Predicting rain doesn't count. Building arks does.

Bram-Paul Jobse - CFO N.V. EPZ a.jobse@epz.nl +31 6 507 45 184 Thursday June 6th 2024

Nuclear safety

Last Minute Risk Analysis (LMRA)

STEP 1 **Look around – What do I see?**

a. Do I detect any uncontrolled hazards? Consult the task manager about it!

b. Am I at the intended equipment?

c. Is the installation (electrically) secured?

d. Am I wearing all the proper Personal Protective Equipment (PPE) required?

e. Have the precautions and measures listed on the permit been taken?

f. Am I prepared for an emergency situation (escape/alarm etc.)?

STEP 2 **Do what is needed to remove any hazards.**

STEP 3 **Start working safely on the job!**

HP High Five

Sharpen your mind with the right tools

EPZ

50 years of experience with the future

EPZ

Nuclear

- 1 power plant
- 1 hectare
- **485 MW**
- **4.000 GWh**
- 1.300.000 households

Solar

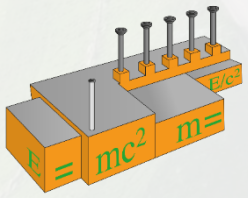
- 62.000 panelen
- 20 hectares
- **21 MW**
- **25 GWh**
- 8.000 households

Wind

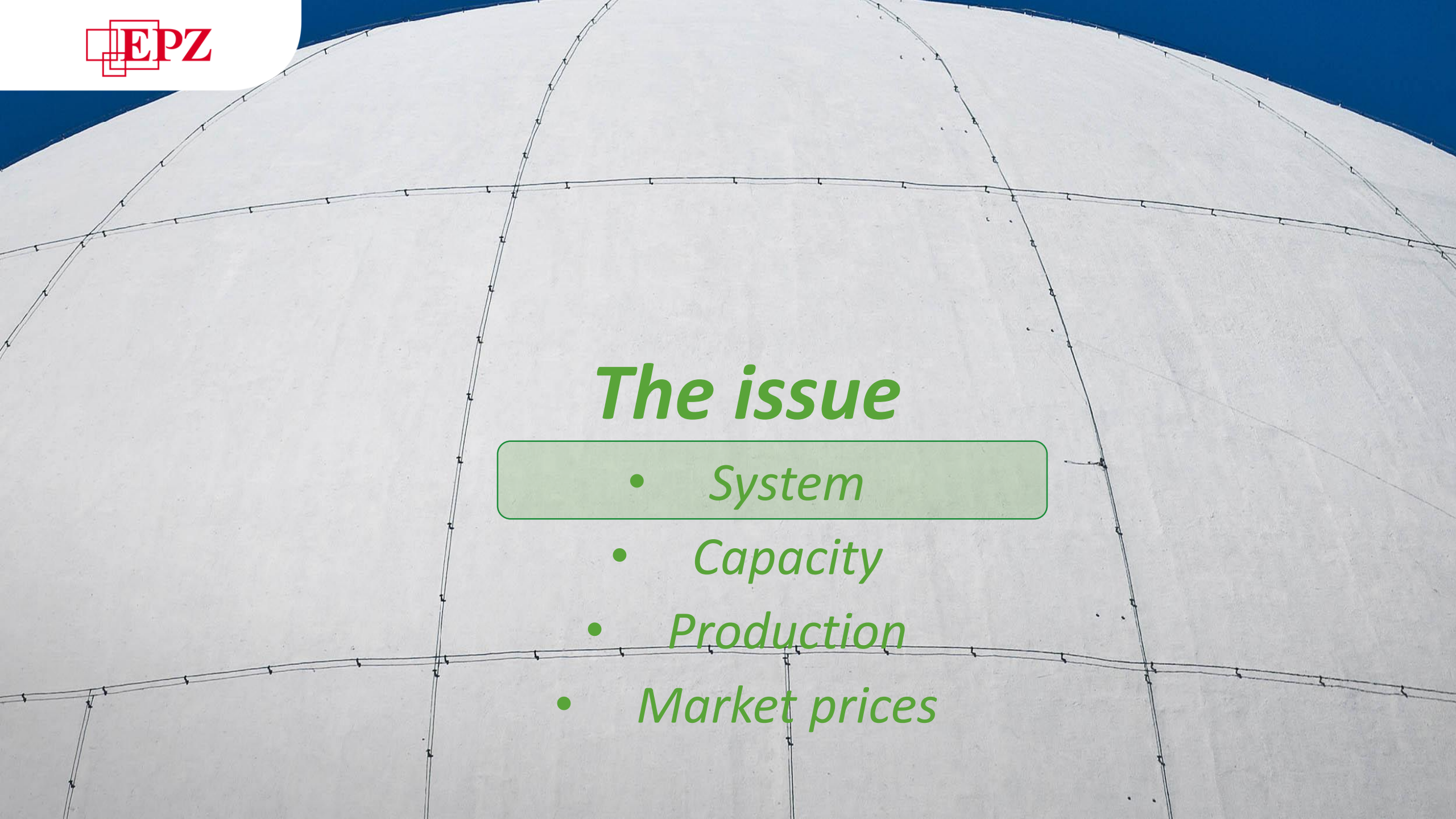
- 8 turbines
- 40 hectare s
- **33 MW**
- **70 GWh**
- 23.000 households

Nuclear waste COVRA

All nuclear waste
of 60 years
electricity production.
Reduction of
120.000.000 tons CO_2



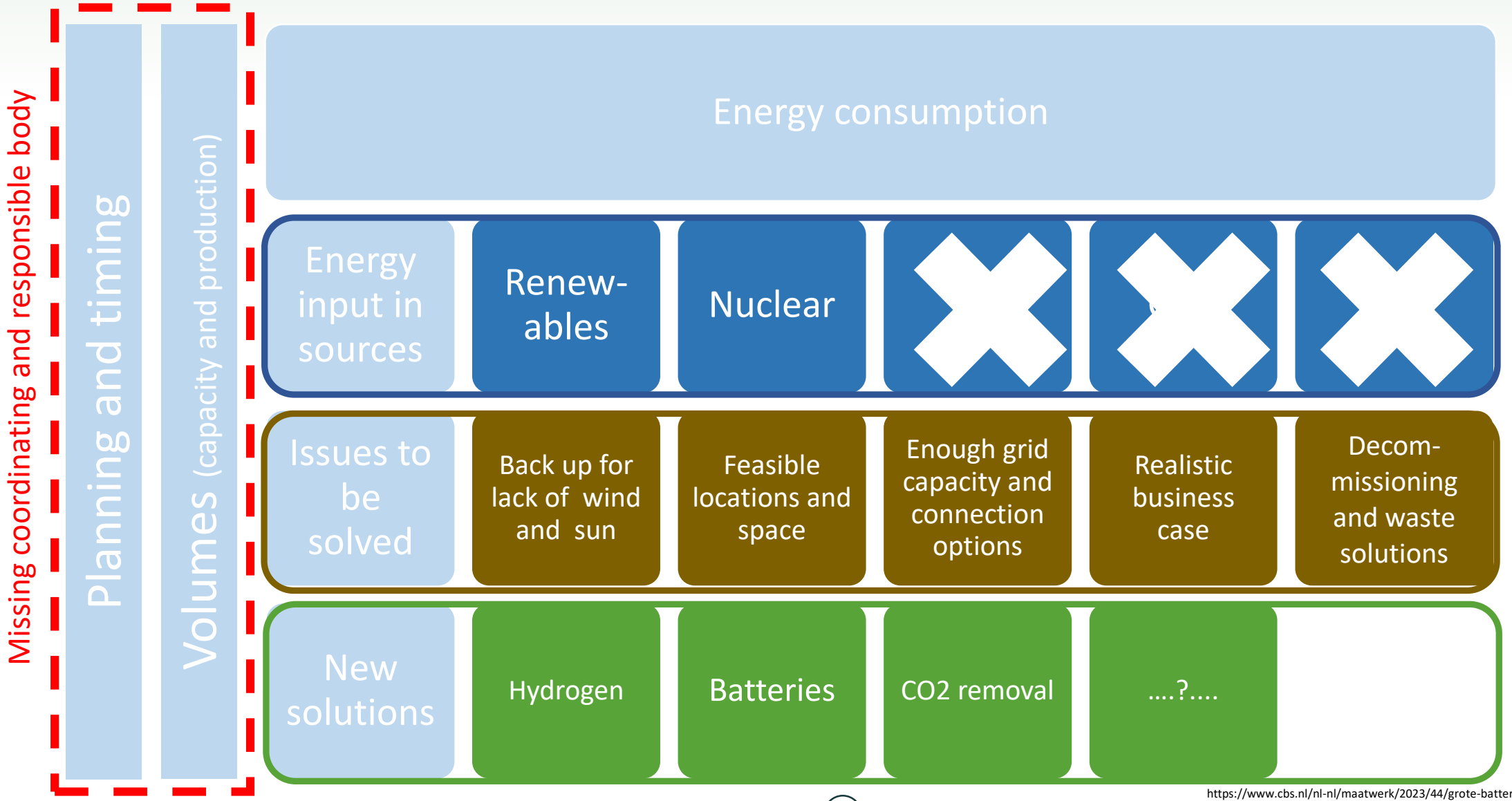

The issue
The solution



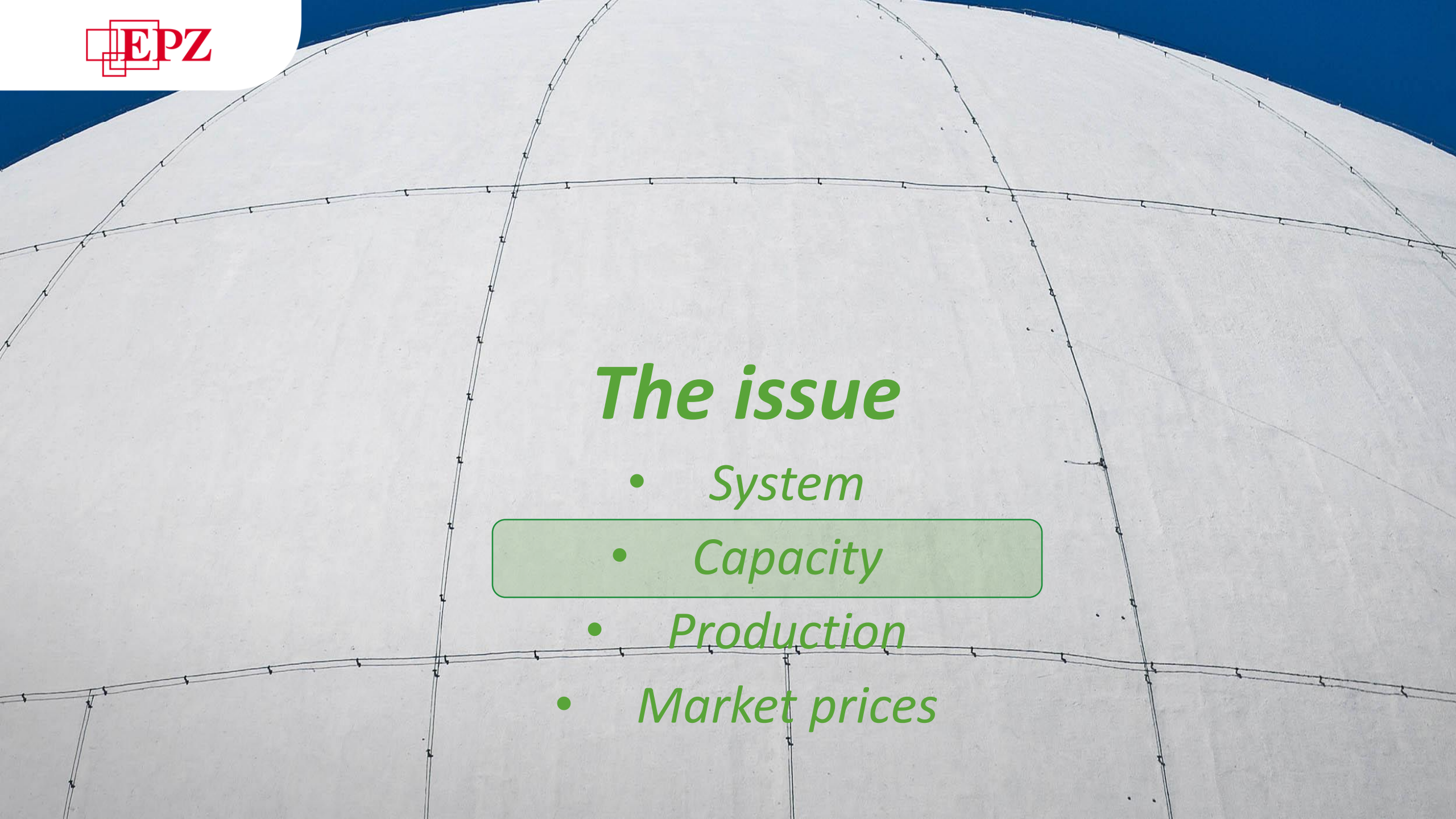
The issue

- System
- Capacity
- Production
- Market prices

The big puzzle
'We need an integral energy policy'



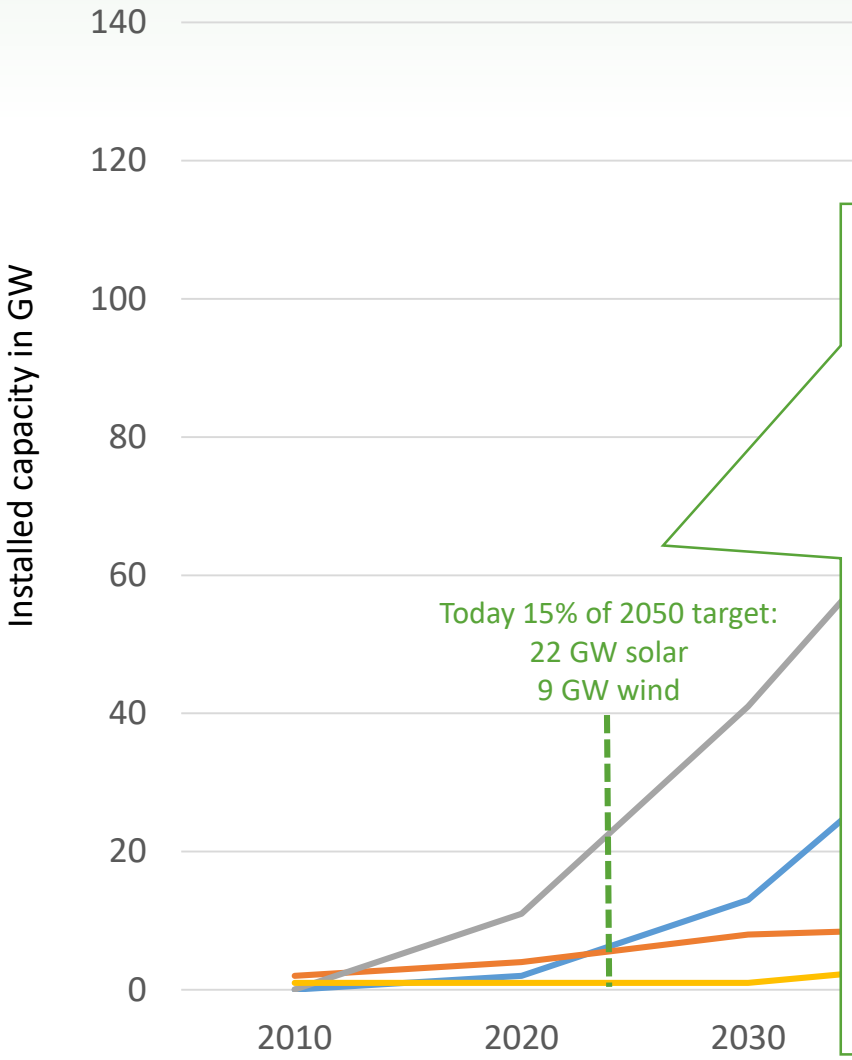
https://www.cbs.nl/nl-nl/maatwerk/2023/44/grote-batterijen-voor-opslag-van-elektriciteit-2022-



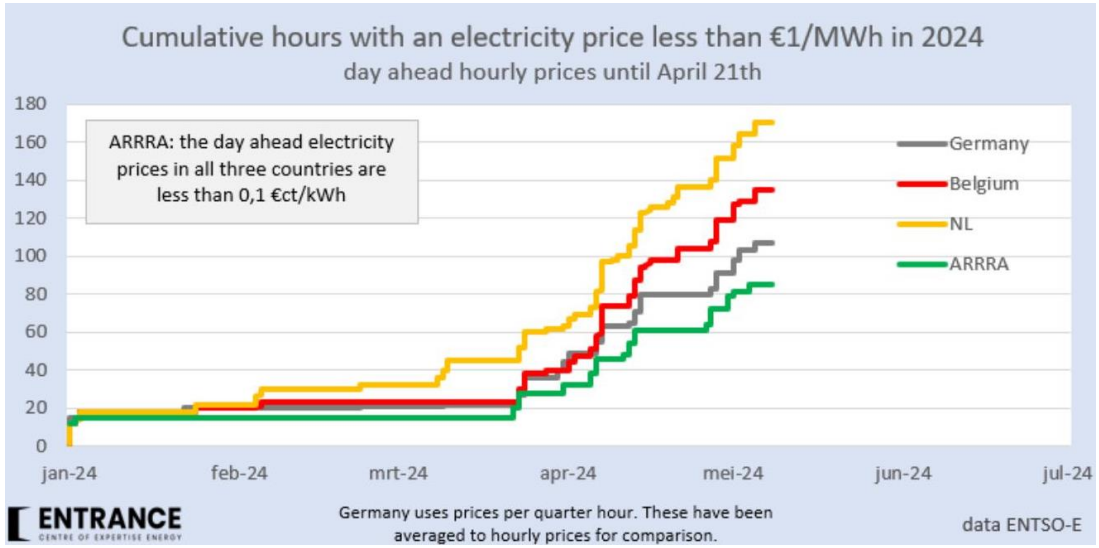
The issue

- *System*
- *Capacity*
- *Production*
- *Market prices*

Installed CO2 free capacity in GW in NL



31 GW Renewables is 155% of an average peak demand of 20 GW. This causes rapidly increasing hours with negative prices.



https://www.pbl.nl/publicaties/trajectverkenning-klimaatneutraal-2050

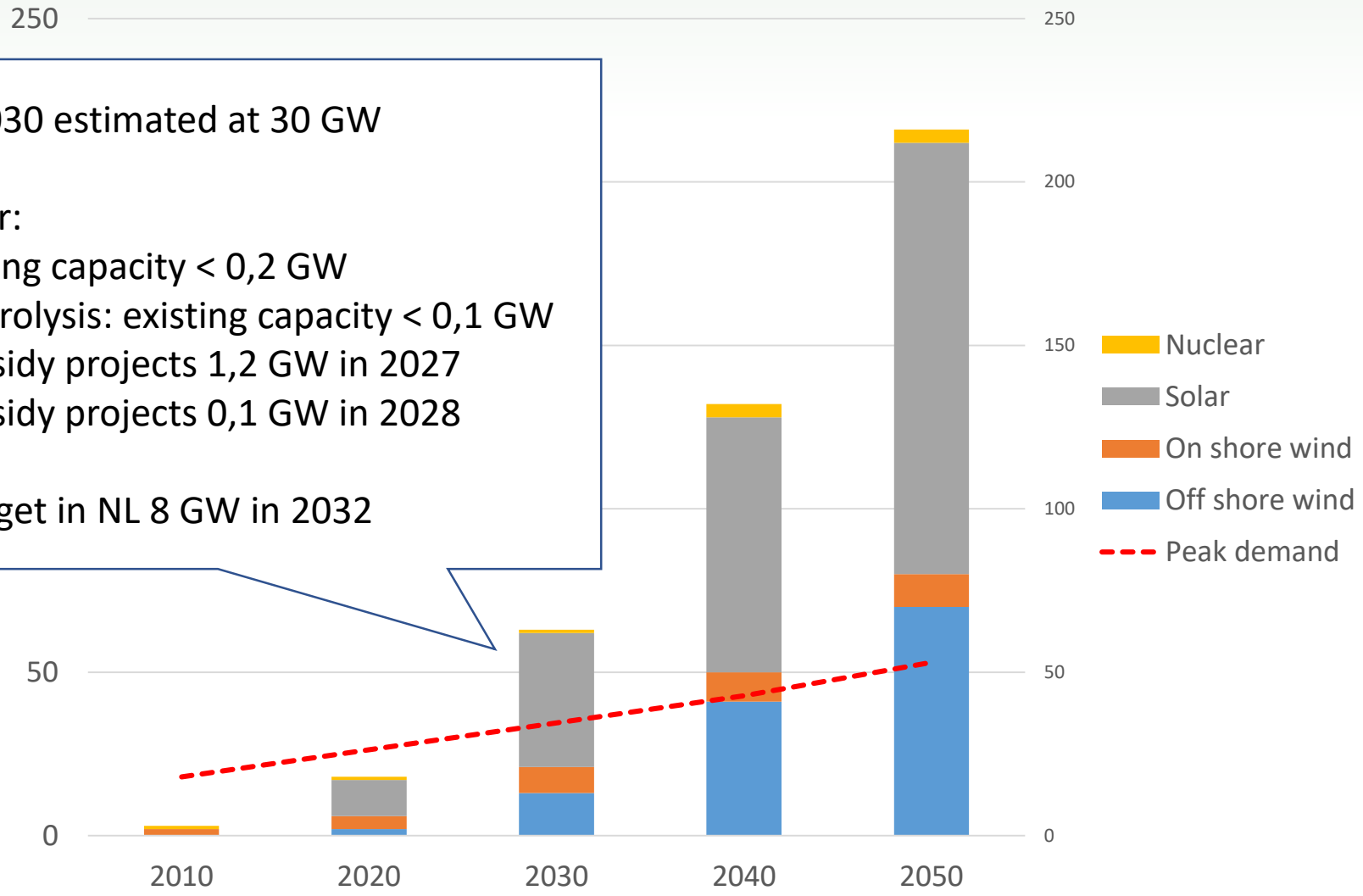
Accumulated installed CO2 free capacity in GW in NL

Overcapacity in 2030 estimated at 30 GW

Can be used by/for:

- Batteries: existing capacity < 0,2 GW
- Hydrogen electrolysis: existing capacity < 0,1 GW
  - 12.22 subsidy projects 1,2 GW in 2027
  - 05.24 subsidy projects 0,1 GW in 2028

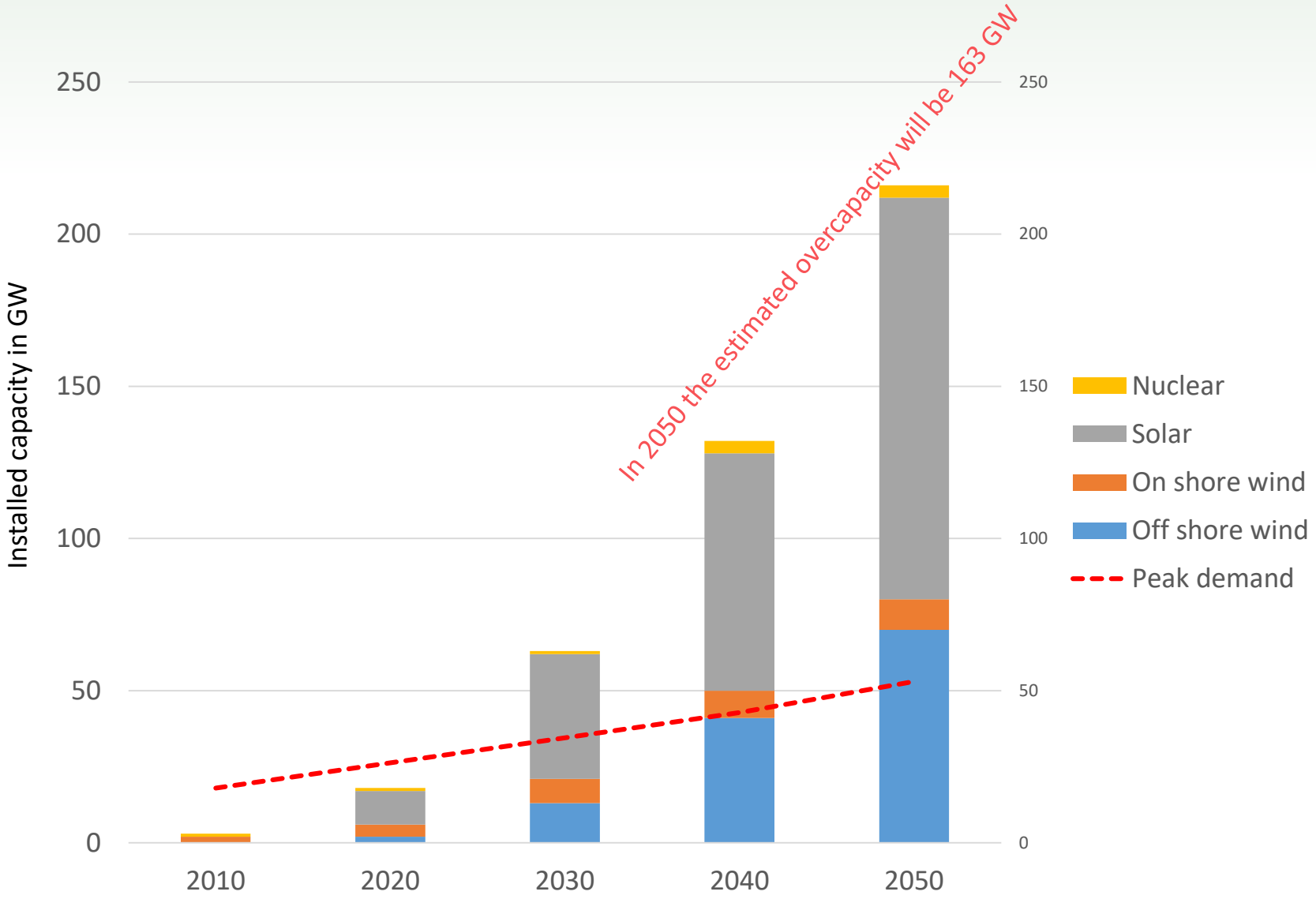
Hydrogen target in NL 8 GW in 2032



https://www.pbl.nl/publicaties/trajectverkenning-klimaatneutraal-2050

https://www.rijksoverheid.nl/onderwerpen/duurzame-energie/overheid-stimuleert-de-inzet-van-meer-waterstof

Accumulated installed CO2 free capacity in GW in NL



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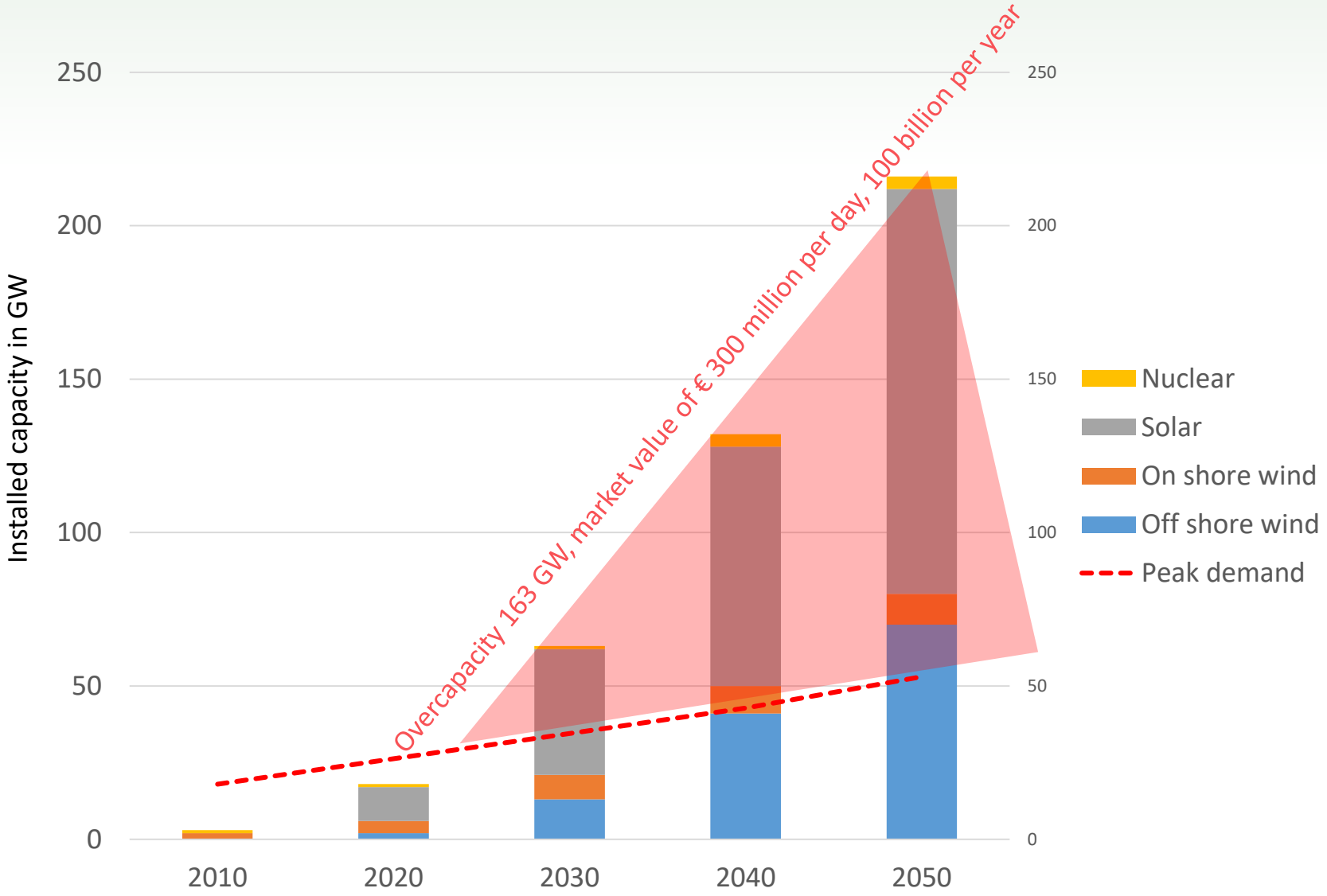

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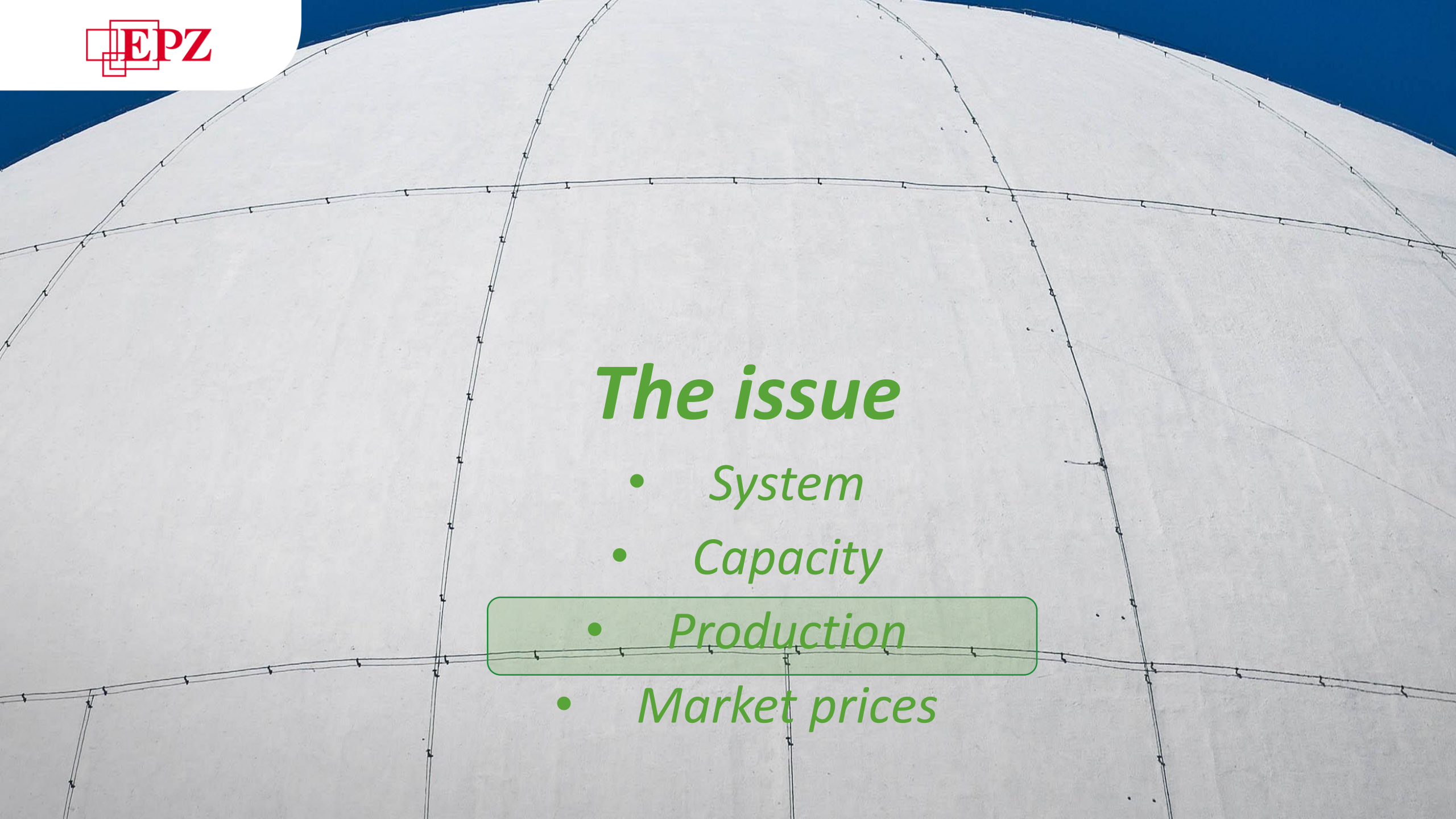
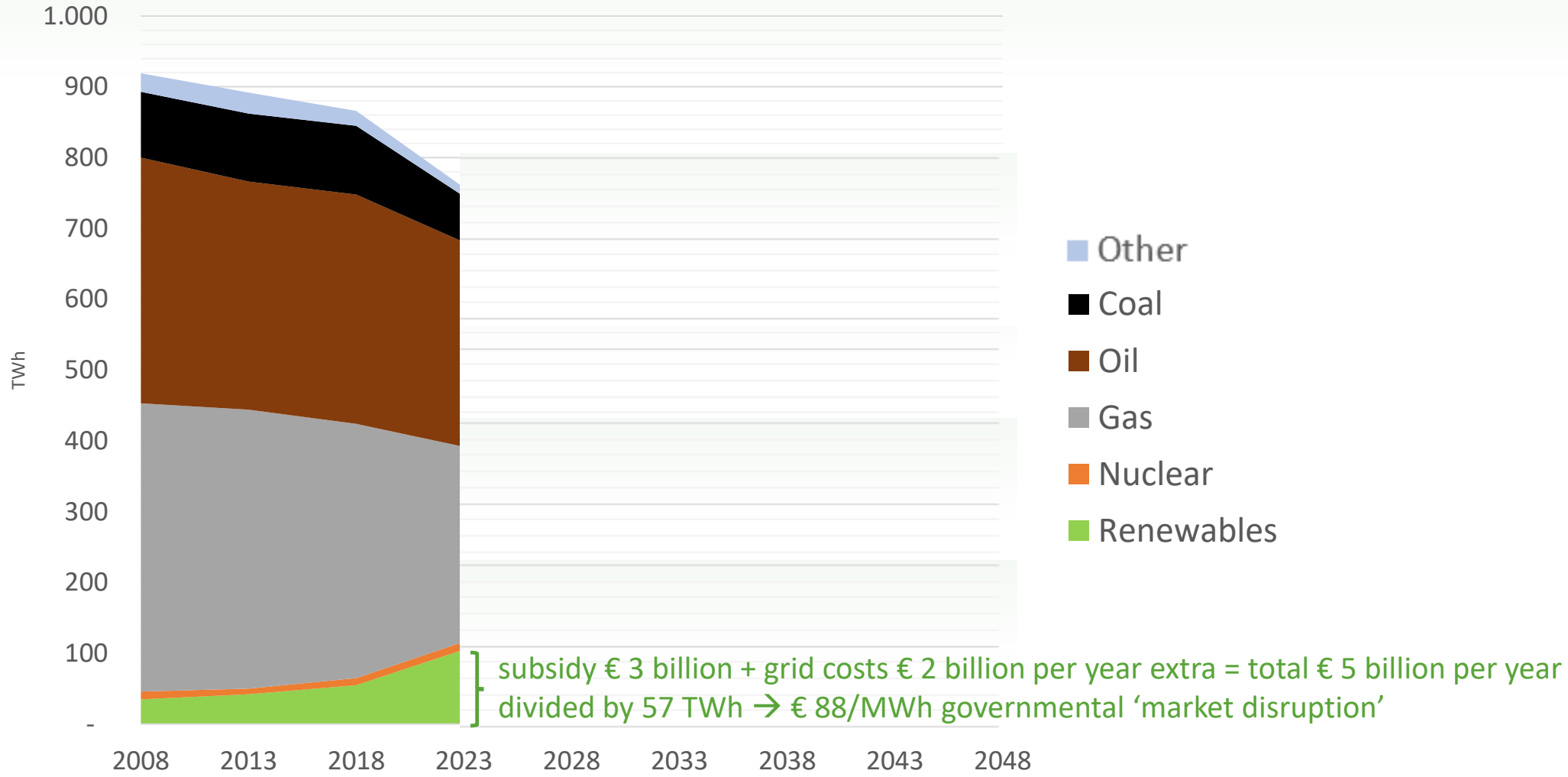


The issue

- *System*
- *Capacity*
- *Production*
- *Market prices*

Yearly primary energy in NL 800 TWh



https://energieinnederland.nl/cijfers/ https://energyscenarios.tno.nl/data/energy_mix https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82610NED/table?ts=1715766443666

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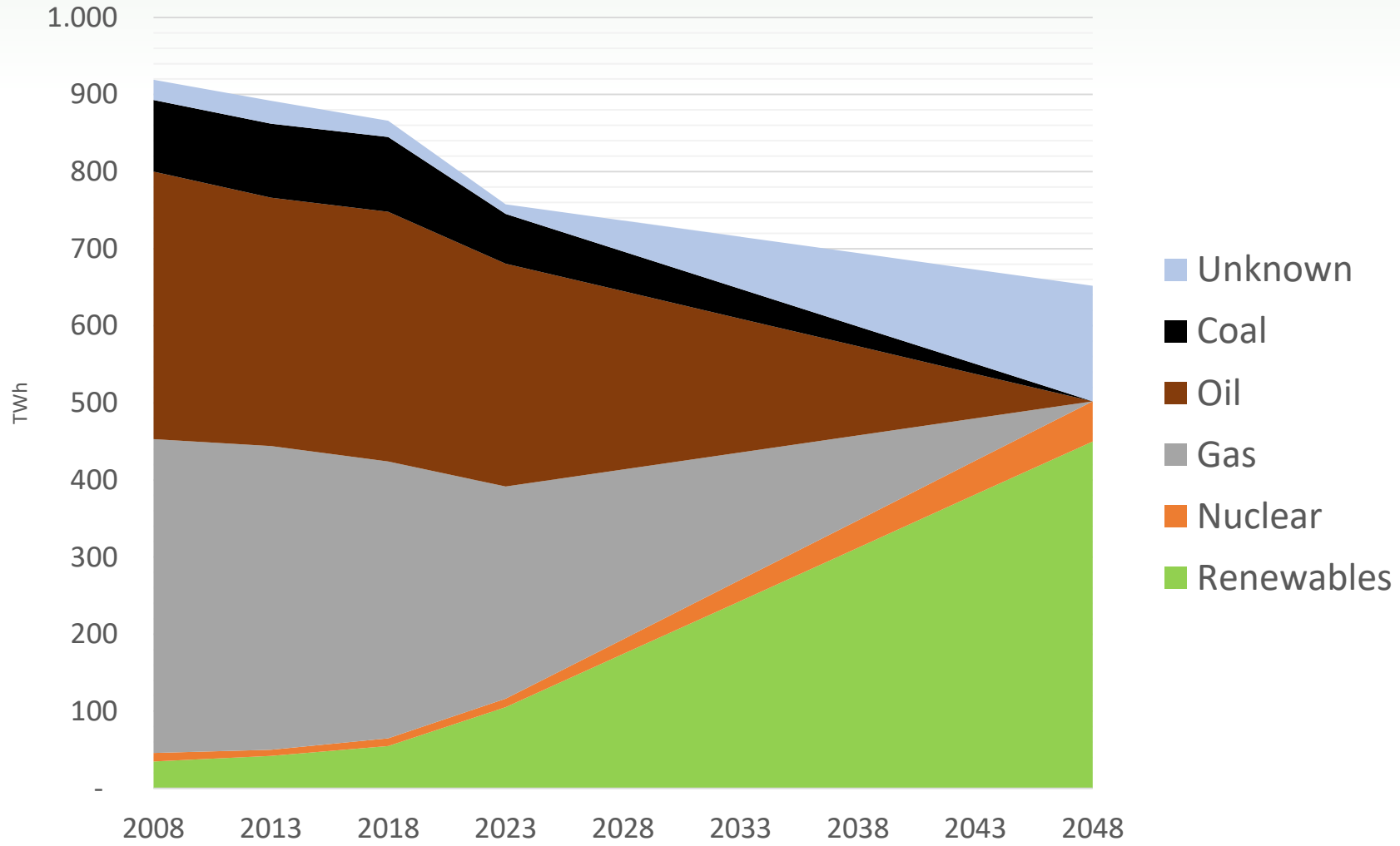

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In the Netherlands

Energy demand in the Netherlands is 800 TWh in 2023

Energy demand in the Netherlands will drop to approximately 650 TWh in 2050

Targets of the government:

• 2 times as much onshore wind as the current capacity	30 TWh
• 18 times as much offshore wind as the current capacity	300 TWh
• 6 times as much solar as the current capacity	150 TWh
total in 2050 (often in the wrong place at the wrong time)	480 TWh

In addition to the above, still necessary

• Extra energy in addition to max. solar and wind	170 TWh
• Tenfold increase in grid capacity	
• Doubling the existing peak capacity to 50,000 MW (not solar and wind)	

Current solutions and their capacities:

- 1 EPR produces 13 TWh
- the largest battery delivers 0,1 TWh
- the most advanced H2 initiative have a permits for 250 MW
- the cost prices are between €80 - €400 per MWh

https://energieinnederland.nl/cijfers/ https://energyscenarios.tno.nl/data/energy_mix https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82610NED/table?ts=1715766443666

Do the solutions work?

The New York Times

Electric Grids Are a Hidden Weak Spot in World's Climate Plans, Report Warns

FINANCIAL TIMES

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"COP28 fossil fuel pledges will not limit global warming to 1.5C, says IEA"

FINANCIAL TIMES

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"Shares of hydrogen cell developer plunge 40% on 'going concern' warning"

Hydrogen — Fantasy or fuel of the future?

FINANCIAL TIMES

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"Ageing computers pose obstacle on the UK's path to decarbonisation"

FINANCIAL TIMES

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"Wind developer Ørsted axes dividend, cuts jobs and exits offshore markets in bid to refocus"

FINANCIAL TIMES

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"Top lithium producer Albemarle downgrades 2030 demand forecast as EV shift slows"

FINANCIAL TIMES

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"Who will pay for Europe's power grid upgrade?"

FINANCIAL TIMES

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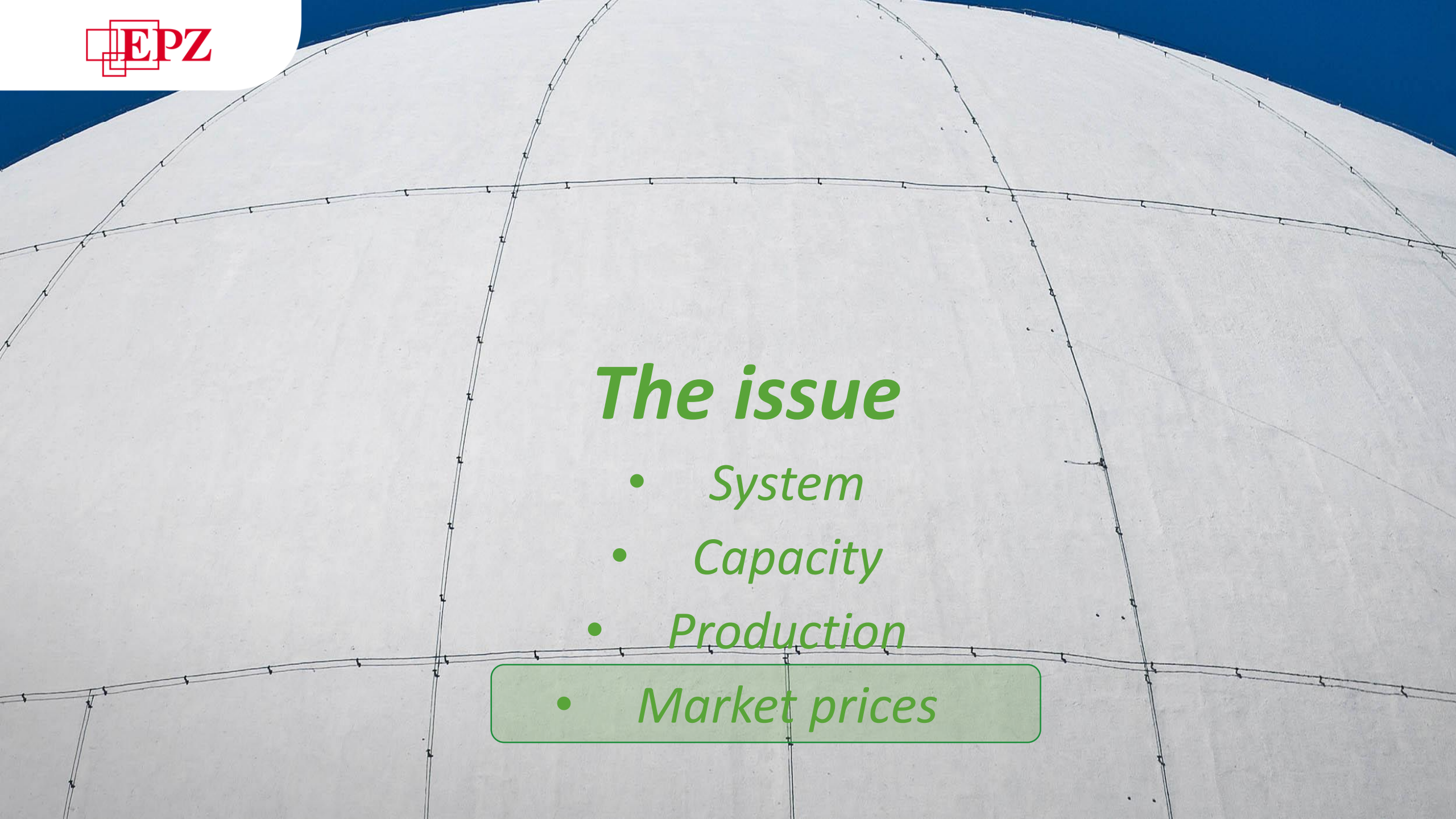
"US offshore wind goals will be missed, say parts manufacturers"



The issue

- *System*
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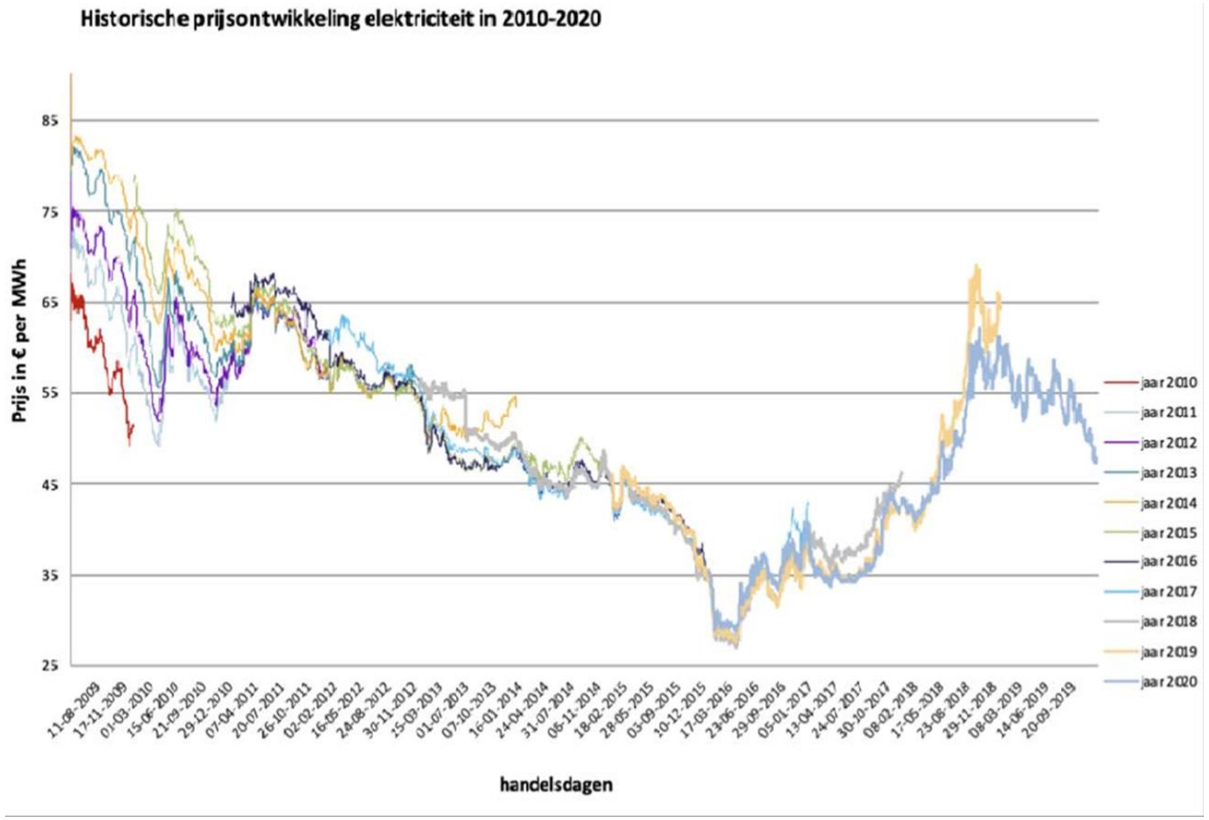
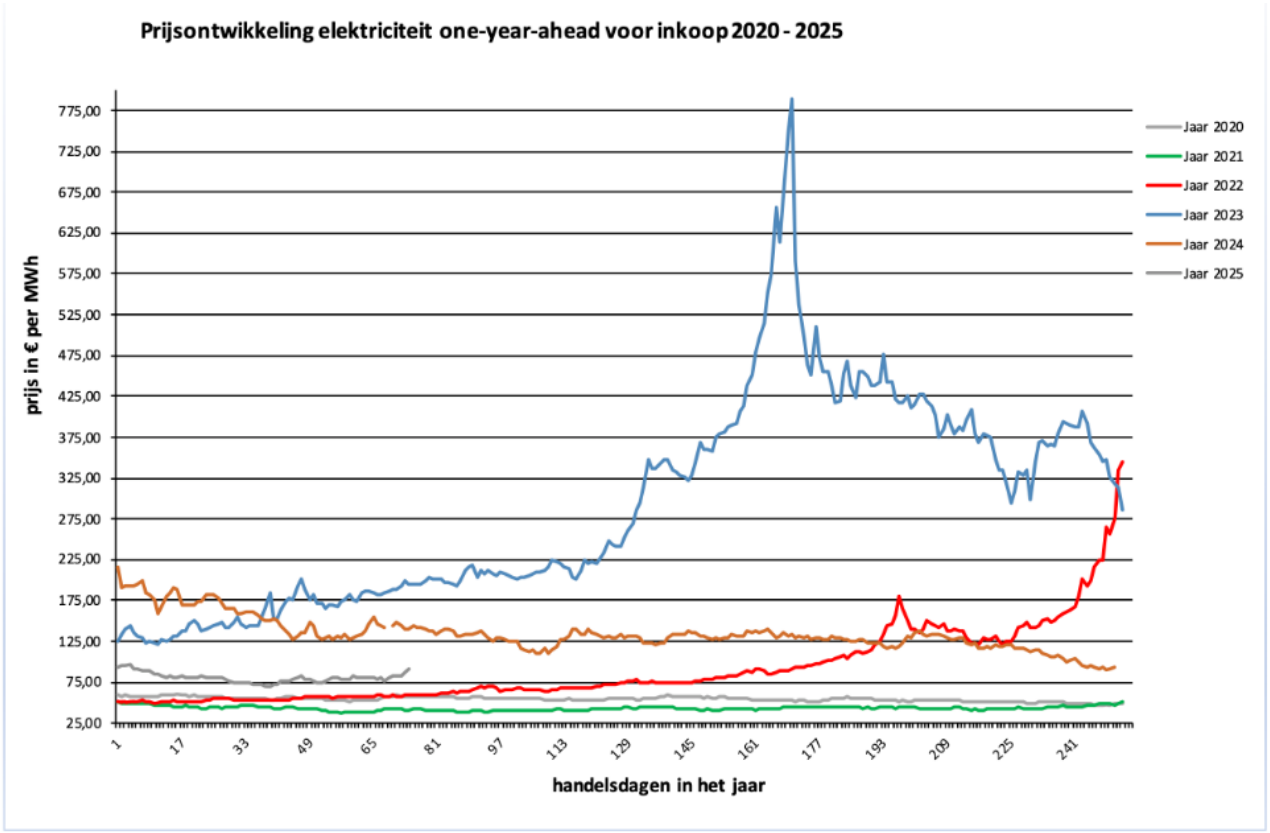
Unstable, unpredictable electricity prices





Zicht op Energie
www.zichtopenergie.nl

Bron: Endex
bijgewerkt tot 13-04-2024

Conclusion

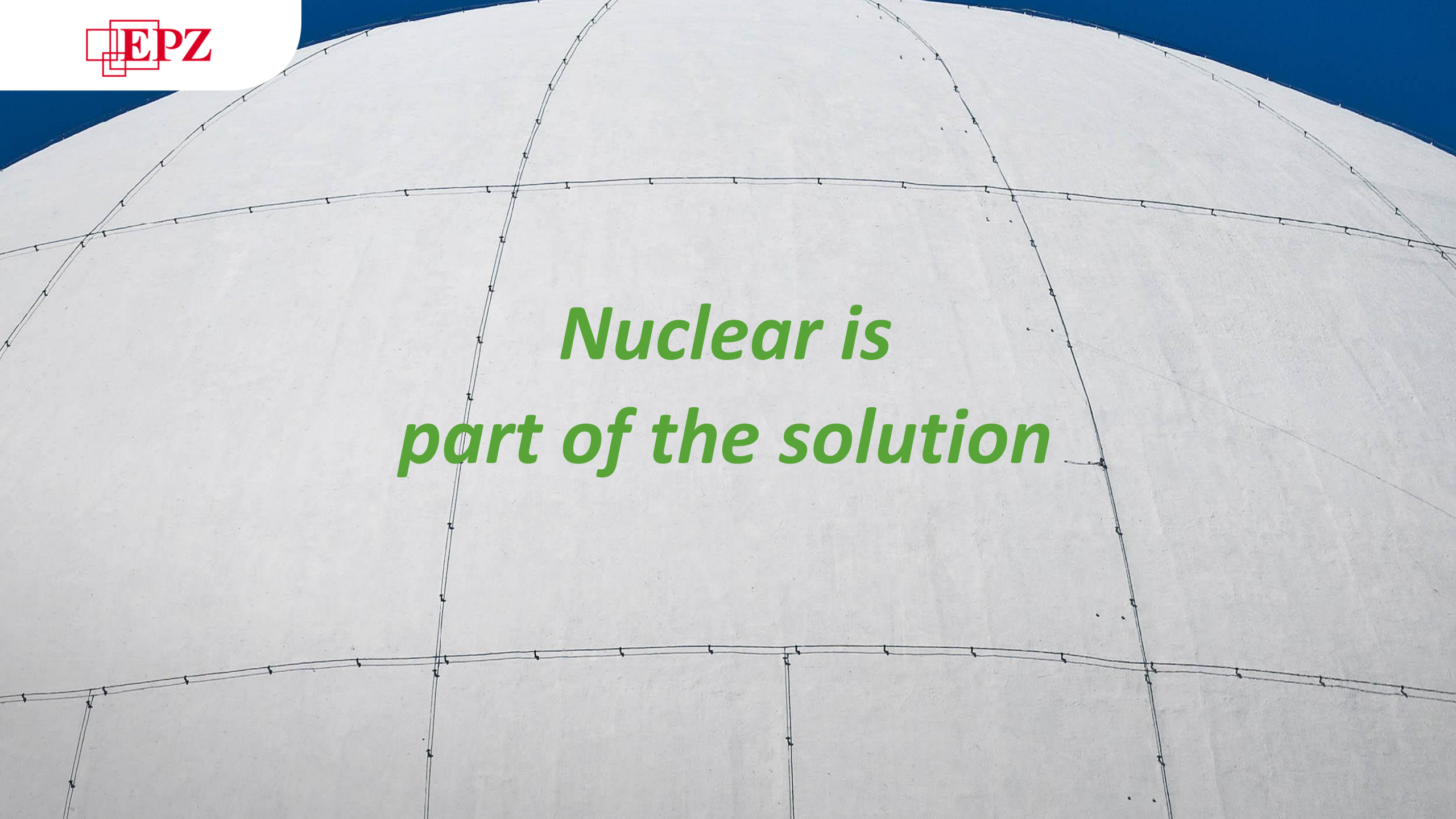
The climate targets are ambitious, so we don't have the luxury of choosing between energy sources.

Not either-or, but both-and:

We need to focus as much as possible on solar, wind, hydrogen, batteries, savings and nuclear energy.

Only then will we be able to come close to a CO2 neutral energy system.

We create alliances focused on nuclear!


EPZ
Nuclear is
part of the solution

Shifting perspective: From ambition to execution

What do you see?
By shifting perspective you might see an old woman or a young woman.

Stop explaining necessity
Stop reading consultant reports
Team up and start building

Our strenghts

Knowledge	Experience
Nuclearisation of people Own simulator Certified education	Our people 6000 years of nuclear operator experience
Location	**Network**
Borssele NPP Netherlands Connected countries	THORIZON, NRG, Rolls-Royce SMR, Westinghouse, LAST ENERGY, EDF energies nouvelle, smart delta resources, DOW, urenco, KHNP, orano

EPZ´s future after 2033

EPZ is developing - in collaboration with others - four nuclear project clusters:

- Large new build: support the government in the developing of the construction of 2 large (1.000-1.600 MW per unit) nuclear power plants at the preferred location of Borssele with the intended purpose of EPZ as future operator, license holder and possible (shared) owner

- New build medium (300-500 MW) and small (< 100 MW): the preparation and development of SMR in collaboration with industry at industrial locations with EPZ as the intended operator

- Extension of operating life BS30: research into the possibility of extending operating life, drawing up a draft covenant and preparation for a permit change

- Dismantling BS30: the preparation for safe, timely and financially responsible dismantling of the Borssele nuclear power plant

Nuclear power plants

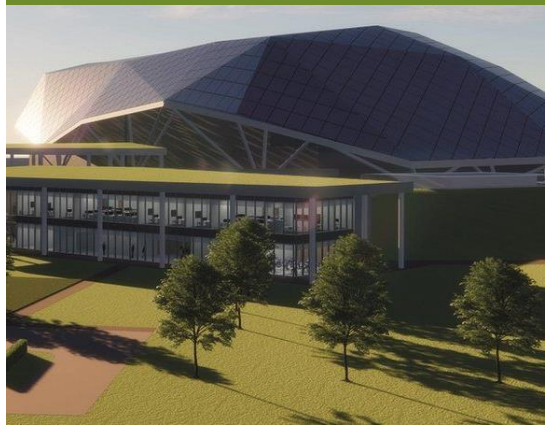
Large > 1.000 MW	Middle 200-500 MW	Small < 200 MW

EDF · ICHNP · Westinghouse · nuward · HITACHI · Rolls-Royce SMR · HOLTEC INTERNATIONAL · LAST ENERGY · energy · arc CLEAN TECHNOLOGY · THORIZON · TERRESTRIAL ENERGY

LARGE
1.630 MW – 13.000 GWh

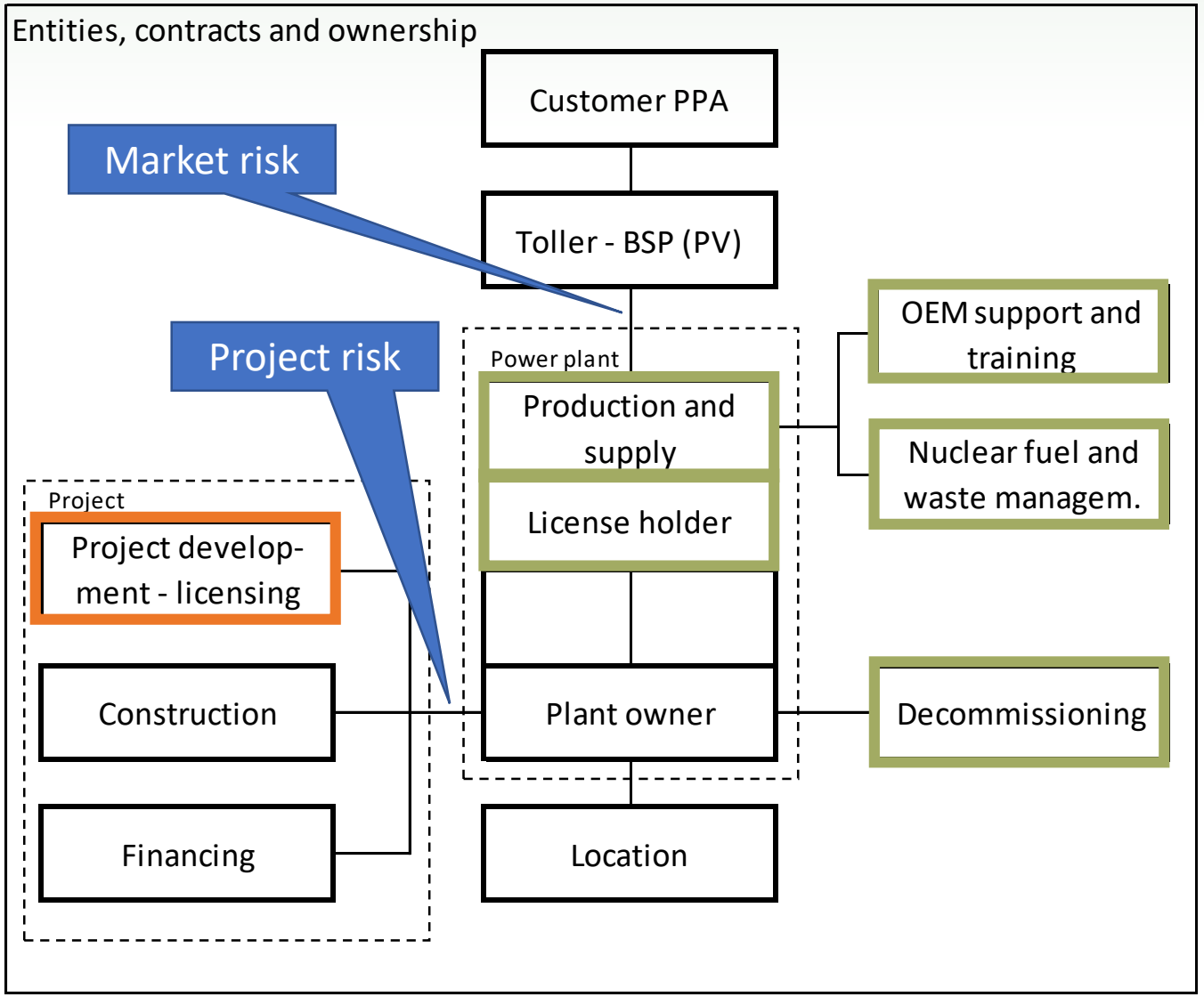
LARGE
1.000 MW - 8.000 GWh

MIDDLE
450 MW - 4.000 GWh



SMALL
20 MW – 160 GWh

Clear project roles and alliance building



Alliance Parties

1. Initiator
2. Licensee / Operator
3. Financier
4. Toller - Customer
5. Builder – Vendor

Roles of EPZ

- Project phase
  - Provide input on product design and supports licensing during the project development phase
- During operation
  - Provide an integral solution, where we also facilitate supporting activities (OEM support, fuel and waste management) through our partner network

Alliance building

1. Alliance strategy
   Understand objective and roles in partnering
2. Partner and type of partnership selection
   Collect all the information on the potential partners and align the culture, objectives to the business
3. Value Creation and trust building
4. Operational plan
   Roles and responsibilities of the partners, activities and tasks
5. Structuring and governance
   Different ways of working and and decision making and coming to an agreement with all the partner of ways of completing the alliance tasks
6. Launch and management
   Implementation of plans, aligning teams with objectives and vision
7. Transformation
   Embrace changing environment and be flexible about it

Our project phases

1. Select production site (in cooperation with the initiator and site owner)
2. Defining plant capacity (in cooperation with the potential off taker)
3. Pre feasibility study (EPZ with the initiator)
4. Pre feasibility business case (EPZ with the initiator)
5. Alliance creation, partners and cooperation model
6. Start licensing process, environmental impact assessment (Alliance)
7. Potential vendor choice (Alliance)
8. Feasibility and go no go process (Alliance)
9. Licensing (Alliance)
10. Tendering (Alliance)
11. Building (Alliance)
12. Operation (EPZ)
13. Return on investment (Alliance)

For us, the end of this presentation

For us, the end of this presentation

means the start of the real building of new nuclear

power in the Netherlands,

will you join us?