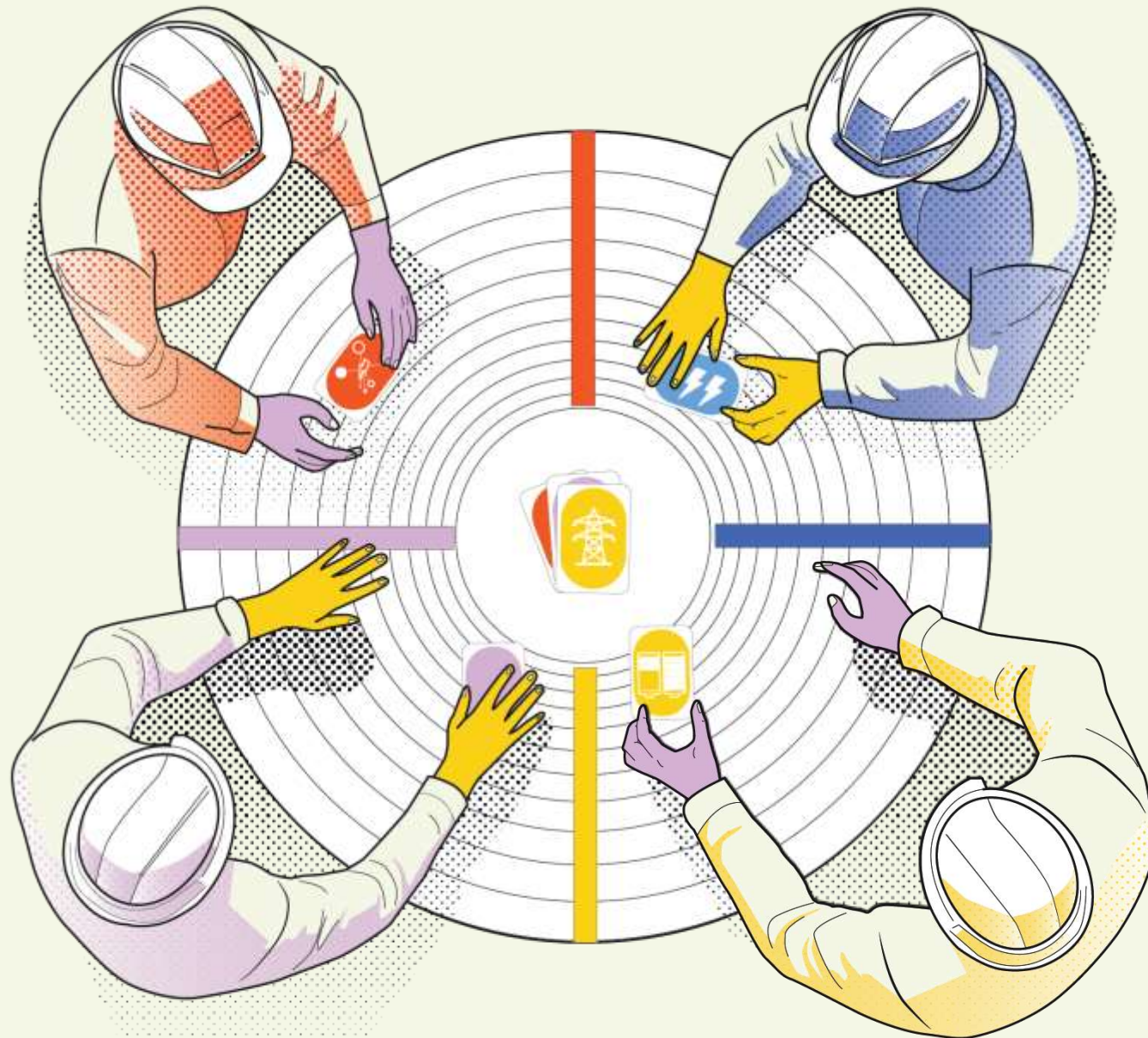
Lack of a common “language”



No single optimal outcome

Context Sensitive

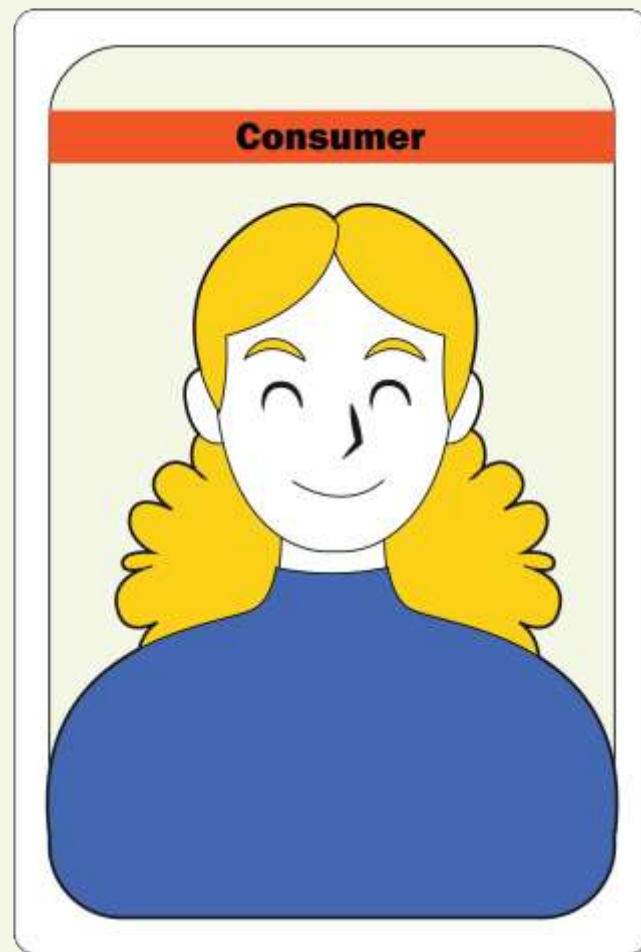
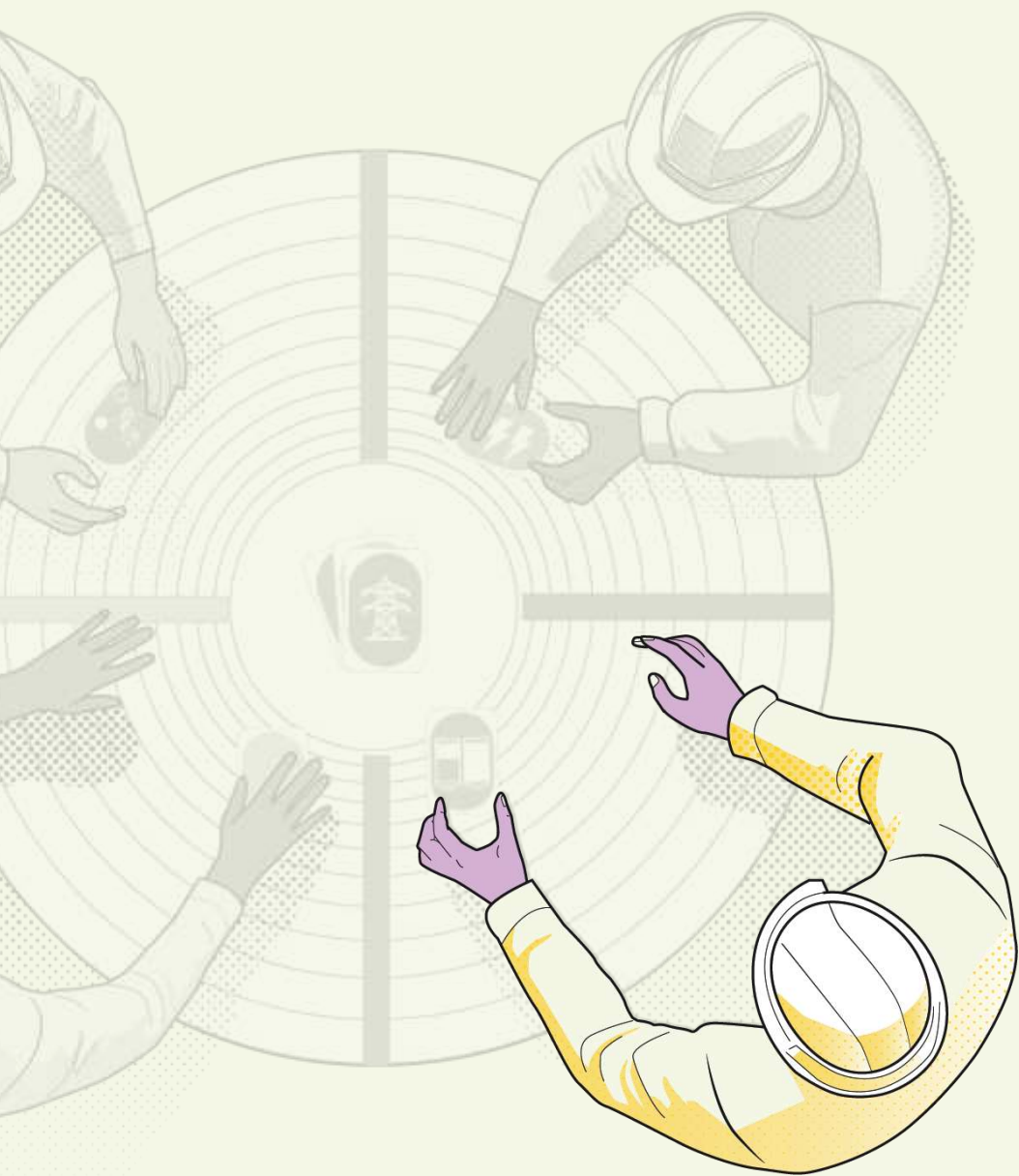
Multiple Scenarios

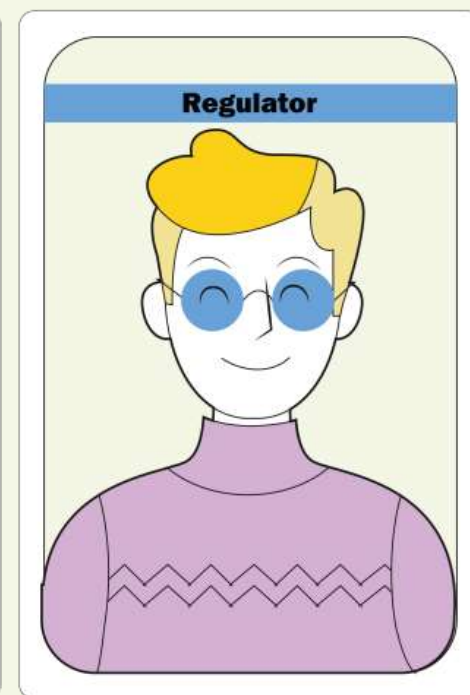
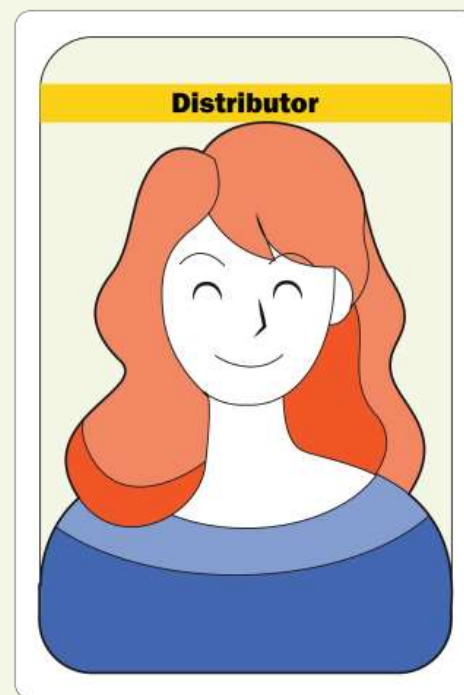
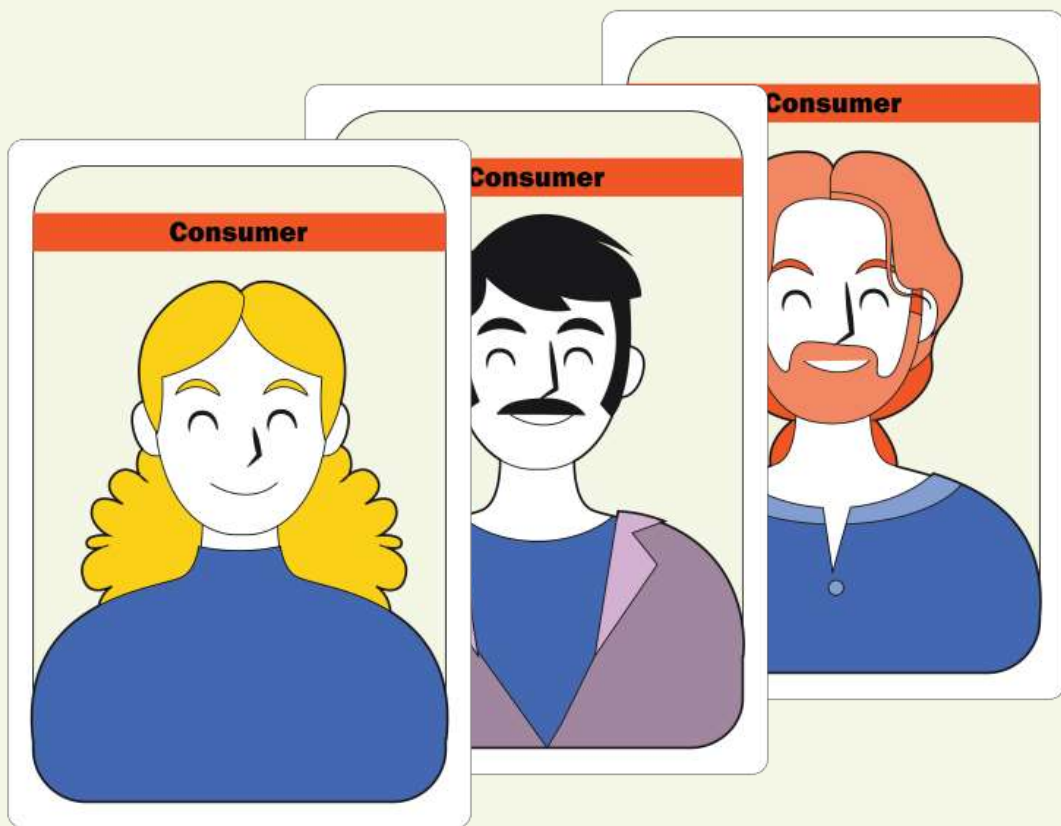


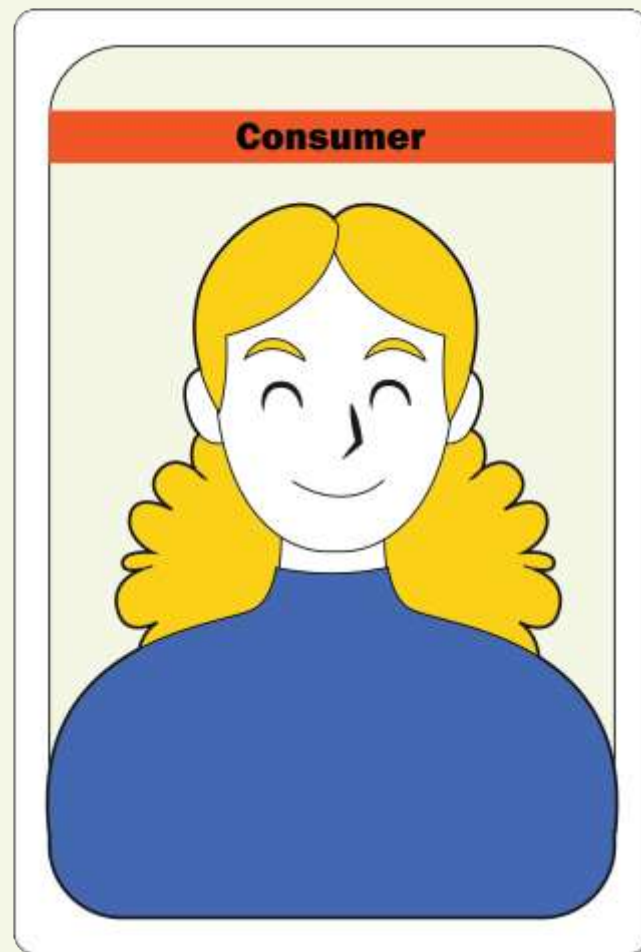
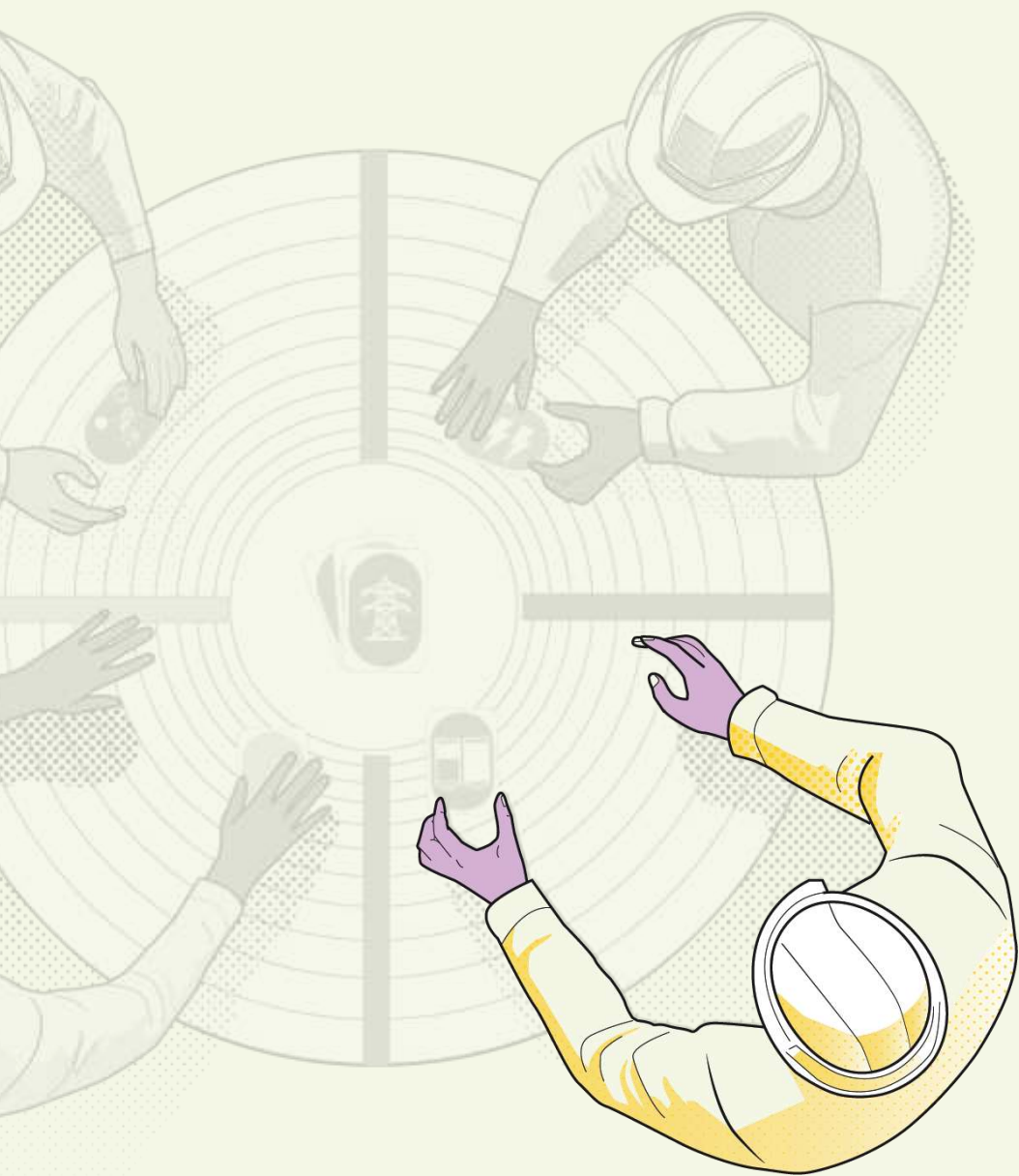
Intuition

Empathy

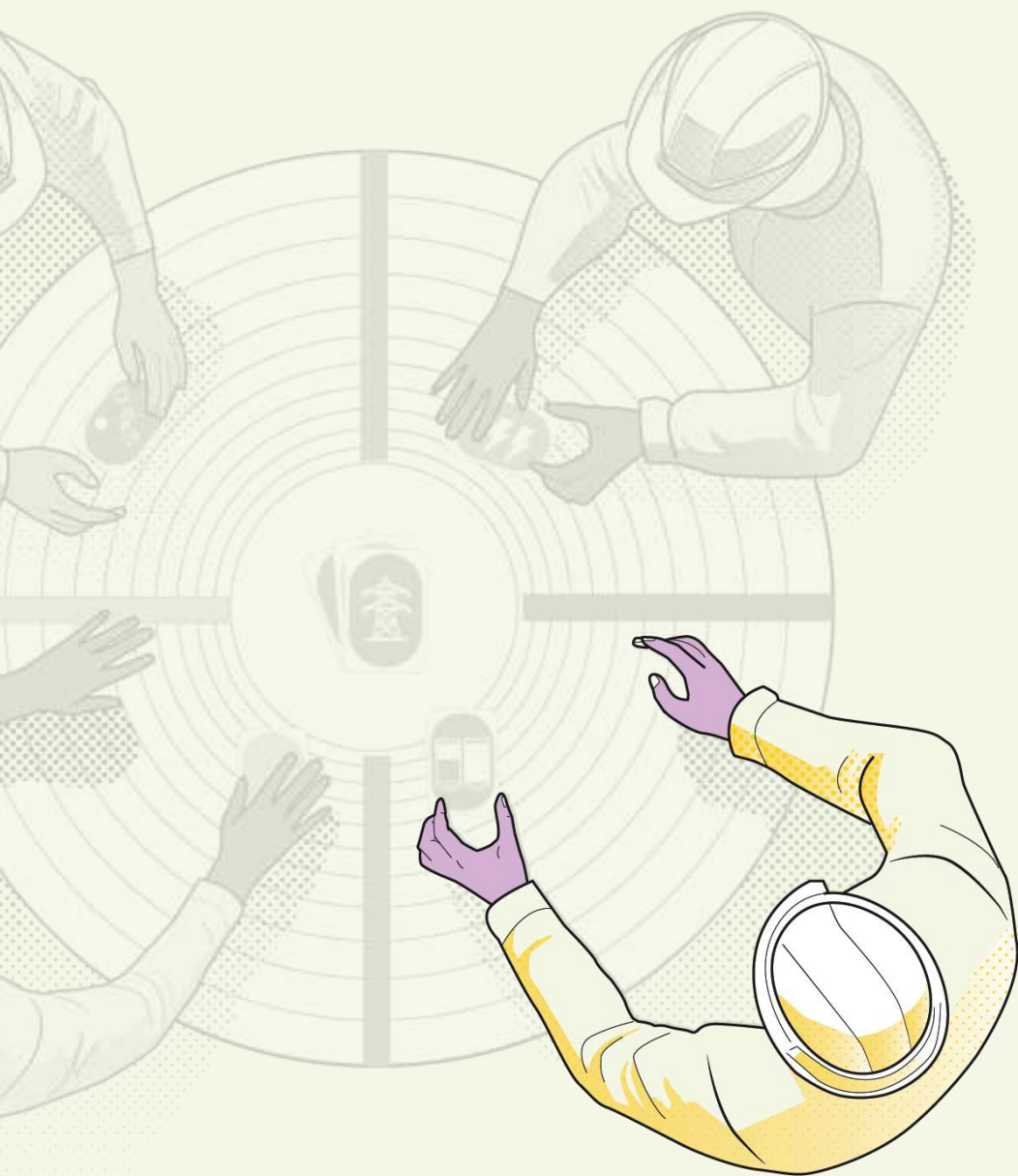












## Cammy McLean

### Persona

Cammy dedicates her entire life to sustainability. She has her own vegetable garden, and runs a sustainable fashion line. She just moved into a new, cosy cottage and wants to go off the grid as much as possible. She's looking to invest in her own solar panels, but she's open to alternatives. Perhaps her neighbors want to join forces?

### Special Rules

Cammy gets a discount of 1 cost token for every card that yields green energy or sustainability tokens.

### Bonus Points

In each round, gain +1 point for every player that has 3 or more sustainability tokens (including yourself).

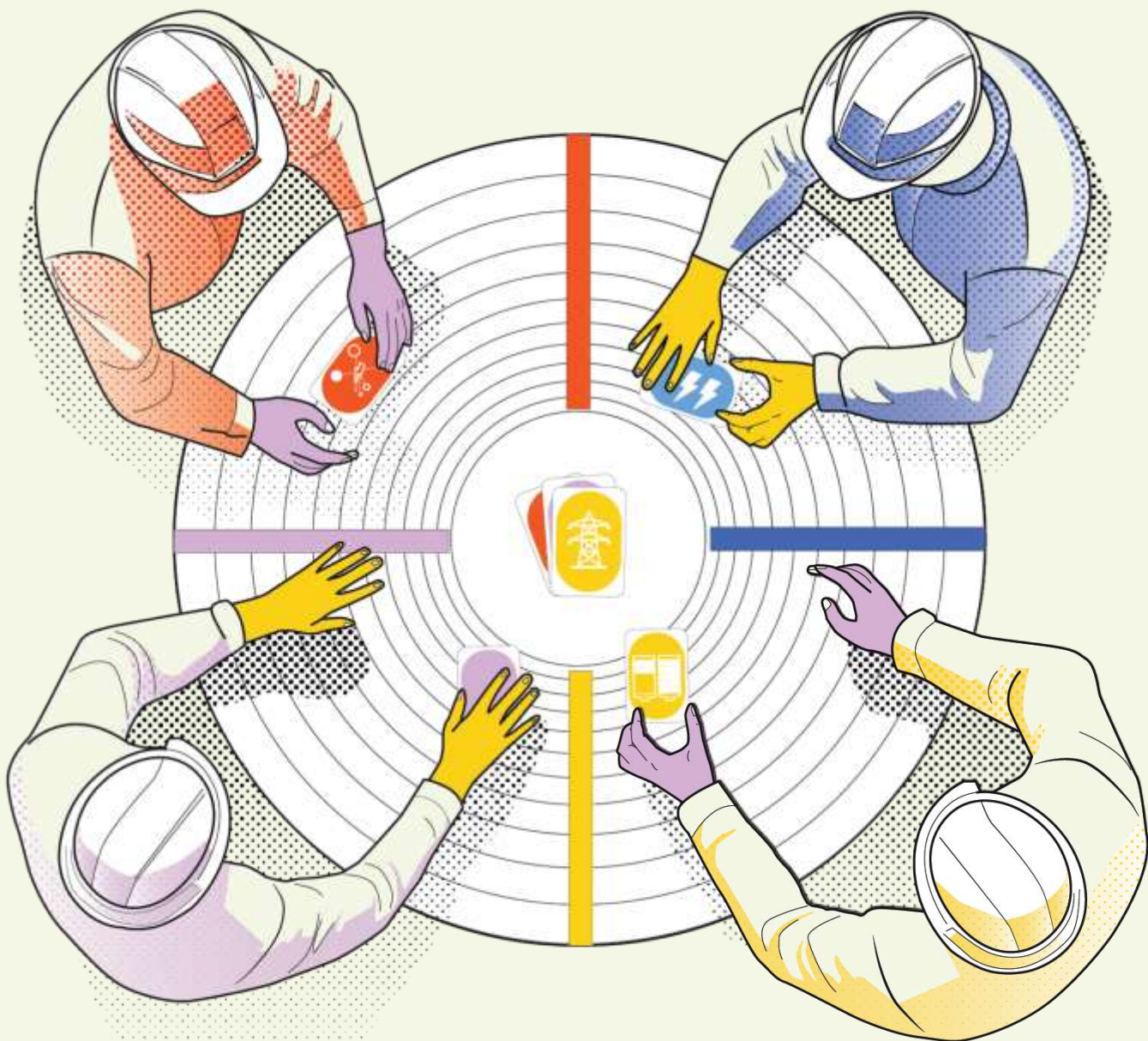
### Tokens



+1



-1



### **Storm Ciara 2020**



Storm Ciara hits the Netherlands. This round, the wind production will be doubled.

### **Groningen Gas Extraction Reduction 2019**



Due to public request, the gas production is reduced.

### **Extreme Heat Wave 2020**



Record temperatures led to high cooling demand, stressing the grid and pushing energy consumption to new highs.



## Storm Ciara 2020



Storm Ciara hits the Netherlands. This round, the wind production will be doubled.

## Groningen Gas Extraction Reduction 2019



### Consumers:

Higher costs if relying on natural gas.



### Distributor:

Must seek alternative sources, You are penalized if you were heavily reliant on Groningen gas.



### Regulator:

You may incentivize renewable solutions or impose a fossil fuel penalty.

## Extreme Heat Wave 2020



Record temperatures led to high cooling demand, stressing the grid and pushing energy consumption to new highs.

## Utilize V2G

Invest in Electric Vehicles and V2G

V2G technology powers bi-directional charging, which makes it possible to charge the EV battery and take the energy stored in the car's battery and push it back to the power grid.

**Tokens Required to Play**



## Energy Storage Systems

Deploy large-scale energy storage systems

Deploy large-scale energy storage systems (such as lithium-ion batteries, flow batteries, or pumped hydro storage) to store excess electricity during periods of during peak congestion. It is to store energy during peak production hours to deal with peak consumption hours - acting as a buffer and enhancing grid stability.

**Tokens Required to Play**



## Invest in Solar Panels

Invest in Solar Energy

Solar panels harness the power of the sun, converting sunlight into clean, renewable electricity. By investing in solar panels, you generate sustainable energy on-site, reducing dependence on the grid and lowering your energy costs during peak sunlight hours.

**Tokens Required to Play**



# Invest in Solar Panels

Invest in Solar Energy

Solar panels harness the power of the sun, converting sunlight into clean, renewable electricity. By investing in solar panels, you generate sustainable energy on-site, reducing dependence on the grid and lowering your energy costs during peak sunlight hours.

Tokens Required to Play



## Utilize V2G

Invest in Electric Vehicles and V2G

V2G technology powers bi-directional charging, which makes it possible to charge the EV battery and take the energy stored in the car's battery and push it back to the power grid.

Tokens Required to Play

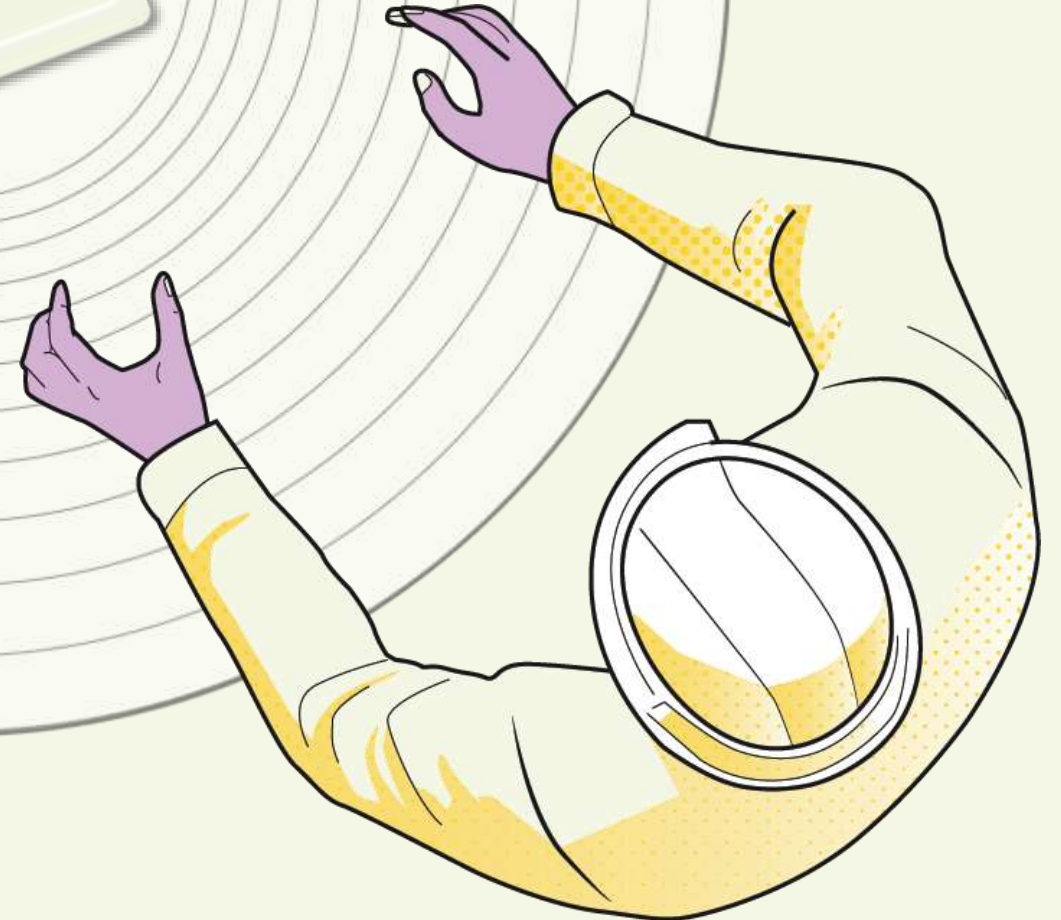


## Energy Storage Systems

Deploy large-scale energy storage systems

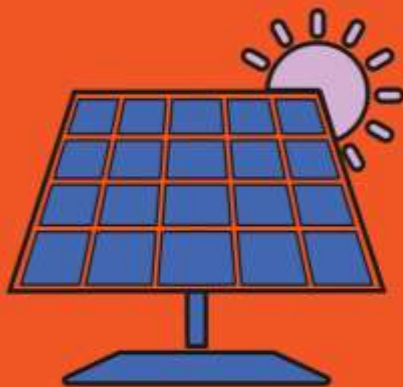
Deploy large-scale energy storage systems (such as lithium-ion batteries, flow batteries, or pumped hydro storage) to store excess electricity during periods of during peak congestion. It is to store energy during peak production hours to deal with peak consumption hours - acting as a buffer and enhancing grid stability.

Tokens Required to Play





## Invest in Solar Panels



Once Played



Earn 5 Energy Tokens on a sunny day

### Utilize V2G

*Invest in Electric Vehicles and V2G*

V2G technology powers bi-directional charging, which makes it possible to charge the EV battery and take the energy stored in the car's battery and push it back to the power grid.

Tokens Required to Play



x7



x2

### Energy Storage Systems

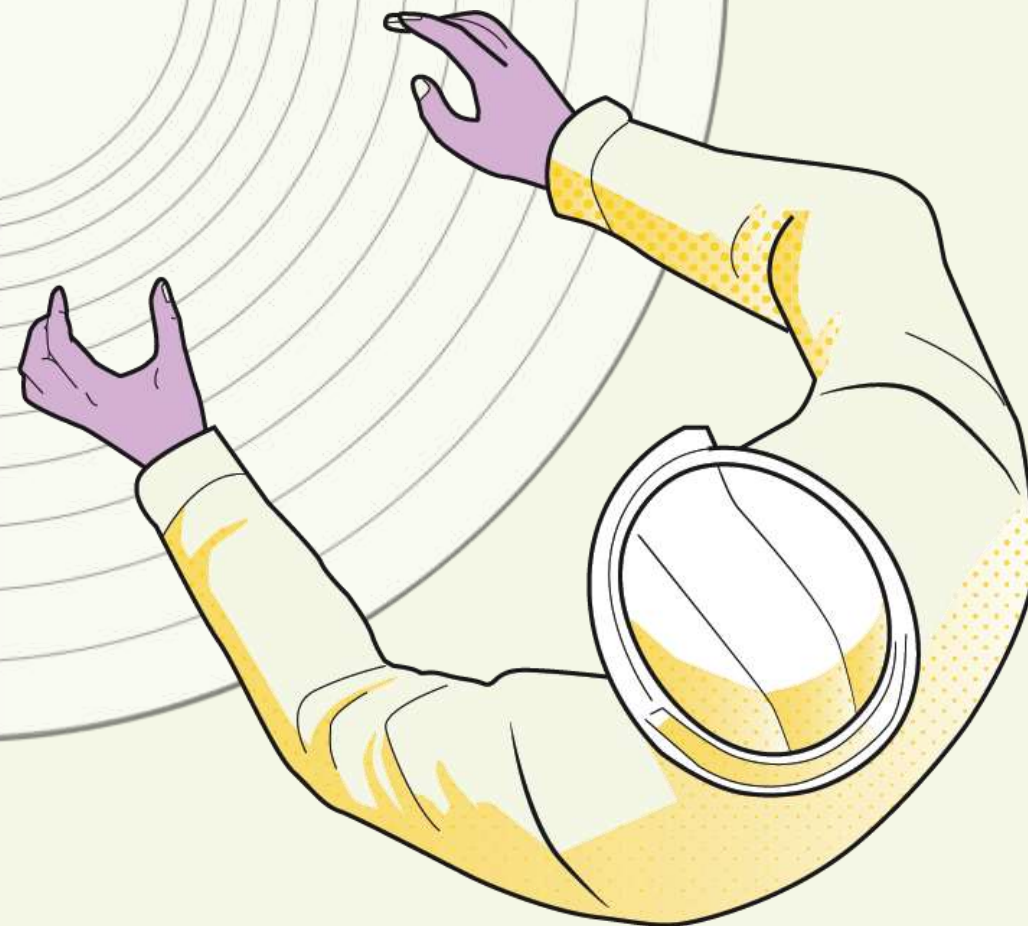
*Deploy large-scale energy storage systems*

Deploy large-scale energy storage systems (such as lithium-ion batteries, flow batteries, or pumped hydro storage) to store excess electricity during periods of during peak congestion. It is to store energy during peak production hours to deal with peak consumption hours - acting as a buffer and enhancing grid stability.

Tokens Required to Play



x4









## Cammy McLean

### Persona

Cammy dedicates her entire life to sustainability. She has her own vegetable garden, and runs a sustainable fashion line. She just moved into a new, cosy cottage and wants to go off the grid as much as possible. She's looking to invest in her own solar panels, but she's open to alternatives. Perhaps her neighbors want to join forces?

### Special Rules

Cammy gets a discount of 1 cost token for every card that yields green energy or sustainability tokens.

### Bonus Points

In each round, gain +1 point for every player that has 3 or more sustainability tokens (including yourself).

### Tokens

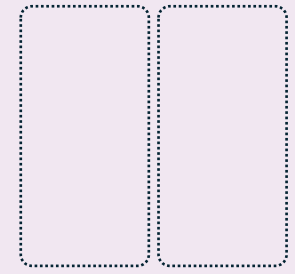
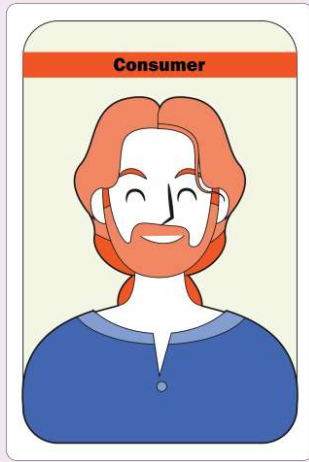
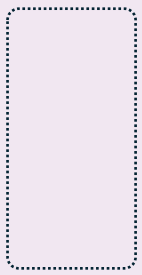
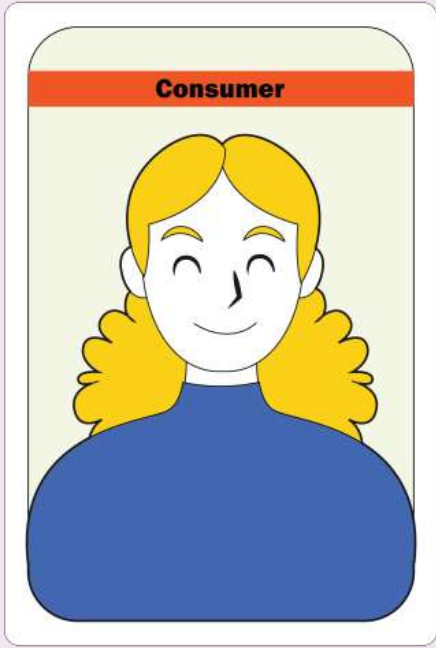
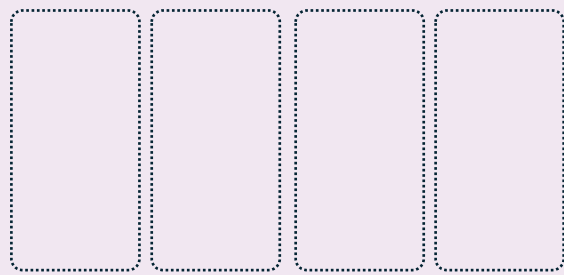


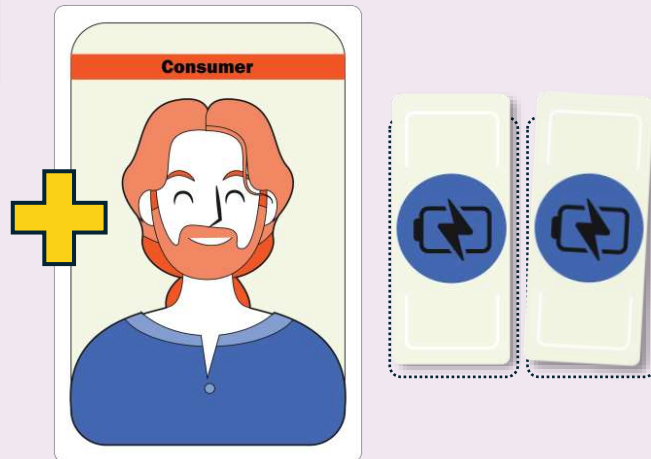
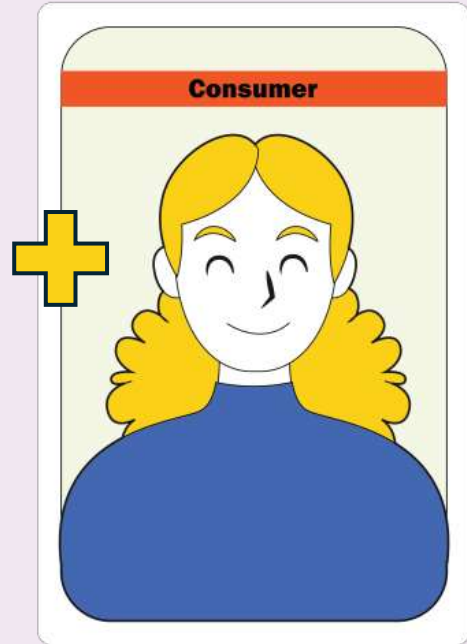
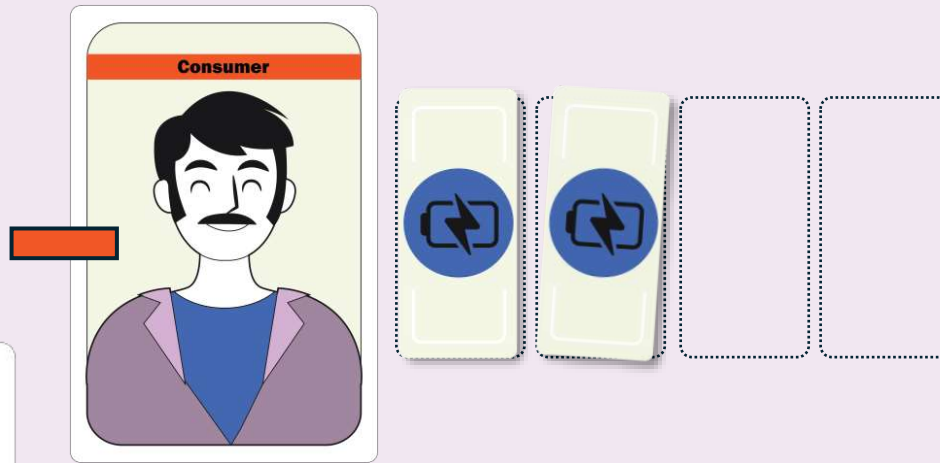
+1

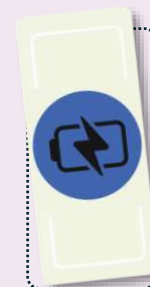
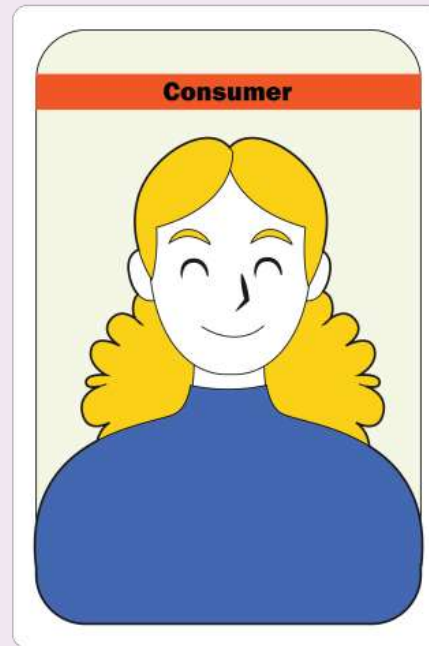
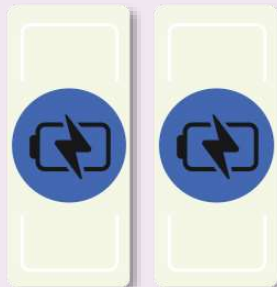
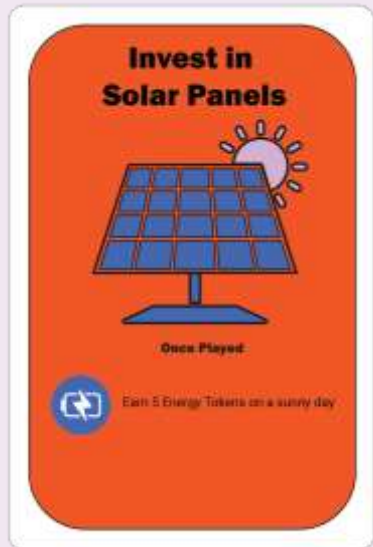
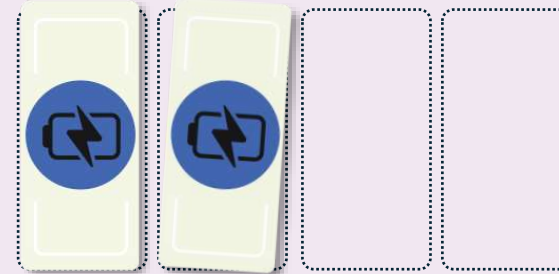


-1

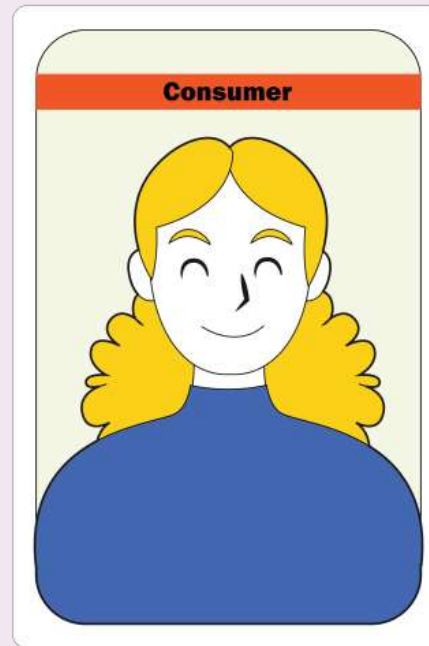
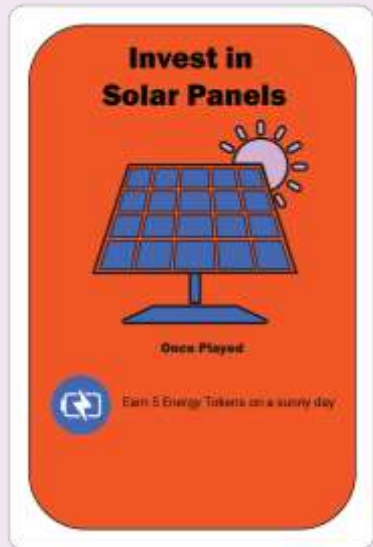
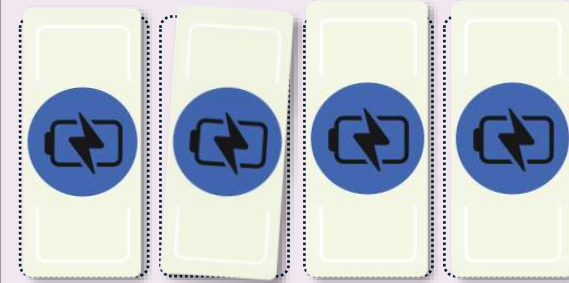


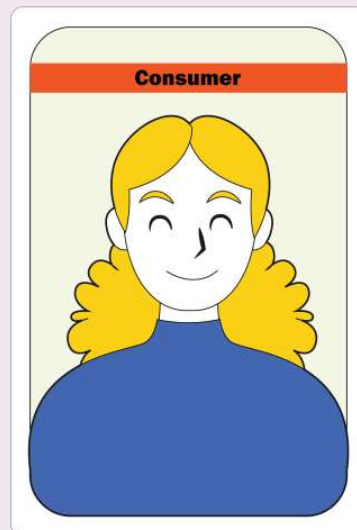
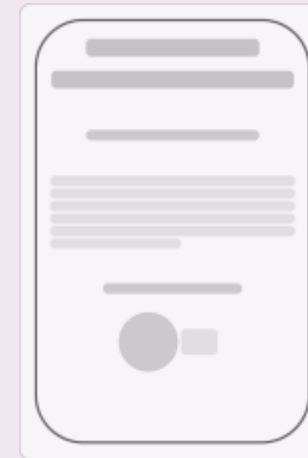
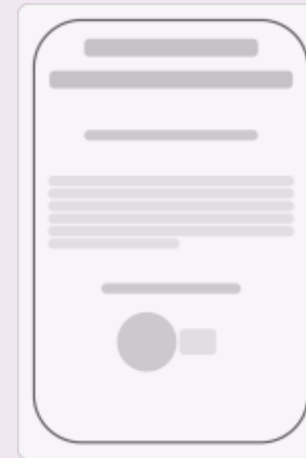
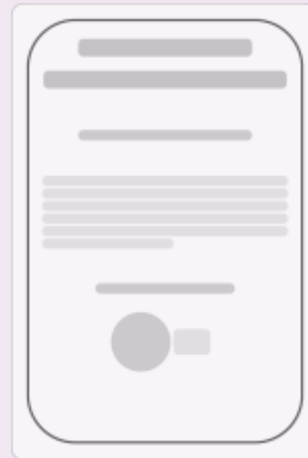
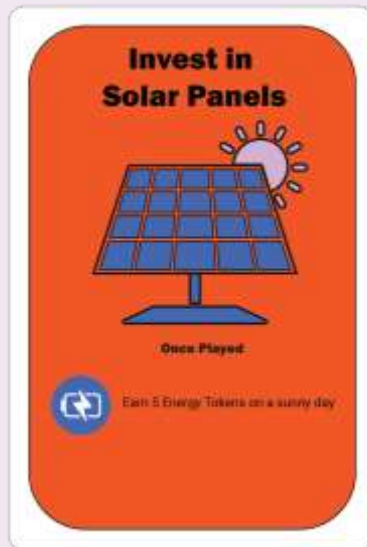




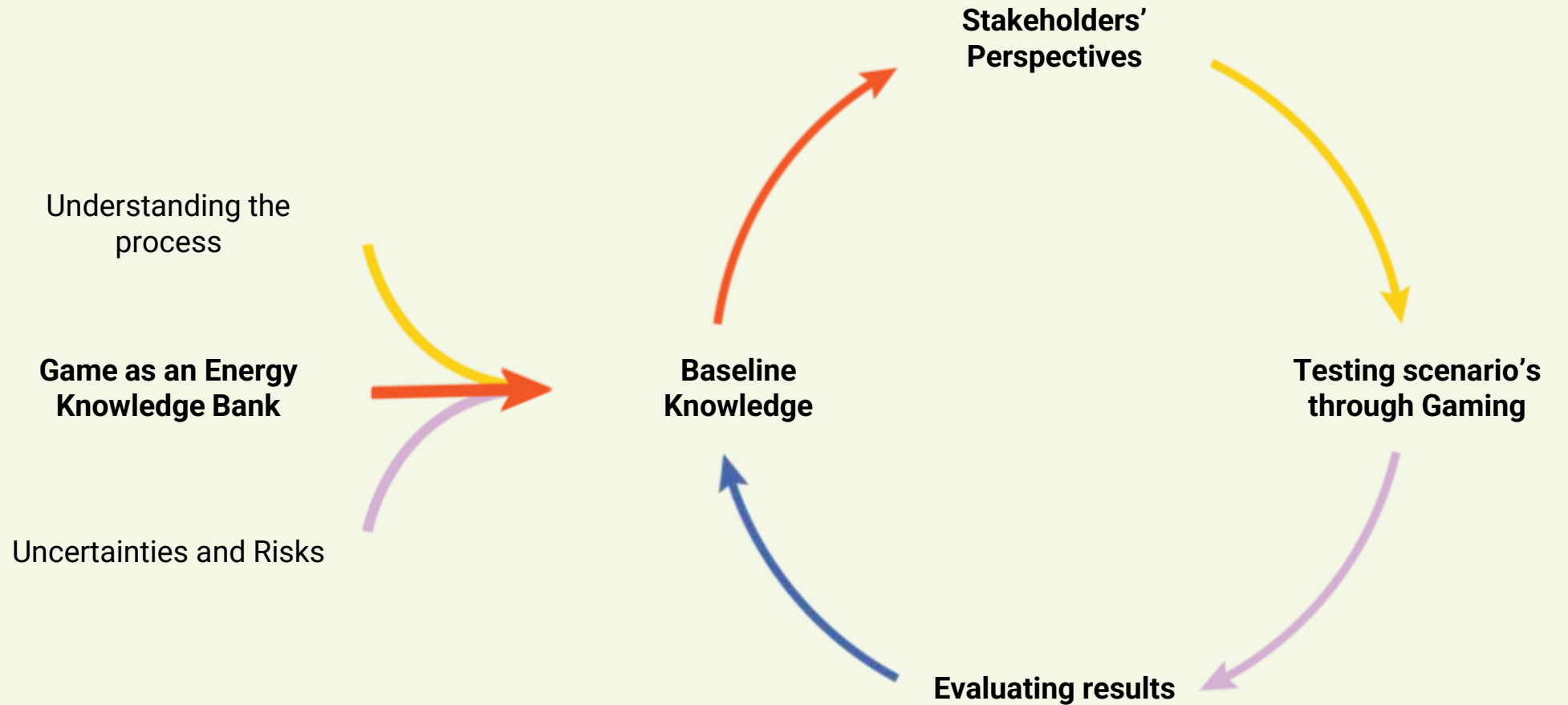






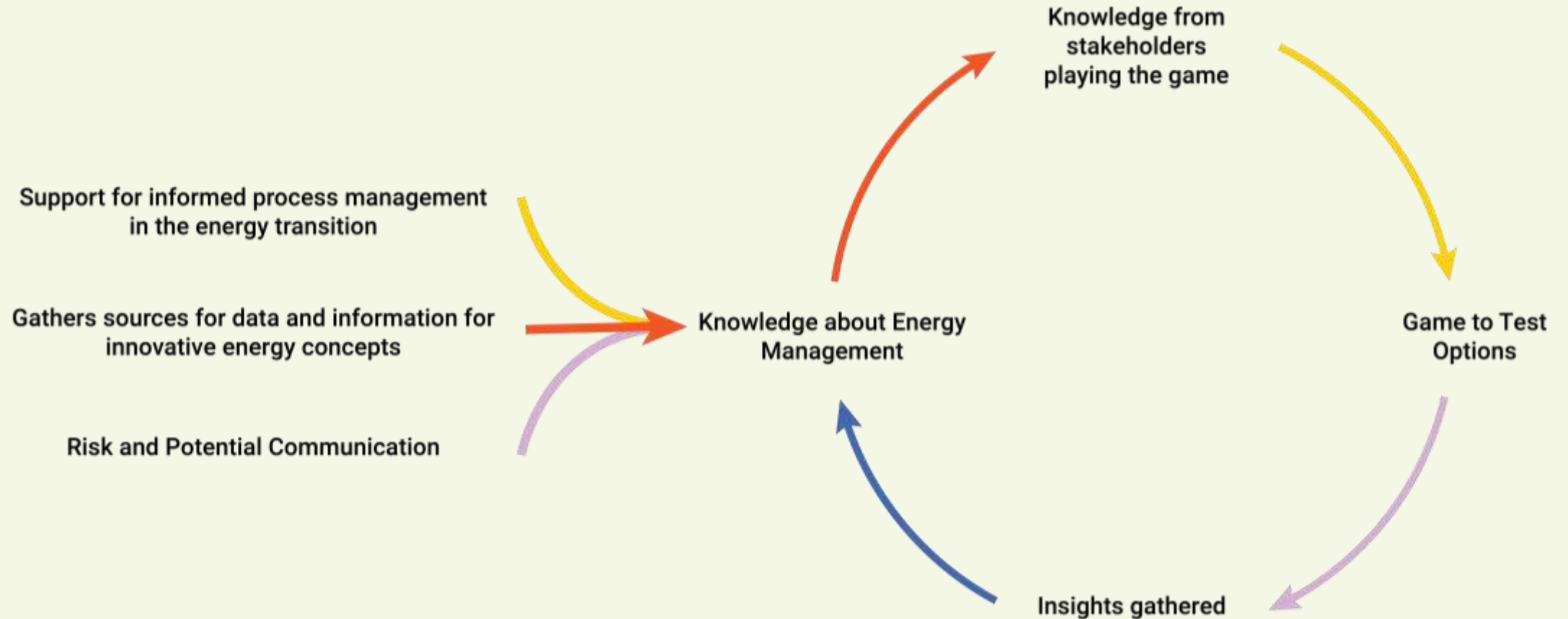


# Key Value Propositions





# Key Value Propositions



# Serious Games in Action

## SERIOUS GAMING VOOR DE LOGISTIEK VOORBEREIDEN OP DE TOEKOMST



2 juli 2020

**TNO** innovation  
for life

## Deltares

### Summary of the Port of the Future Serious Game

The procedure of the game can be summarised as follows. The aim is to move away from the traditional port and to reach the 'Port of the Future' vision. To achieve that, a team of up to five players chooses appropriate policy measures in four rounds.

Different scenarios will be played to investigate the wide range of possible impacts and to trigger the debate among the players by creating constructive conflicts between them during the negotiation and decision-making process. This is expected to demonstrate that successful policy-making in ports can only be achieved when the stakeholders work in close collaboration with each other.



Rijkswaterstaat  
Ministerie van Infrastructuur en Waterstaat

NIEUWSBERICHT

## Terugblik tendergame Rijkswaterstaat en Markt

Gepubliceerd op: 29 april 2024, 17:03 uur · Laatste update: 30 april 2024, 09:46 uur

Op 8 april 2024 organiseerden we een tendergame, waarin samen met de markt nieuwe inzichten opgedaan werden over effectief tendermanagement door middel van een serious game, waarbij aanbesteder gegadigde werd en vice versa.





Complex Issue



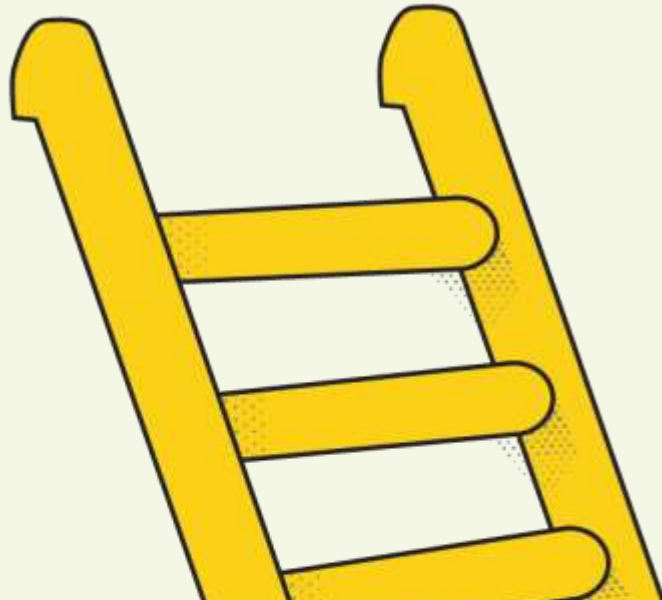
Solutions require cooperation



Lack of a common “language”



No single optimal outcome





# Game Development Packages

## Advanced

### Launch

### MVP

**Game Board**  
Design &  
Customisation

**Solutions**  
Addition &  
Improvement

**Mechanics**  
Refinement

**Marketing**  
Business  
development

**Evaluation**  
& Play-through

**Research**  
(Stakeholders,  
Legal/Tech  
Constraints)

**Tech**  
Validation  
from Experts

**Solutions**  
Addition &  
Improvement

**Mechanics**  
Refinement

# Get Gaming



with the

# The Energy Challenge