Energy transition
Province of Groningen

Presentation Gottingen 30-06-2017

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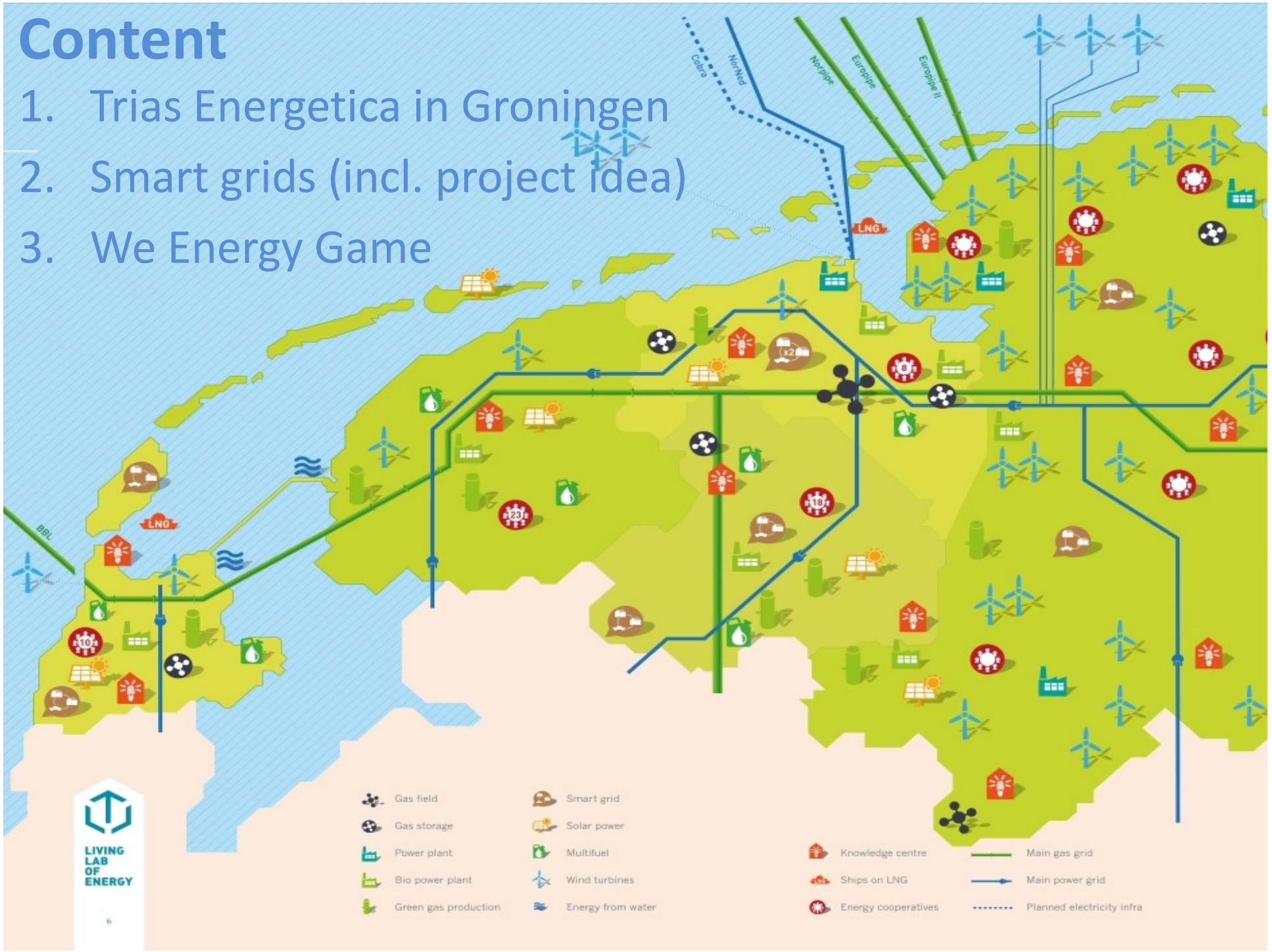


1. Trias Energetica

Policy Groningen on Energy transition

savings

renewables

energy system 2.0

Besparing energieverbruik:

Industrie
Bedrijven
Huizen
Accomodaties en overheidsgebouwen

Duurzame energie:

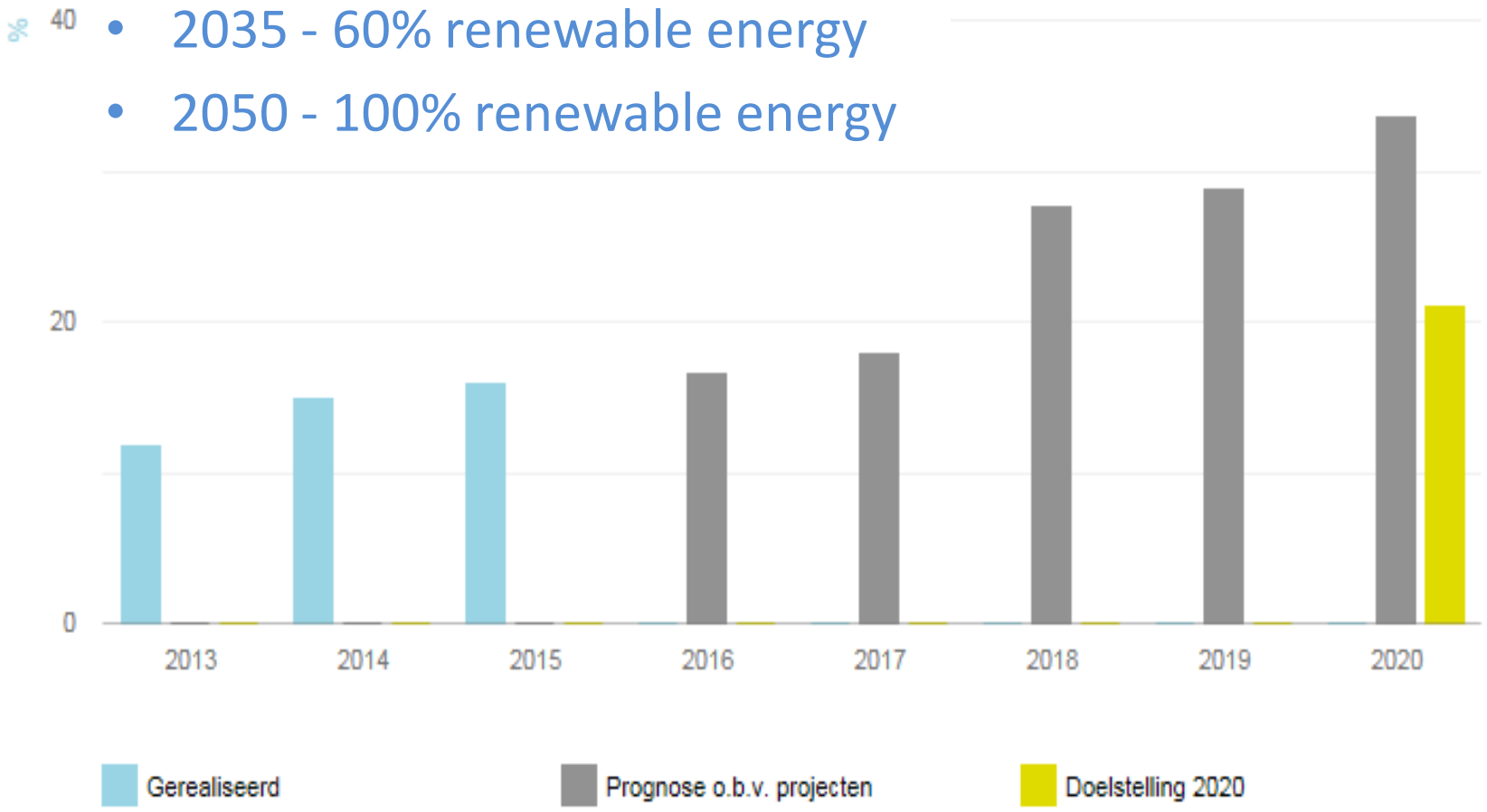
Lokale initiatieven
Zonneweides
Wind op land en zee
Hergebruik warmte
Gas 2.0

Balancering:

Smart grids
Internationaal netwerk
Slimme apparaten
Tijdelijke opslag

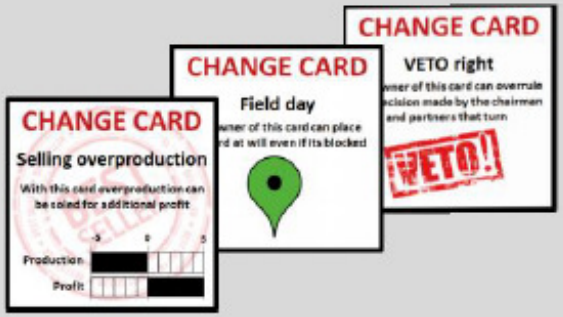
Ambitions province of Groningen

- 2020 - 21% renewable energy
- 2035 - 60% renewable energy
- 2050 - 100% renewable energy



Frank Pierie

We-Energy Game



How can you make a city energy neutral?

Learn to play it in 10 minutes

The game stems from research conducted by Frank Pierie, a researcher at the Hanze University of Applied Sciences, Groningen. The We Energy Game was developed as part of his doctoral research to provide energy cooperatives and stakeholders with practical insight into the energy possibilities. The game takes place in a city, where you can negotiate and make bargains with other players about the use of renewable energy sources, in order to get the city energy neutral. You play as an area of a community (production, people, planet, profit, regulation and space) that is involved with energy. You receive points by placing different energy source cards on the map. Can your area reach first its energy neutral goal before the game ends? Each energy source card has its advantages and disadvantages and can affect the score of each player. But Beware! the change cards can change the current flow of the game, by blocking players, cards or changing the score.

Contains

- 72 energy cards
- 1 map of a Village
- 1 map of a City
- 1 Board
- Rule book
- 1 USB stick
- Change cards
- 2 Dices

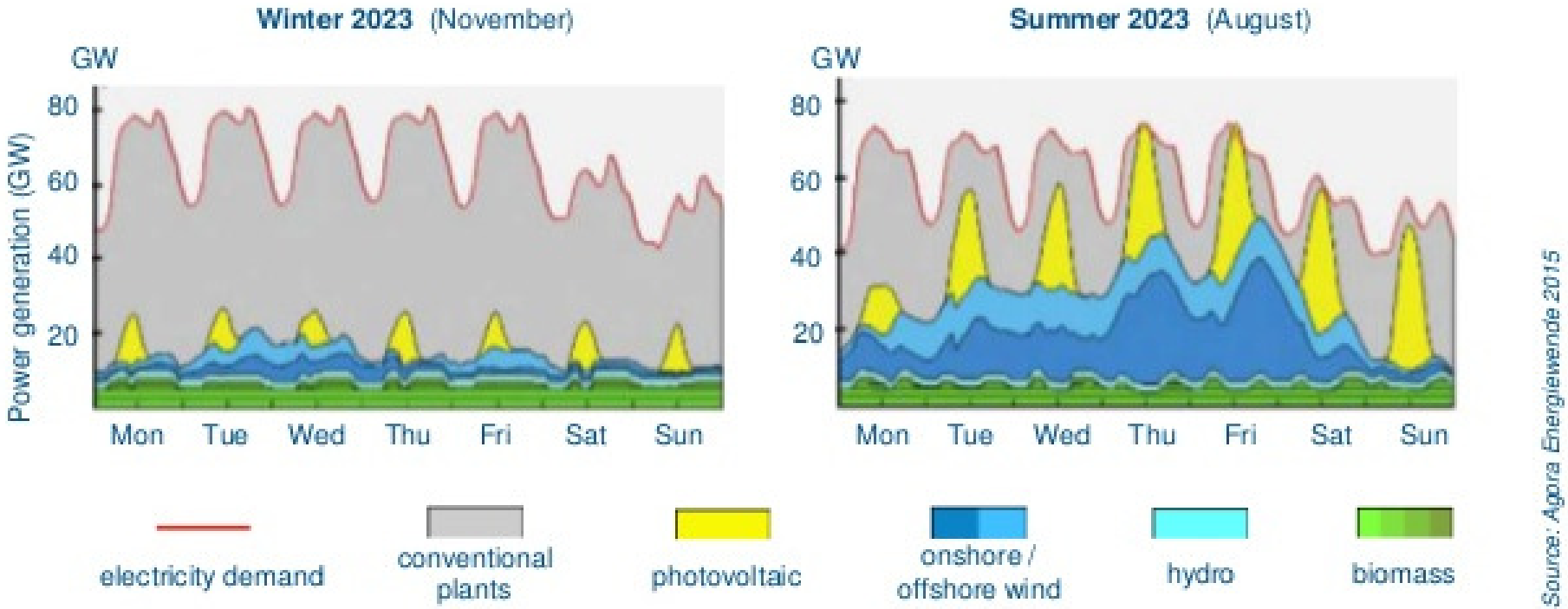
we-energy.eu

Hanze University of Applied Sciences Groningen

6 players | Age 12+ | 40 - 50 minutes

Balance & flexibility needed!

Future: German electricity system volatility in 2022



Source: Agora Energiewende 2015

Renewables can cover the total demand by 2022 but conventional back-up capacity for the winter will still be needed.

Smart grids / energy system 2.0

Match demand & supply:

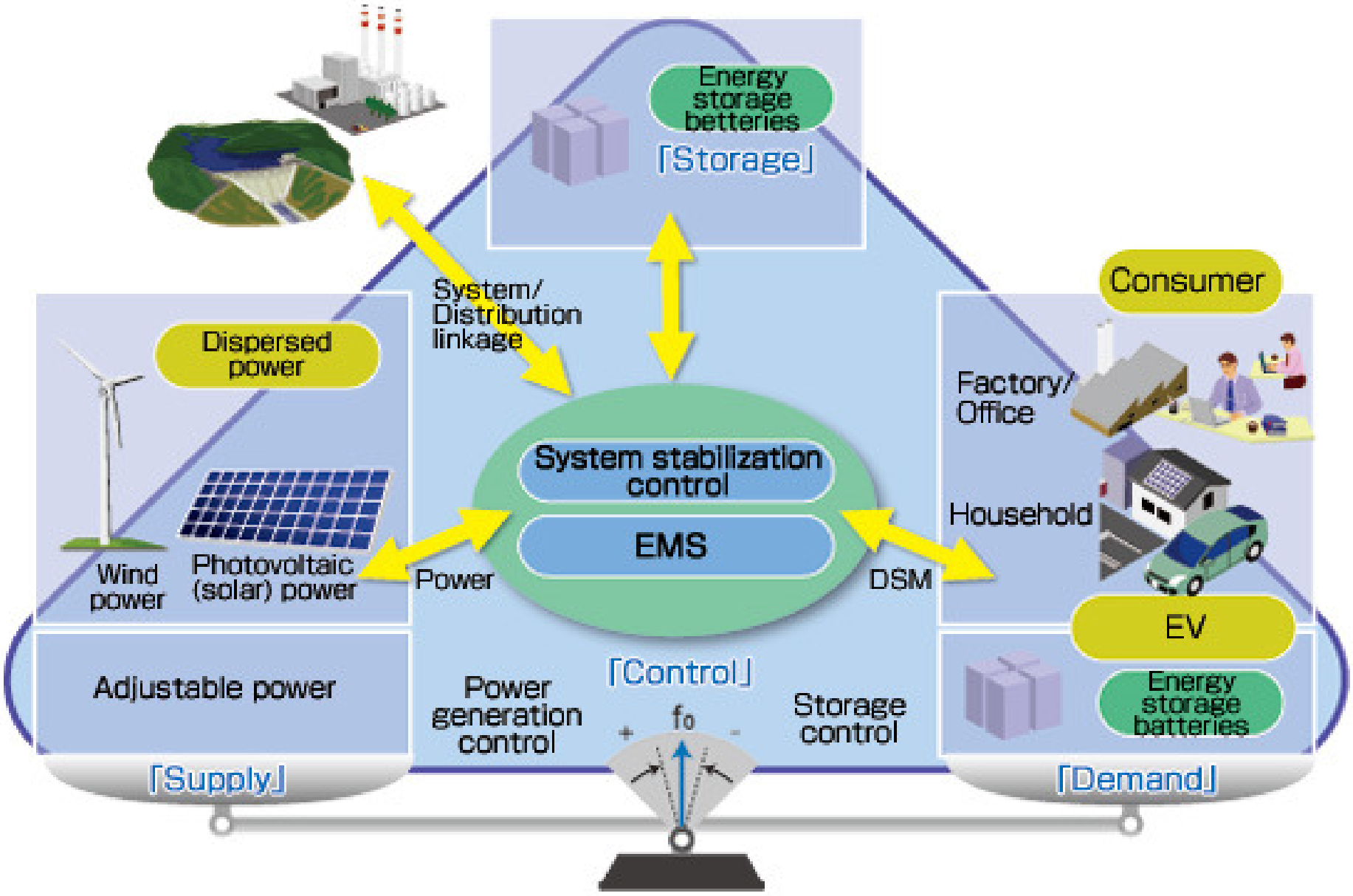
Create flexibility in a new energy system

Supply → transport →demand
I
storage

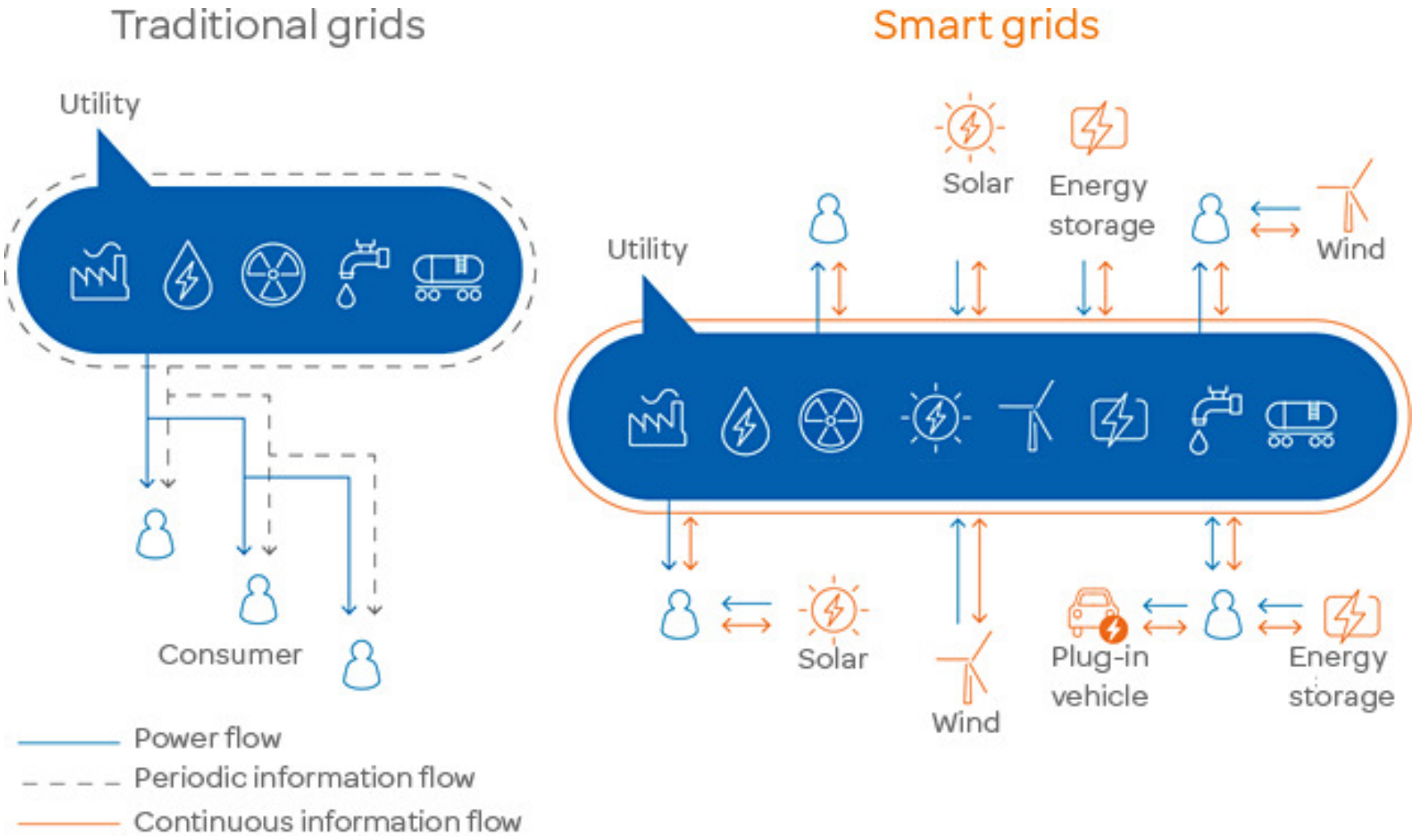
Different scale levels:

households – region – national - international

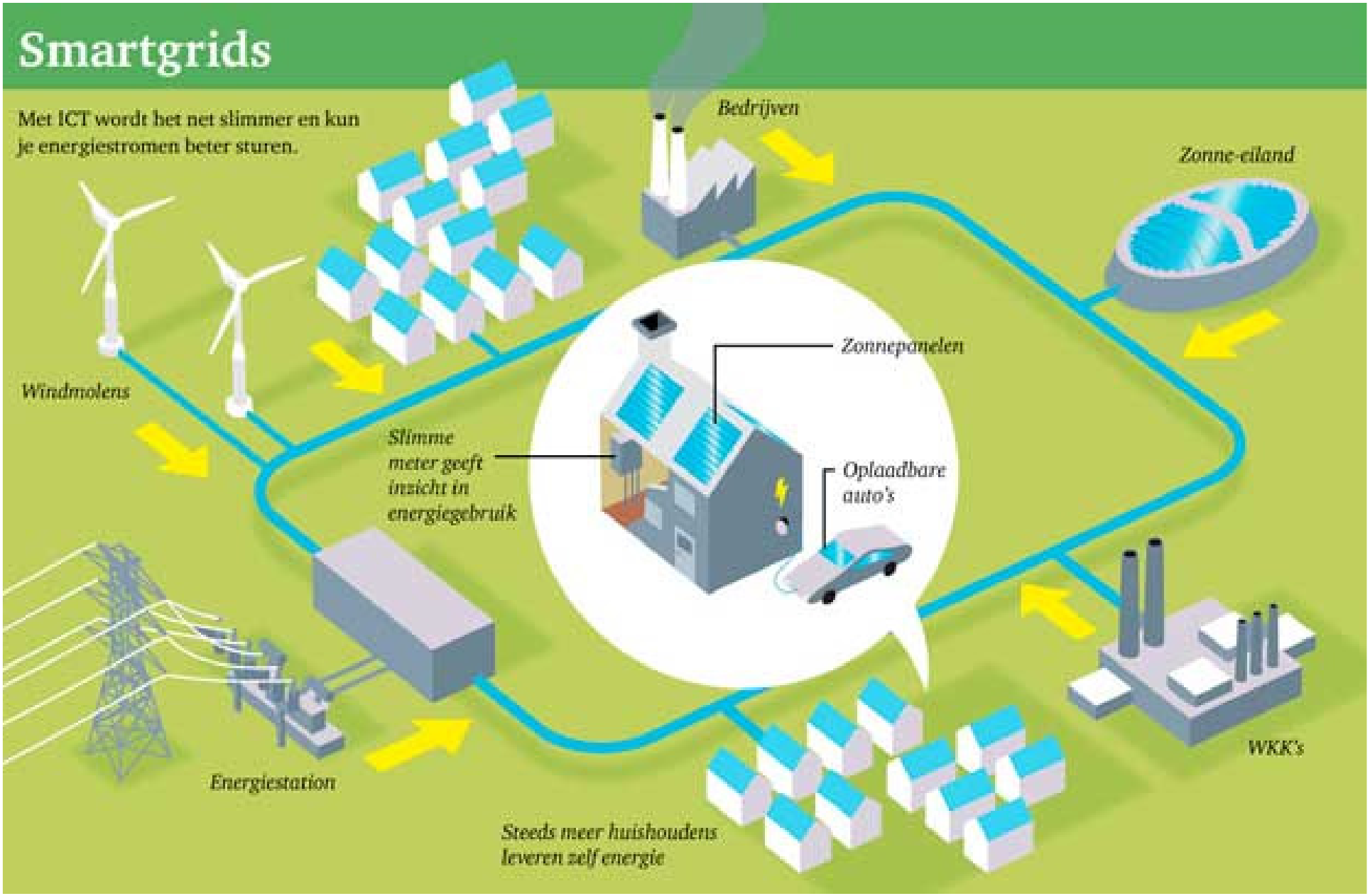
“Prosumers”: consumers = producers



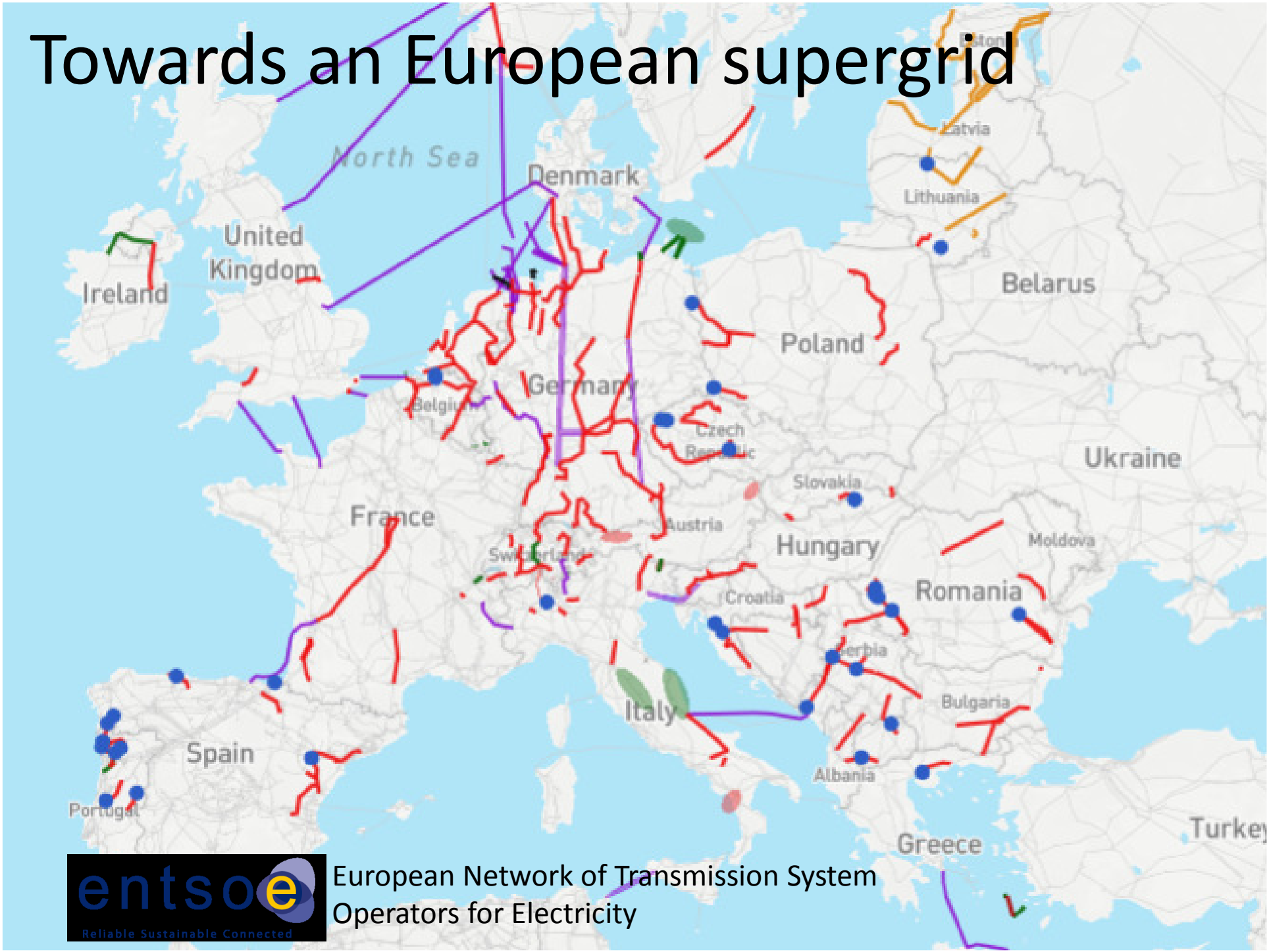
Complex system: 1 -> 2 directions



Regional scale



Towards an European supergrid



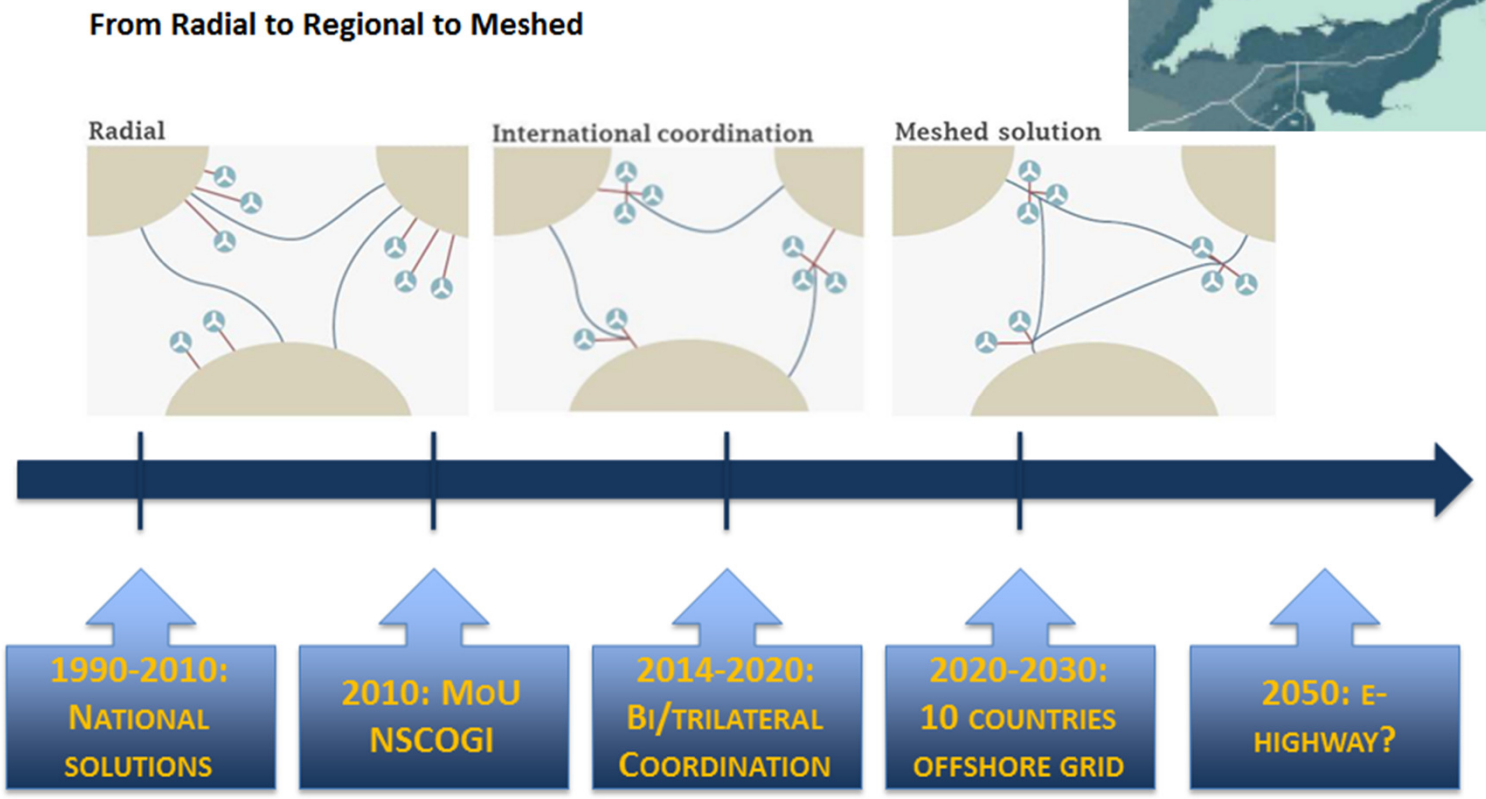
entsoe
Reliable Sustainable Connected

European Network of Transmission System Operators for Electricity

“North Sea Grid”

TenneTs Powerlink Island:

North Seas Countries’ Offshore Grid Initiative:

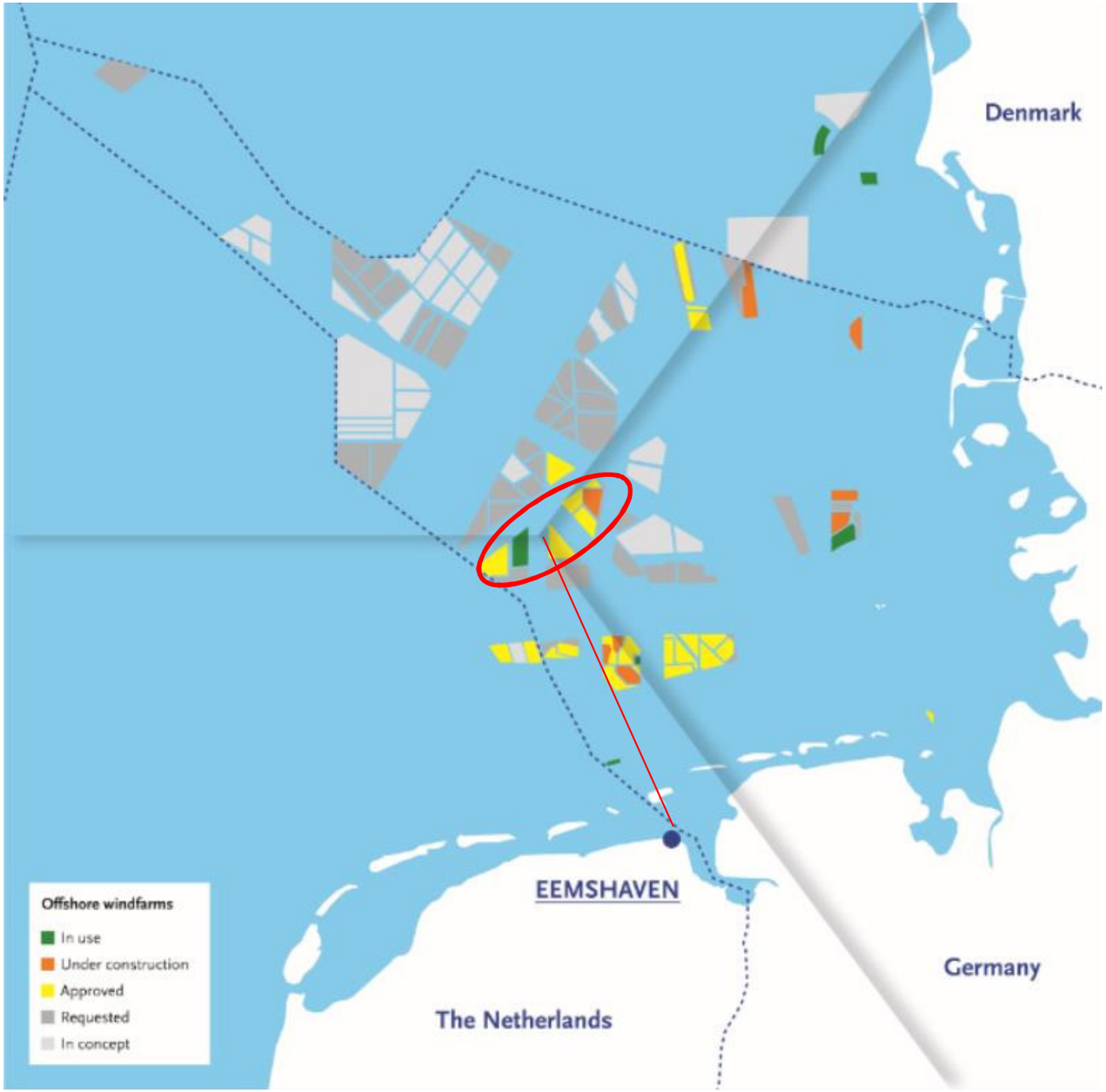


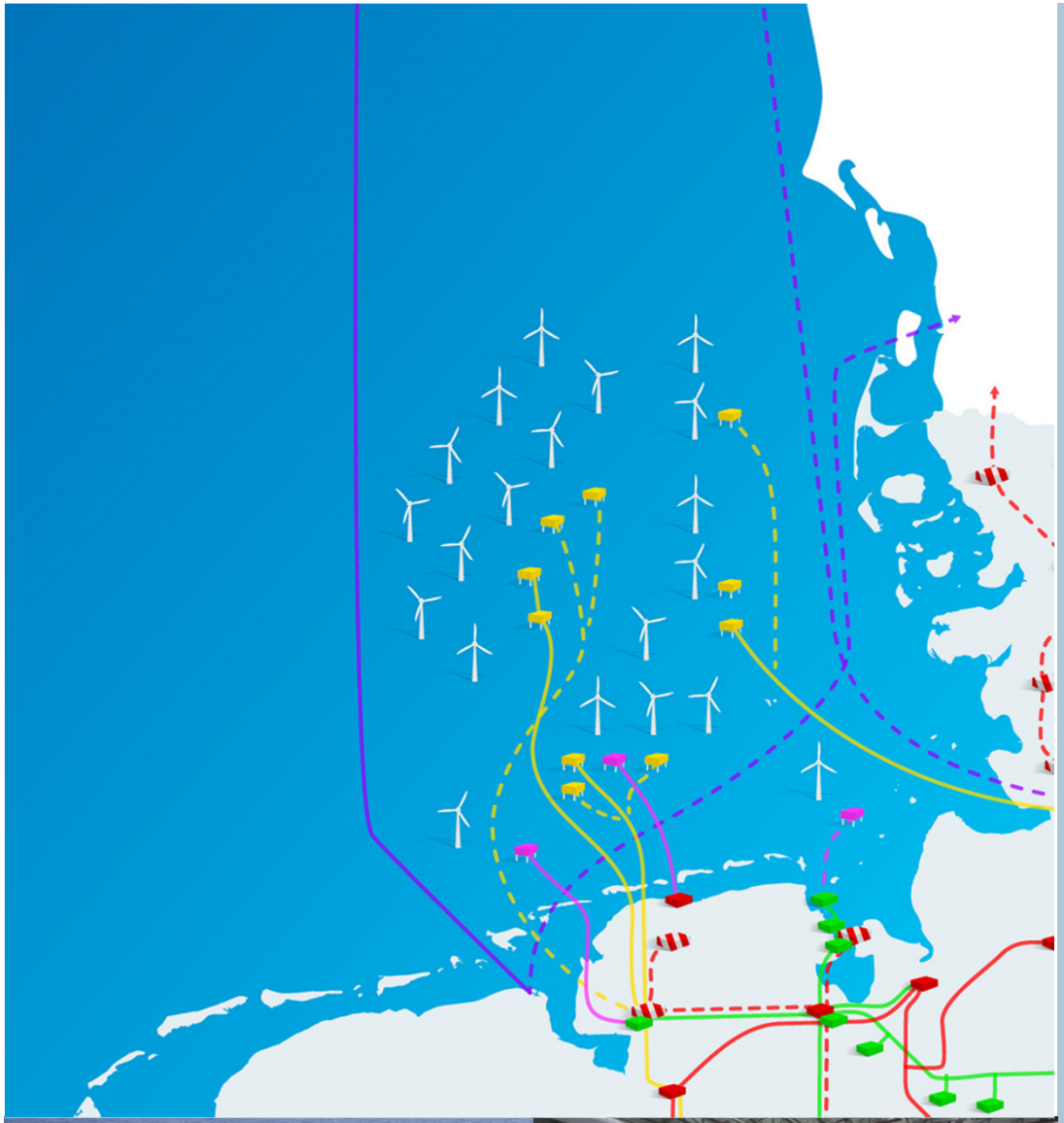
Pilot cross border landing offshore wind

Realizing an electricity cable

to land power of German cluster of windfarms BorWin

in the Eemshaven





Landing German windfarm in Eemshaven?

Challenges

- Politics, regulations, jurisdictions pioneering
- Technological; transport capacity

Crossborder cooperation

Niedersachsen + Northern Netherlands

Stefan Wenzel Energy minister Umweltministerium

- Conference “Energie without borders” Emmen 20 jan.2017
- Hannover Messe (april 2017)
- ABM North Sea Committee in Göttingen

Cooperation in 4-helix

1. Governments
2. Business (SME, industries)
   - Energy producers
   - Network providers (TSO/DSO's)
3. Knowlegde institutes
4. End users (households, companies)

Changing roles and responsibilities

INTERREG B project idea

- Experience from North Sea Countries:
  - Energy transitions in different phases
  - But comparable background (starting energy situation)

- WP's reflect:
  - Technological aspects
  - Finanical aspects (market introduction)
  - Jurisdictional aspects
  - End users & privacy aspects

- Partners reflect the quadruple helix
  - Found: Groningen, Oldenburg
  - Sought: Denmark, Sweden, Norway, UK, Belgium

Contact: i.vander.veen@provinciegroningen.nl

We-Energy Game

Powered by

Hanze University of Applied Sciences Groningen

EnTranCe ENERGY TRANSITION CENTRE

Energy Academy Europe

The game has 6 main roles

There are six roles in the game:

1)Production

2)People

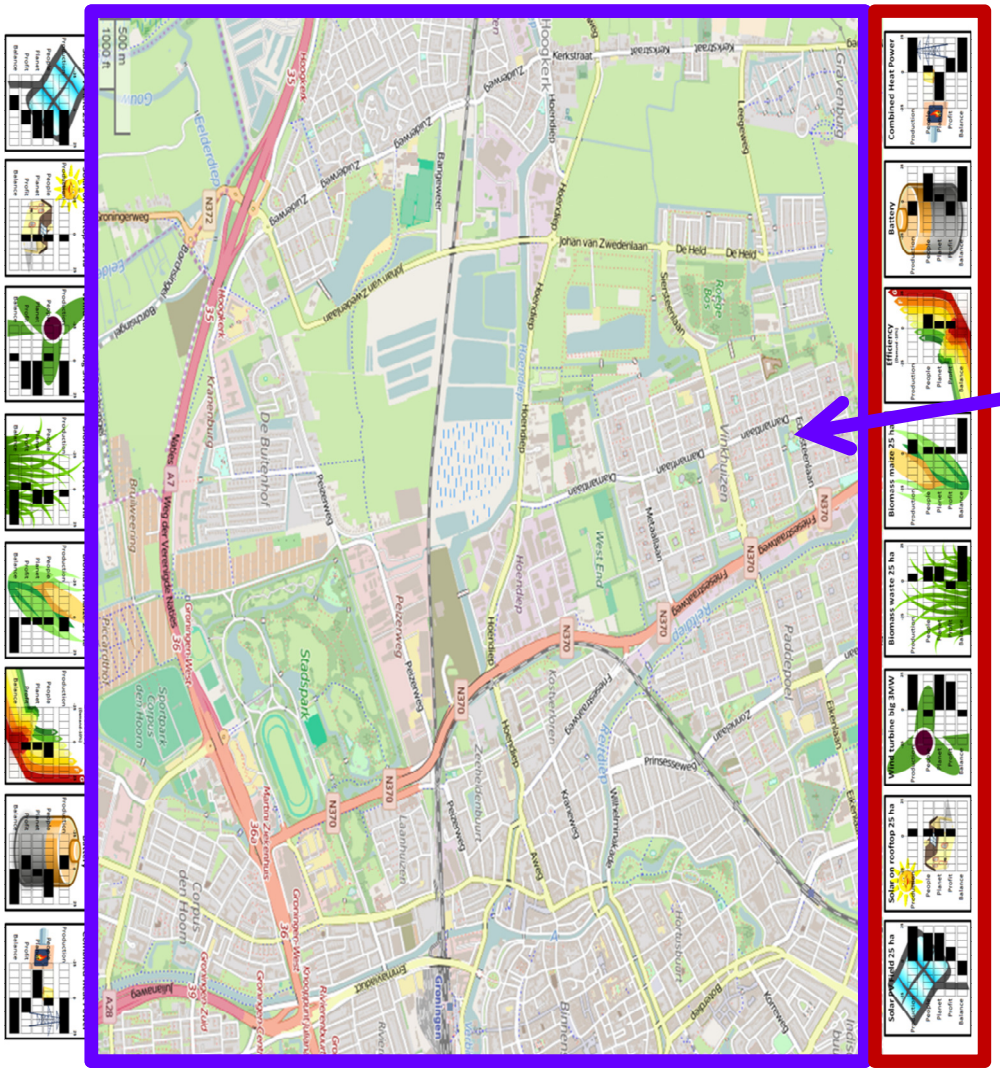
3)Planet

4)Profit

5)Permit

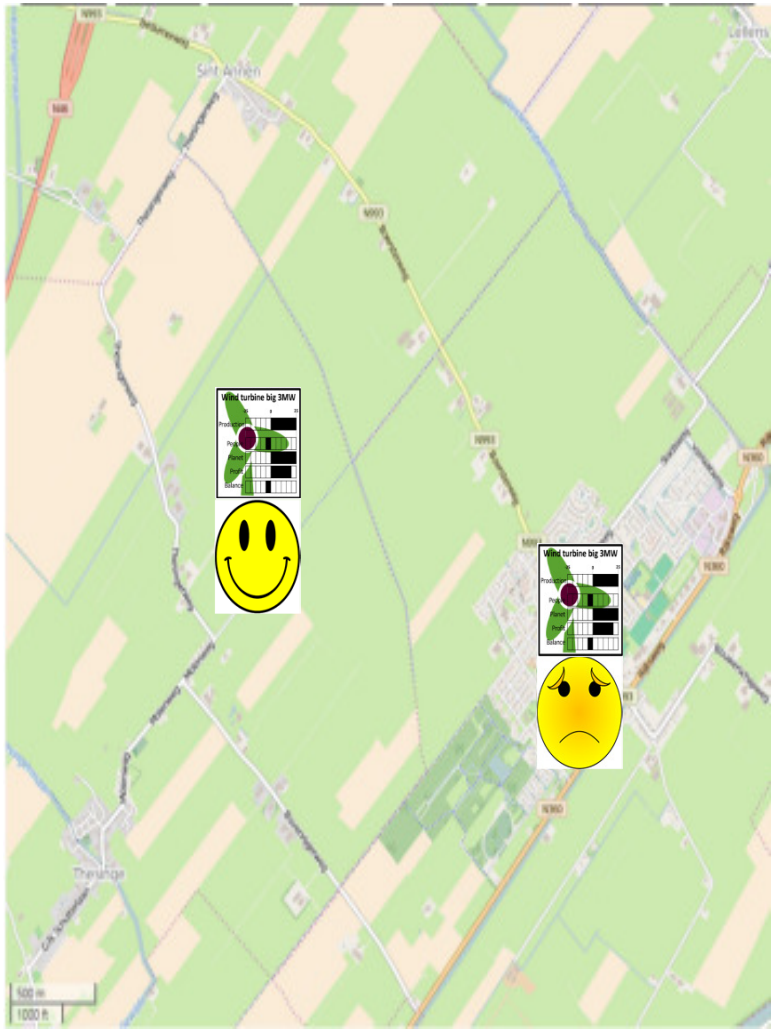
6)Balance (DSO)

The board



The map

Use of the map



Playing cards can be placed on the map

However:

Only on areas suited for specific cards

- e.g. wind turbine in field solar
  panels roof in village

The playing cards

Each card represents the area needed for that technology

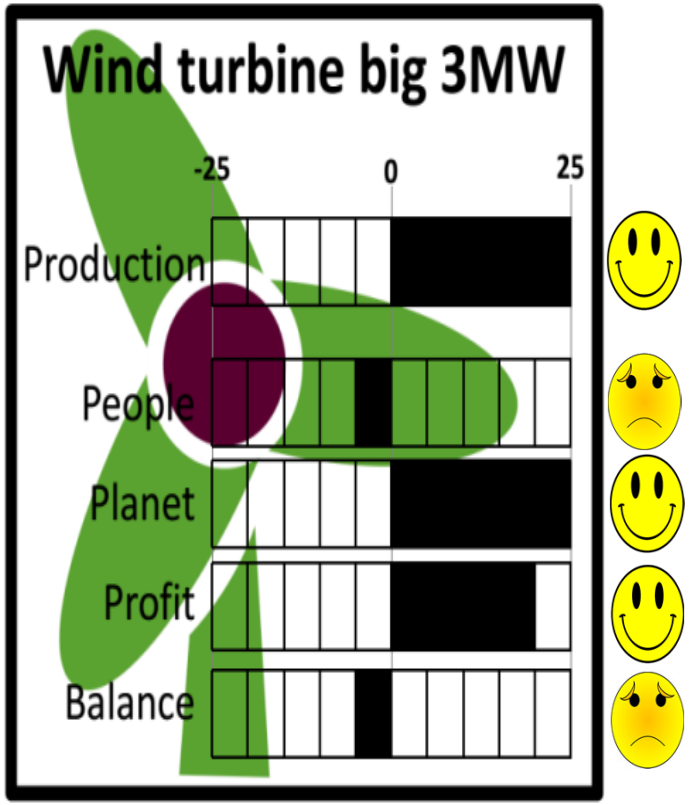
except:

- **Efficiency**
- **Storage**
- **CHP**

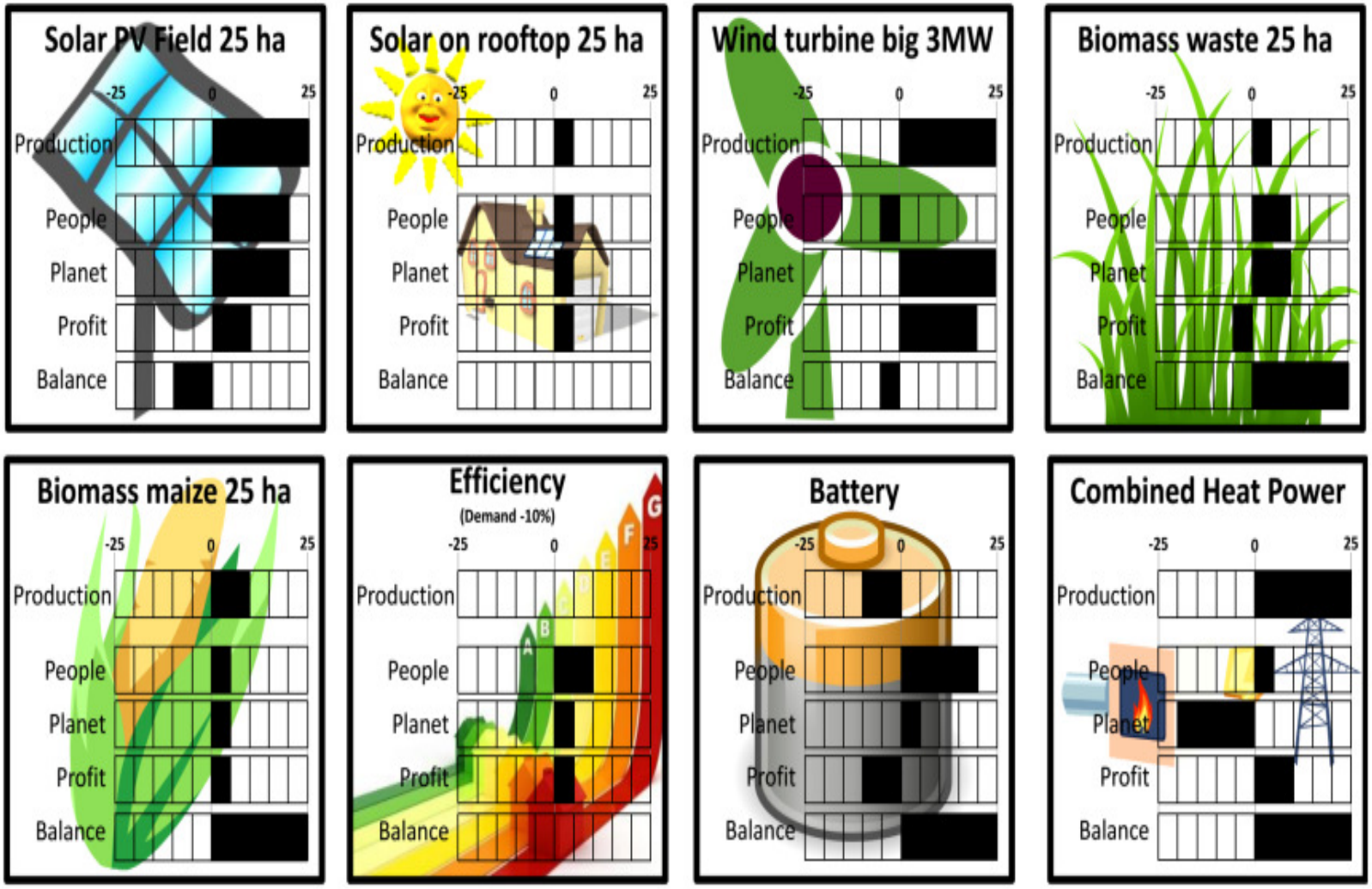
Example of the scores

Roles on:

- Production
- People
- Planet
- Profit
- Balance



Scores


Solar PV Field 25 ha
Solar on rooftop 25 ha
Wind turbine big 3MW
Biomass waste 25 ha
Biomass maize 25 ha
Efficiency
(Demand -10%)
Battery
Combined Heat Power
-25
0
25
Production
People
Planet
Profit
Balance
A
B
D
E
F
G

Goal of the game

1. **All roles must achieve production score**

2. **All roles must achieve their individual scores**

Let’s start

Round one: 10 minutes

Village of Ten Boer

(4,600 inhabitants)

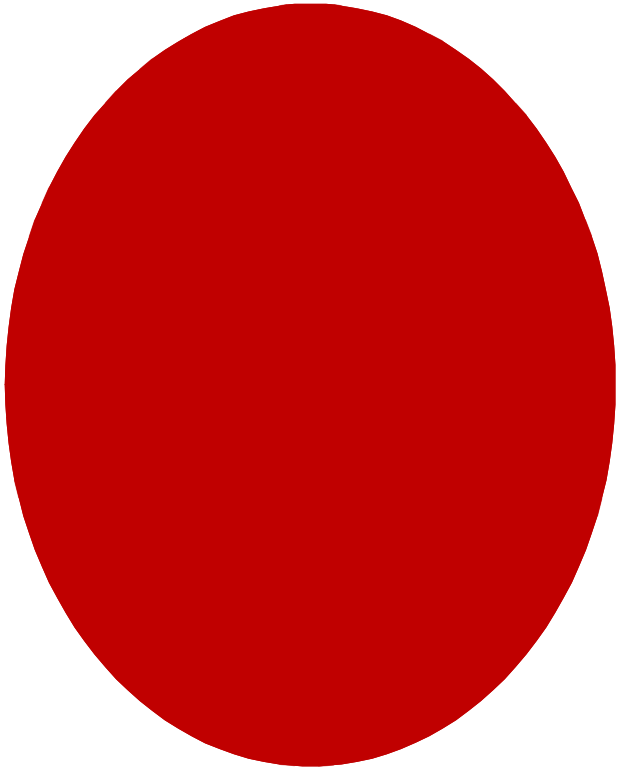
Production goal

20

Points

Time round: 10 minutes

TIMER STARTS



Round two: 10 minutes

City of Groningen

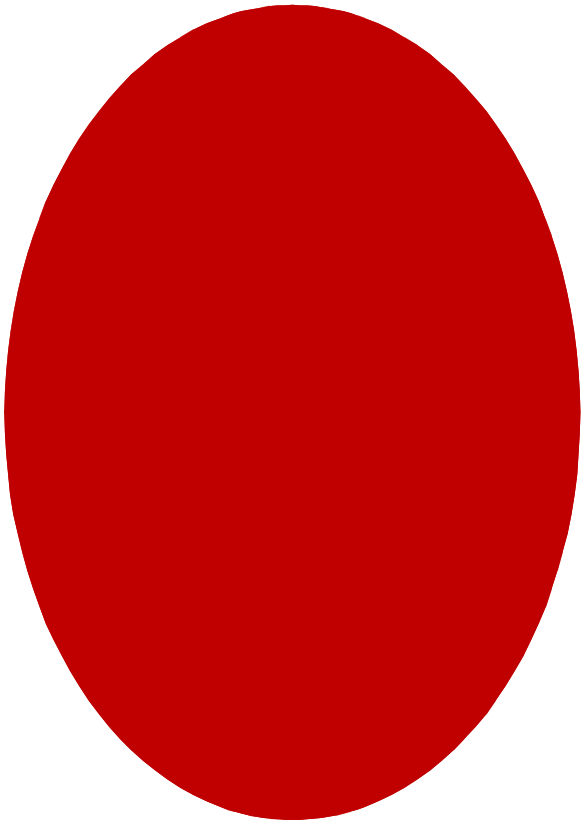
(180,000 inhabitants)

Production goal

100 Points

Time round: 10 minutes

TIMER STARTS



WE energy GAME

OR: Why is higher production of Renewable Energy Sources difficult in The Netherlands?

Experience and discuss how all interests must be secured:

- Production / Chairman
- People
- Planet
- Profit
- Balance
- Permit