RBCN
Rotterdam Biomass Commodities Network

RWE

EUBCE

Biomass sourcing & Sustainability

Peter-Paul Schouwenberg
Head of Stakeholdermangement & Sustainability

Geertruidenberg, 2026, May 18

Agenda

12:30 - 13:30	**Lunch**
13:30 - 13:45	Welcome by Peter-Paul Schouwenberg
13:45 - 17:30	Presentations
	RWE in the energy transition by Mark Bouwmeester
	Projects at the Amer-energy hub in Geertruidenberg by Yari Boogaarts
	Worlswide sourcing of biomass/RED II/III-sustainability requirements by Peter-Paul Schouwenberg
	Tour RWE Generation NL and afterwards drinks & snacks

Veiligheid – Algemene instructies 1

Wat te doen?

Brandalarm
3x lange 'whoop' toon
Bedrijfsmedewerkers naar de controlekamer!
Aannemer en eigen personeel verlaten het gebouw!
Ga naar de verzamelplaats!

Wat te doen in geval van nood? – Blijf kalm!

Alarmnummer:
+31(0)88-8538222

1. Meld het incident
   - Wat is er gebeurd?
   - Waar is het gebeurd?
   - Hoeveel gewonden?
   - Welk letsel?
   - Wacht op instructies!
2. Directe maatregelen
   - Instructies opvolgen
   - Zet gevaarlijke ruimte af
   - Verleen eerste hulp
   - Beheers het gevaar
3. Breng in veiligheid
   - Neem personen in gevaar mee
   - Gebruik de gemarkeerde vluchtwegen

Gedragsregels

De normale verkeersregels gelden op het terrein.
Voetpaden moeten worden gebruikt.

Let op de maximumsnelheid van **30** km/u.

Parkeren is alleen toegestaan op de daarvoor bestemde plaatsen.

Roken is alleen toegestaan in de daarvoor bestemde ruimtes.

Er zijn nog meer gedragsregels voor dragers van actieve lichaamshulpmiddelen (bijv. implantaten zoals pacemakers). Neem als betrokkene contact op met uw RWE-toezichthouder.

Life Saving Rules

- Ik heb ervoor gezorgd dat ik aan een veilig systeem werk
- Ik werk met een geldige werkvergunning
- Ik gebruik de vereiste extra persoonlijke beschermingsmiddelen
- Ik vraag toestemming voordat ik veiligheidsvoorzieningen omzeil of uitschakel
- Ik houd me aan de elektrische veiligheidsregels
- Ik sta nooit onder een hangende last
- Ik installeer en respecteer afzettingen; Ik blijf uit de 'line of fire'
- Ik bescherm mezelf tegen vallen en verdrinken
- Ik betreed besloten ruimtes alleen met toestemming
- Ik rijd en loop veilig
- Ik houd me aan de regels voor brand- en explosiepreventie
- Ik ben niet onder invloed van alcohol, drugs of medicijnen

Contactpersoon: Yari Boogaarts
Telefoonnummer: +31 6 27 41 80 32

5-3-2024 Thanks for being our Mission Zero Hero! #missionzero

RWE

Veiligheid informatie
RWE Generation Amercentrale

Informatiefolder met belangrijke veiligheids- en gedragsinstructies op locatie

RWE Generation SE
Amercentrale
Amerweg 1
4931 NC Geertruidenberg
www.rwe.com

MISSION ZERO

Thanks for being our Mission Zero Hero!
#missionzero

Veiligheid – Algemene instructies 2

Persoonlijke Beschermingsmiddelen

Verplichte PBM-zones - Blauw gemarkeerd

Wanneer u zich in de blauw gearceerde gebieden op de kaart bevindt, zijn de volgende PBM's verplicht en moeten altijd worden gedragen.

✓ Veiligheidsbril
✓ Hoge veiligsheidsschoenen
✓ Werkkleding
✓ Veiligheidshelm

Deze gebieden zijn ter plaatse duidelijk gemarkeerd door geschilderde blauwe lijnen en lokale signaleringsborden. Let op: Extra PBM's kunnen nodig zijn volgens de risicobeoordeling voor uw taak, uw werk vergunning, of de lokaal aangegeven borden. Bijv. ademhalingsbescherming, gehoorbescherming, hand bescherming etc.

Alle andere gebieden – niet blauw gemarkeerd

Als u zich buiten de blauw gemarkeerde gebieden op de kaart bevindt, zijn er geen verplichte PBM-eisen. **Let op:** PBM's kunnen nodig zijn afhankelijk van de risico beoordeling voor uw taak, uw werkvergunning of de lokale aangegeven borden. Bijvoorbeeld: ademhalingsbescherming, gehoorbescherming, handbescherming enz.

Uitzonderingen

In het magazijn, de werkplaats en het laboratorium: De volgende PBM's zijn verplicht en moeten altijd worden gedragen.

✓ Veiligheidsbril
✓ Hoge Veiligsheidsschoenen
✓ Werkkleding

Excursies en rondleidingen : De volgende PBM's zijn verplicht en moeten altijd worden gedragen.

✓ Veiligheidsbril
✓ Veiligheidshelm

Let op: Excursies en rondleidingen mogen alleen onder toezicht worden uitgevoerd van RWE-personeel.

RWE Generation SE
Amercentrale
Amerweg 1
4931 NC Geertruidenberg
www.rwe.com

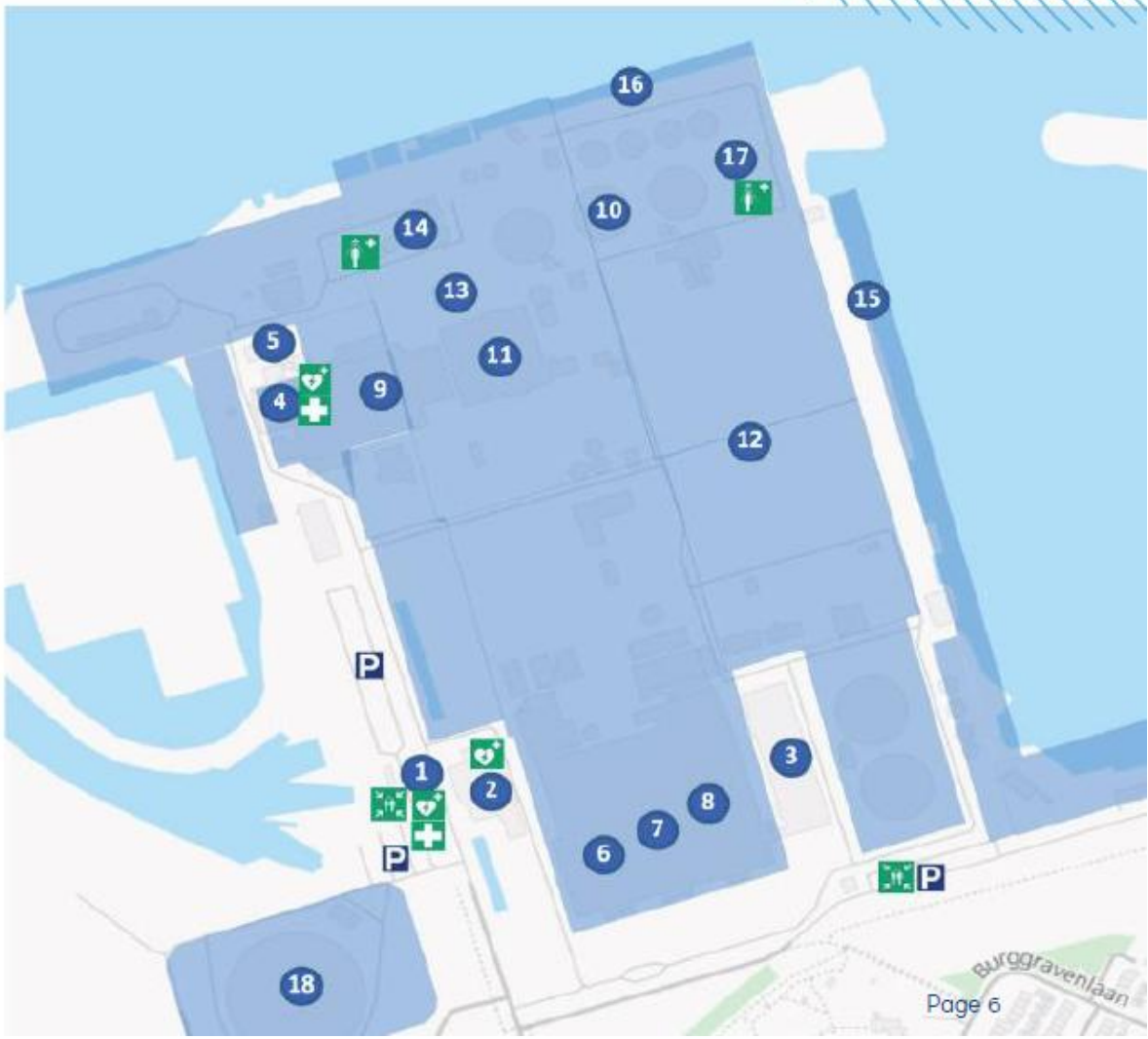
5-3-2024

Amercentrale

Legenda

1. Poort/Beveiliging
2. Hoofdkantoor Generation NL
3. Werkplaats/magazijn/ laboratorium/ kantoor
4. Werkvergunningenkantoor AC 9
5. Onderhoudsgebouw
6. Eenheid AC 6
7. Eenheid AC 7
8. Eenheid AC 8
9. Eenheid AC 9
10. Gipssilo's
11. Vliegasfilters en rookgasreiniging
12. Koelpark
13. Hulpketelhuis
14. Ammoniakopslag
15. Loskade Kolen
16. Loskade Bio
17. Chemie opslag
18. Koeltoren

PBM-gebieden
Parkeerplaats
Verzamelplaats
EHBO-post
Noddouche
Automatische Defibrillator (AED)



20260518 EUBCE visit

Amer Bio CHP in the circular economy

Mark Bouwmeester

RWE in de Benelux

850+
werknemers

Locaties

- ① **Geertruidenberg: Nederlands hoofdkantoor RWE Generation NL**
- ② **Zwolle: Kantoor RWE Renewables (onshore wind)**
- ③ **Utrecht: Kantoor RWE Renewables (offshore wind) en RWE Generation**
- ④ **Brussel: Kantoor RWE Renewables (offshore wind)**
- ⑤ **Amercentrale**, 631 MWe, 350 MWth & 0,5 MWpdc
- ⑥ **Eemshavencentrale**, 1.554 MW
- ⑦ **Magnumcentrale**, 1.410 MWe & 5,66 MWpdc
- ⑧ **Moerdijkcentrale**, 774 MW
- ⑨ **Clauscentrale**, 1.304 MW & 11 MW
- ⑩ **Swentibold**, 245 MWe, 275 MWth
- ⑪ **Volkerak**, 9,53 MW
- ⑫ **Sabinapolder**, 6,8 MW
- ⑬ **Karolinapolder**, in aanbouw 19,2 MW
- ⑭ **Halsteren**, 6,8 MW
- ⑮ **Kattenberg-Reedijk**, 9,6 MW
- ⑯ **Zuidwester**, 90 MW
- ⑰ **Westereems**, 152,9 MW
- ⑱ **Oostpolder**, 36 MW
- ⑲ **Oostpolderdijk**, 7,5 MW
- ⑳ **Eekerpolder**, 63 MW
- ㉑ **Kerkrade**, 14 MWpdc
- ㉒ **Geertruidenberg**, 8,4 MWpdc
- ㉓ **Spaarbekkencentrale Vianden**, Luxemburg, 1.291 MW
- ㉔ **Thornton Bank**, 87 MW (huur & exploitatie)
- ㉕ **OranjeWind**, 760 MW onder constructie
- ㉖ **Eemshavenbatterij**, 35 MW
- ㉗ **Moerdijk inertia-batterij**, 7,5 MW

RWE heeft meerdere projecten in ontwikkeling zoals waterstofprojecten, electrolysers, batterij-opslag en wind- en zonneparken.

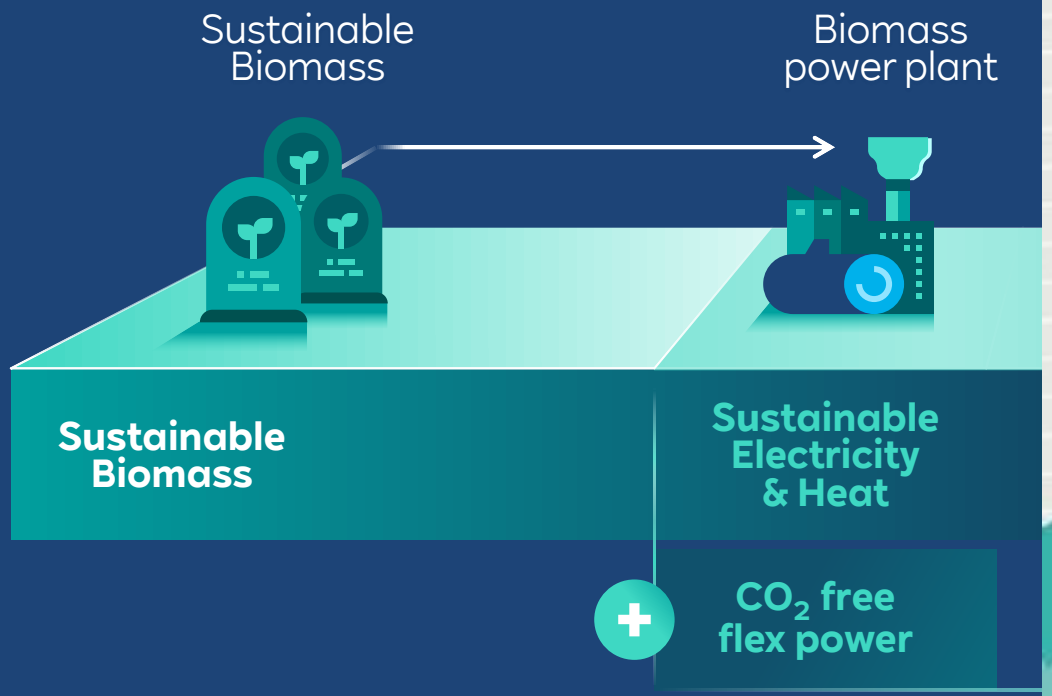
Legenda

- Kantoor
- Gascentrale
- Kolencentrale
- Biomassa
- Zonnepark
- Drijvend zonnepark
- Waterkracht
- Windpark op land
- Windpark op zee
- Batterij

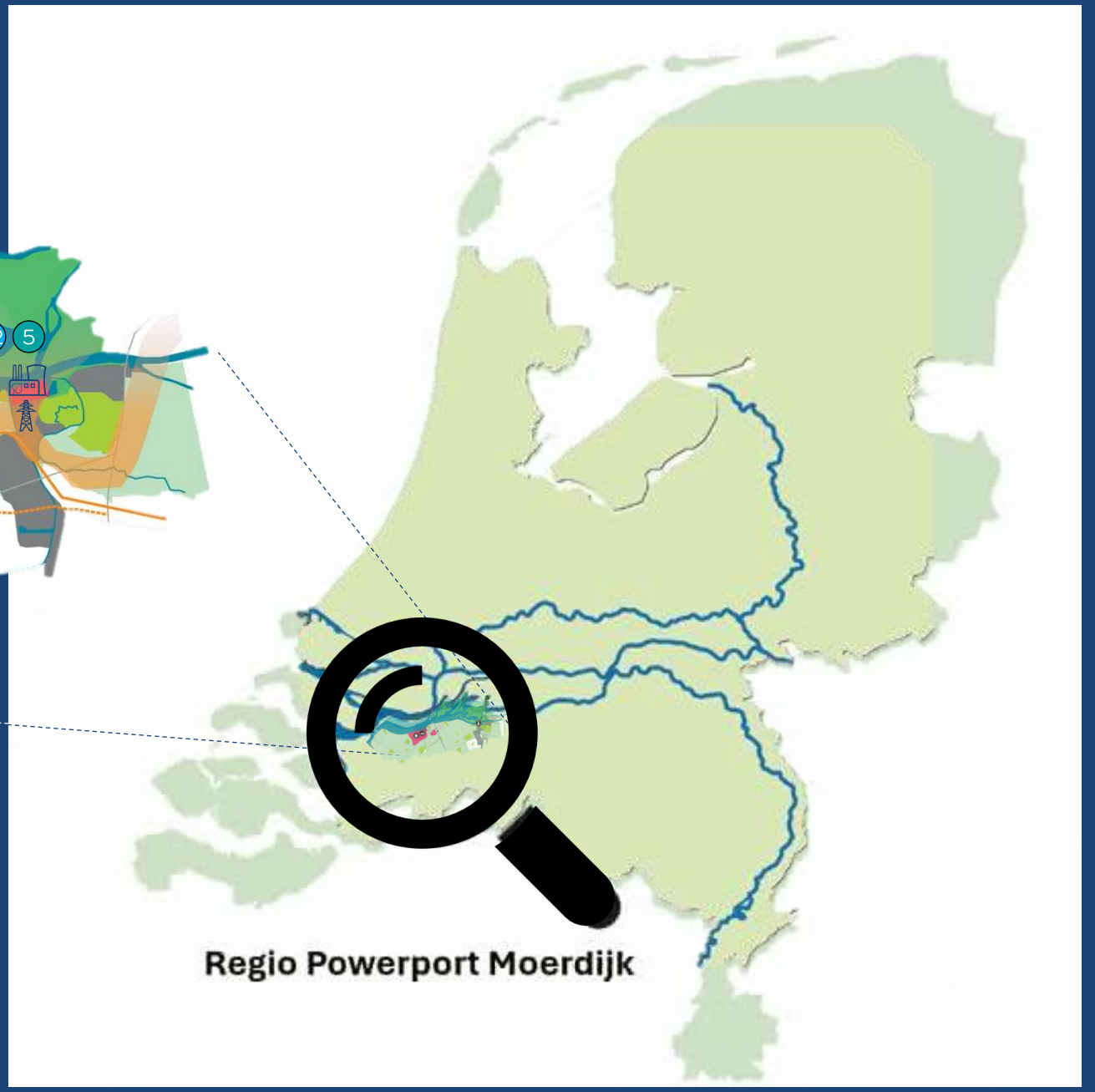
Meer info:
https://benelux.rwe.com

Januari 2025

Amercentrale
Biomass CHP



Powerport
General



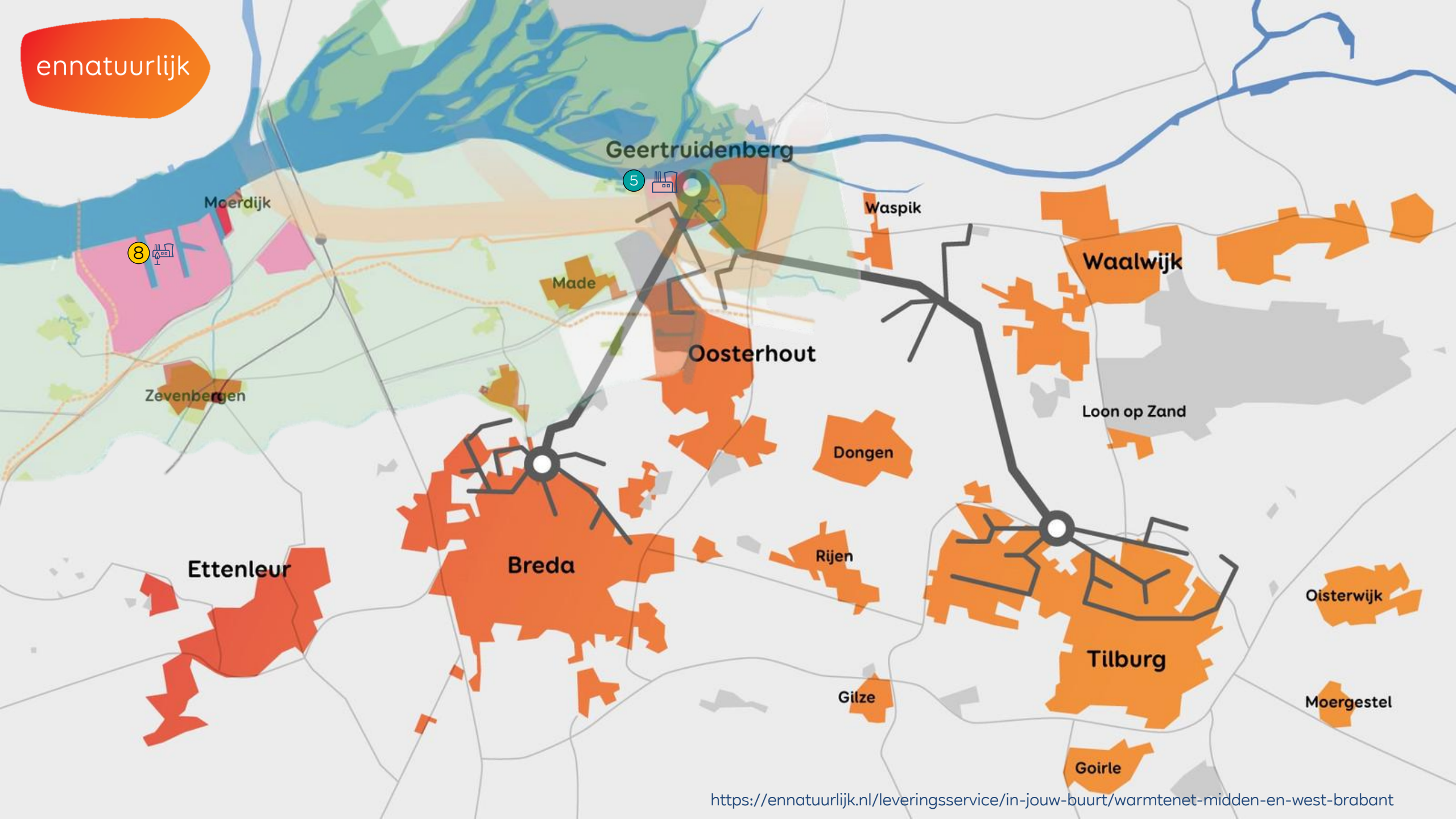
[REF] https://www.youtube.com/watch?v=20h_f8WHgR

https://www.moerdijk.nl/energie/energieprojecten-om-energie-infrastructuur-te-verbeteren/powerport/

Amercentrale
Amerwarmtenet

- One of the largest district heating networks in the Netherlands.
- Supply a total of more than 1,900,000 GJ of heat to
- 51,000 households and
- 355 businesses
- in Breda, Tilburg, Oosterhout, Geertruidenberg, Made, Dongen and Sprang Capelle

[REF] https://ennatuurlijk.nl/leveringsservice/in-jouw-buurt/warmtenet-midden-en-west-brabant

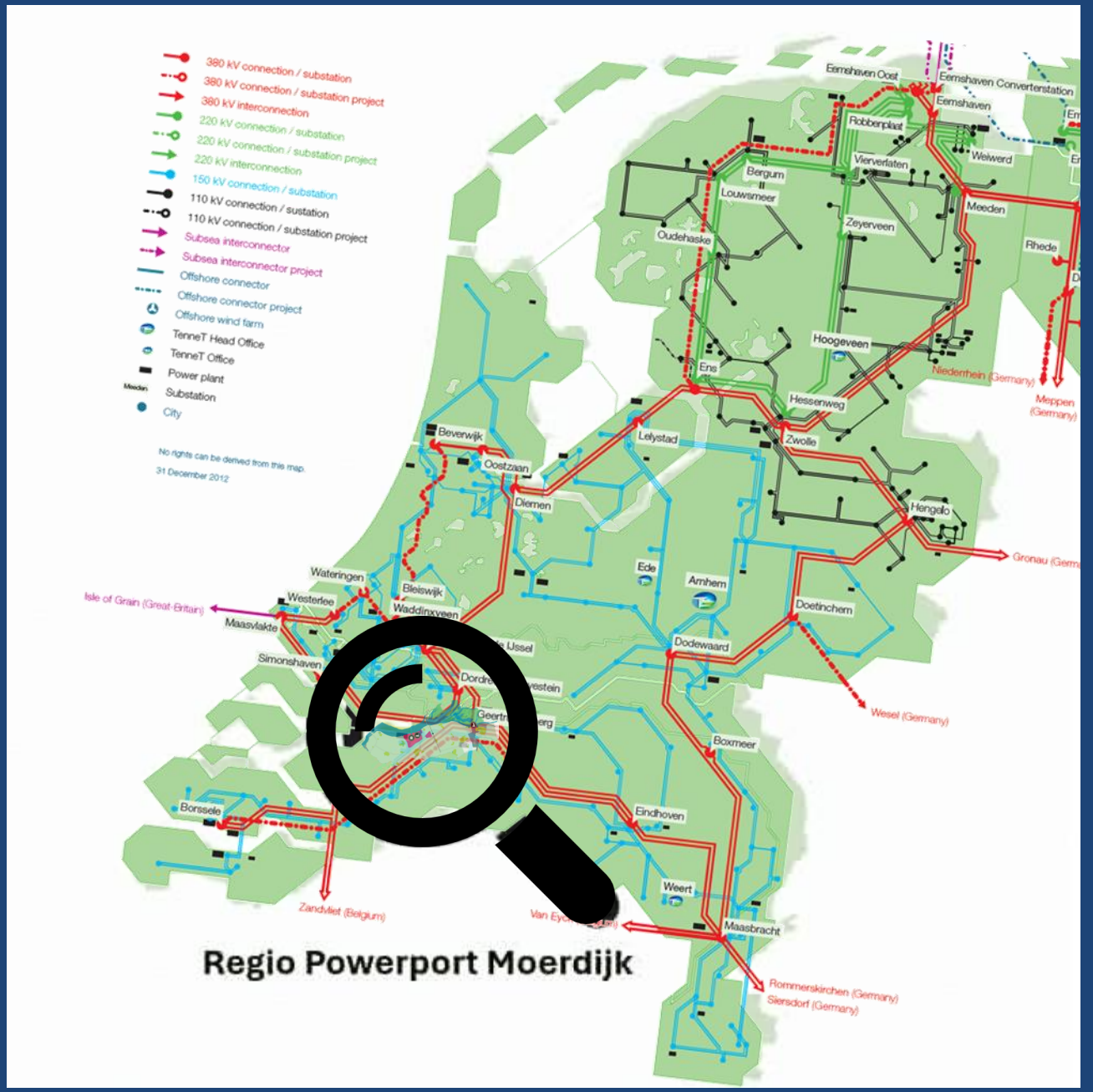


https://ennatuurlijk.nl/leveringsservice/in-jouw-buurt/warmtenet-midden-en-west-brabant

HV grid

380 kV
150 kV

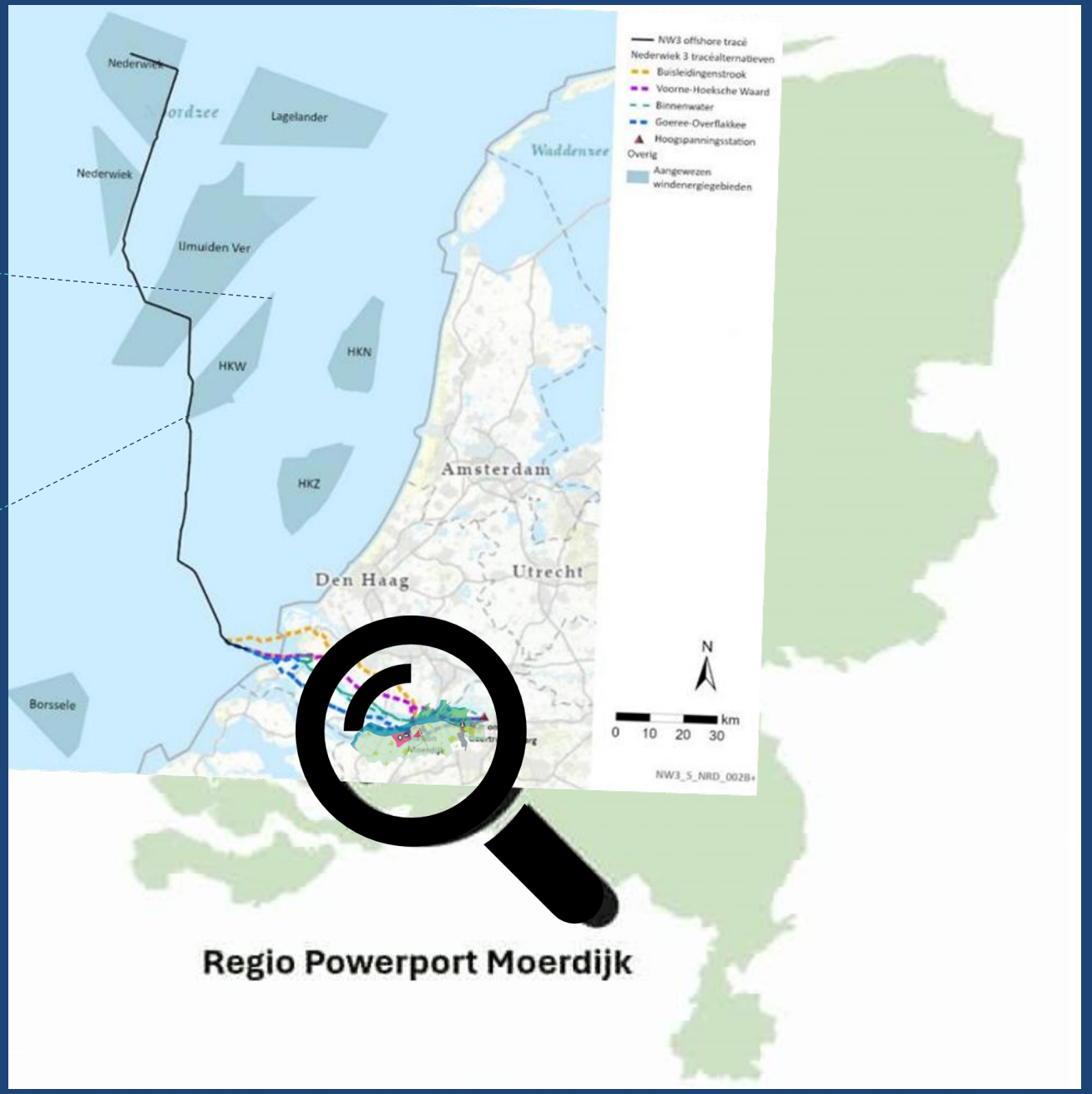
https://www.tennet.eu/nl/projecten/provincies/noord-brabant/hoogspanningsstations-geertruidenberg-150kv-en-380kv



[REF] TenneT

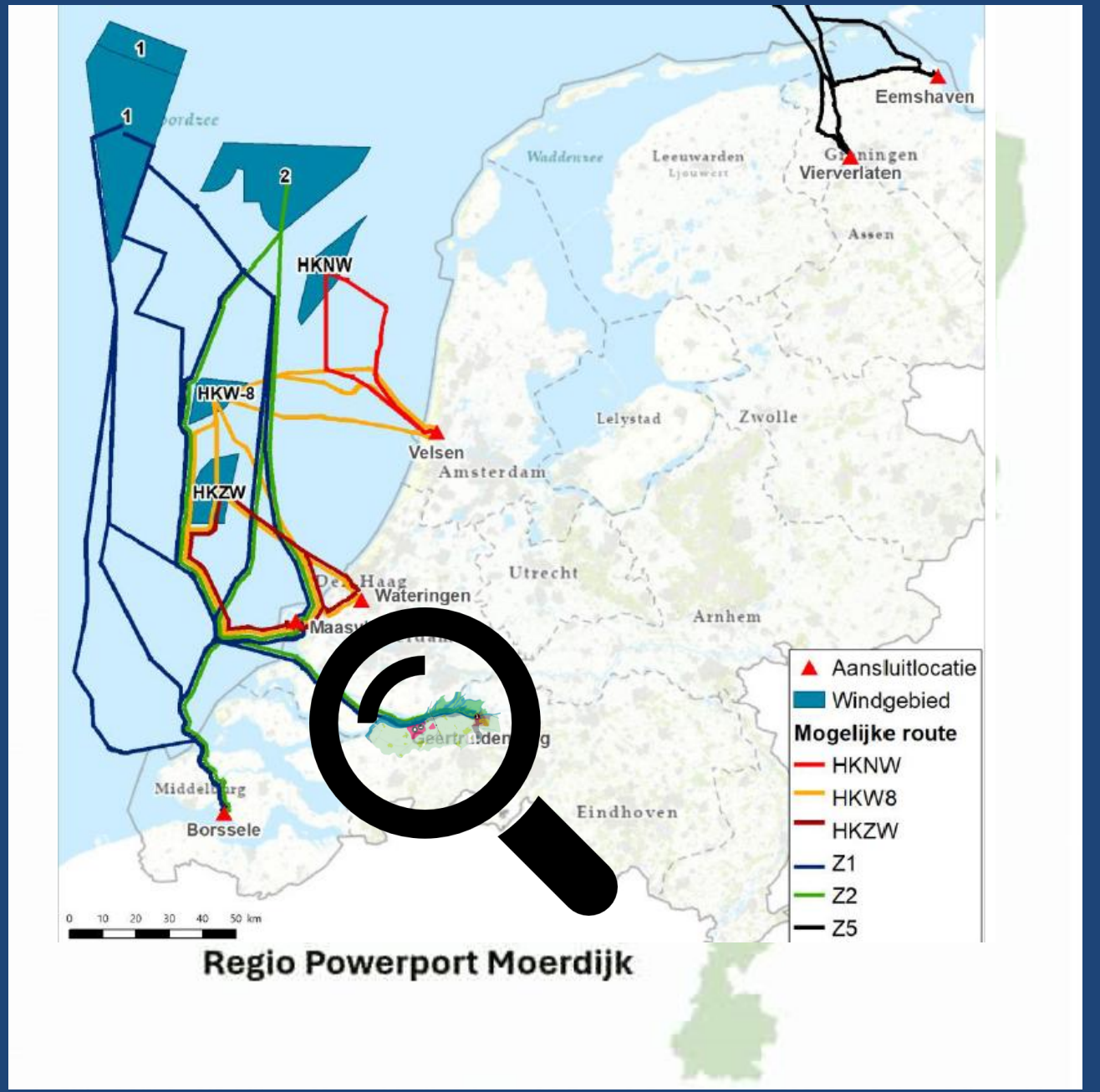
HV grid connection for off shore wind parks

[REF] https://www.oranjewind.nl/



HV grid connection for
Off shore wind parks

https://www.linkedin.com/posts/powerhouse-north-sea-the-north-sea-is-share-7452270857722261504-Uc6J



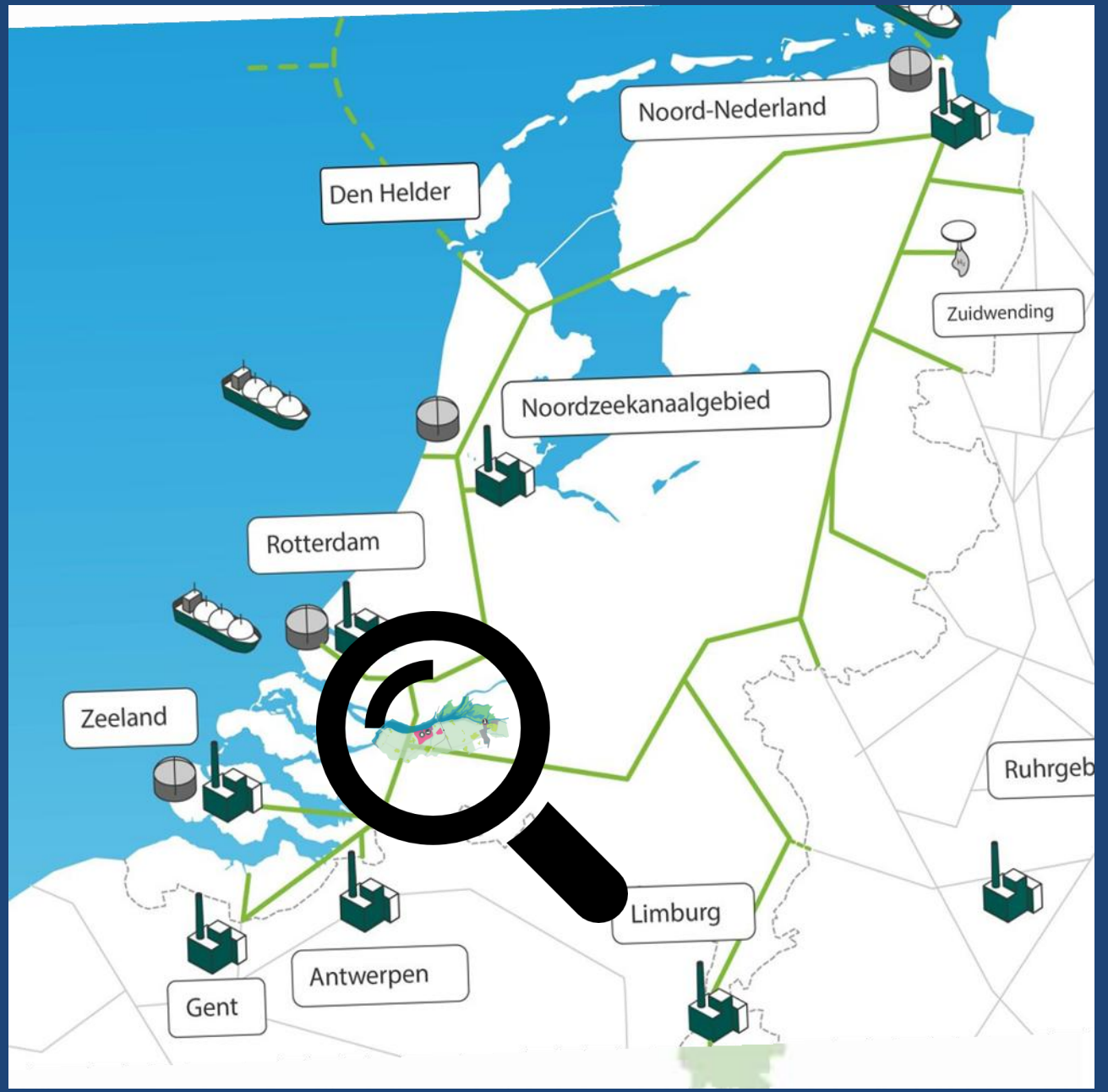
Regio Powerport Moerdijk

Hydrogen

[REF] ehb.eu 2025

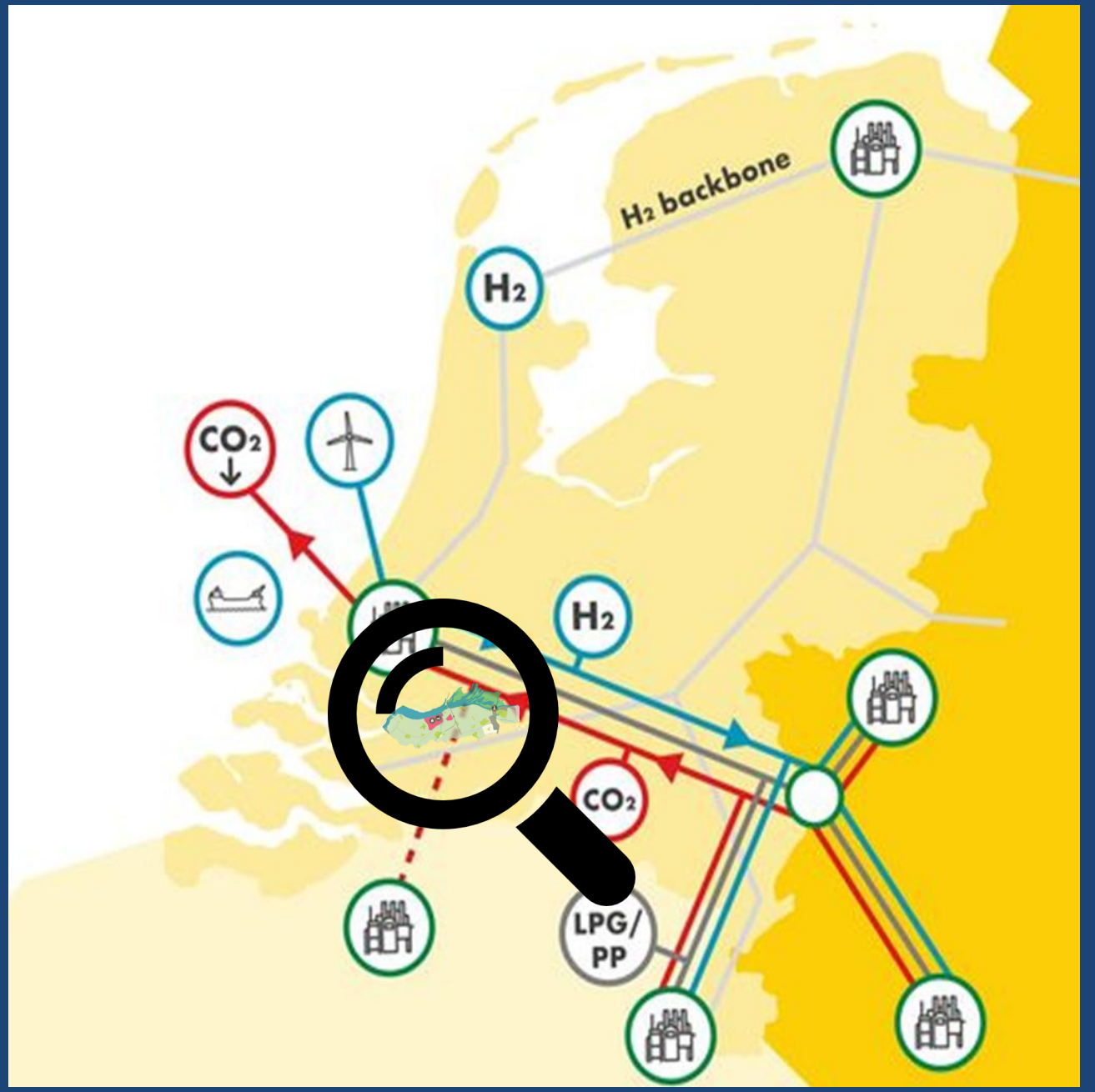
Analysts agree, but not all lobbyists: the role of hydrogen for climate neutrality is crucial but secondary to direct electrification

[REF] Agora Energiewende, Agora Industry (2021): 12 Insights on Hydrogen



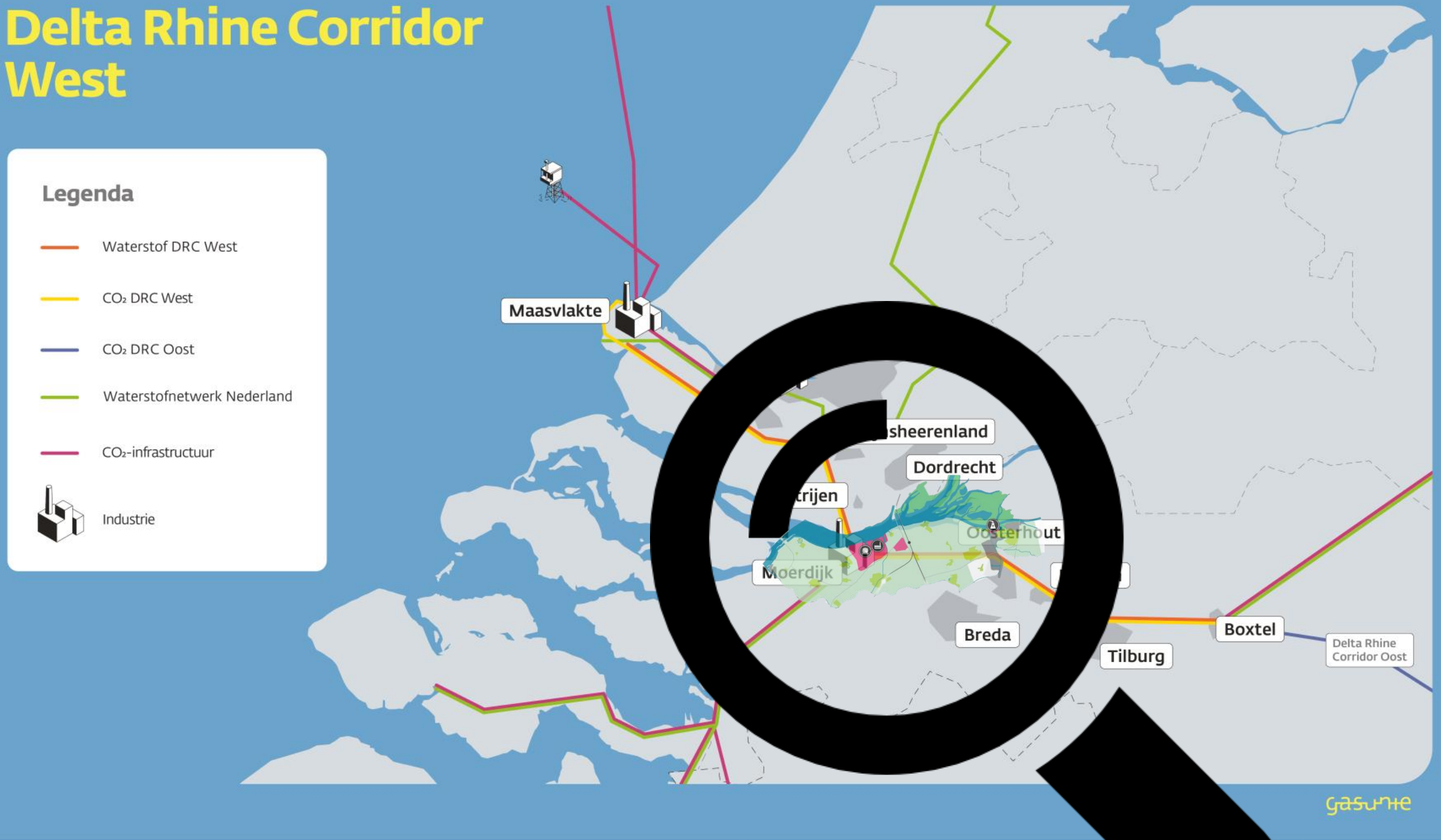
[REF] https://www.gasunie.nl/

Delta Rhine Corridor
Hydrogen CO2 and others?

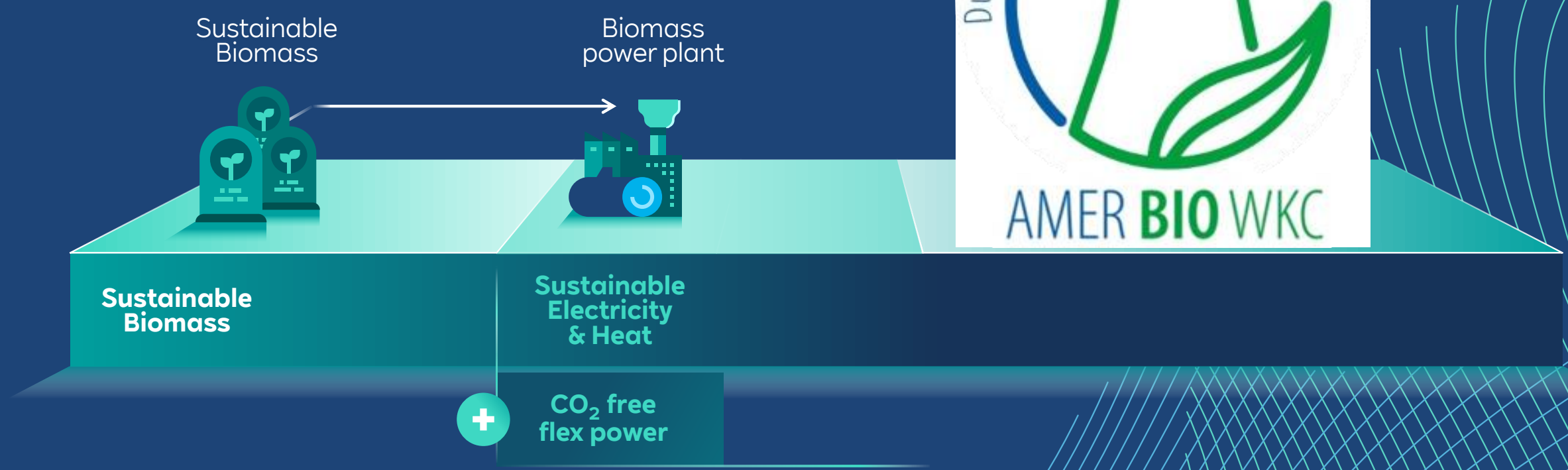


https://energeia.nl/gasunie-koopt-voor-maximaal-e25-mrd-aan-pijpleidingen-in/

Delta Rhine Corridor West



Amercentrale
Biomass CHP



Duurzame warmte & elektriciteit
AMER BIO WKC

Biomass availability
Process residues

RWE

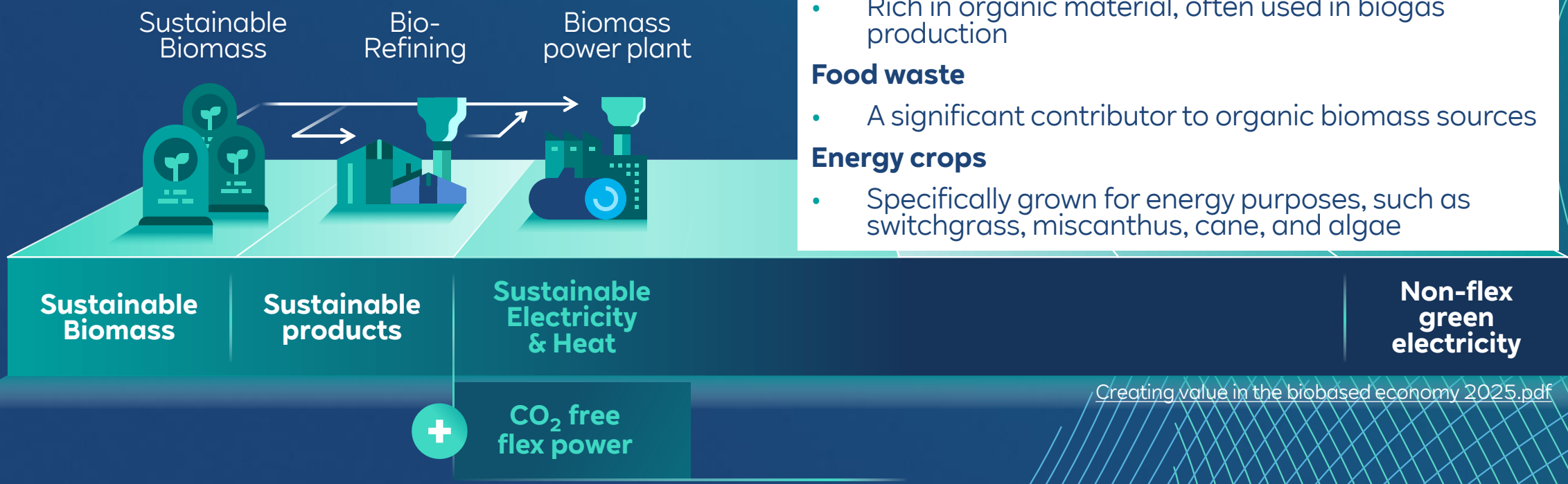
Wood and wood products
- Firewood, sawdust, and wood chips

Agricultural residues
- Crop waste like corn stalks, rice husks, sugarcane bagasse, wheat straw

Animal manure
- Rich in organic material, often used in biogas production

Food waste
- A significant contributor to organic biomass sources

Energy crops
- Specifically grown for energy purposes, such as switchgrass, miscanthus, cane, and algae



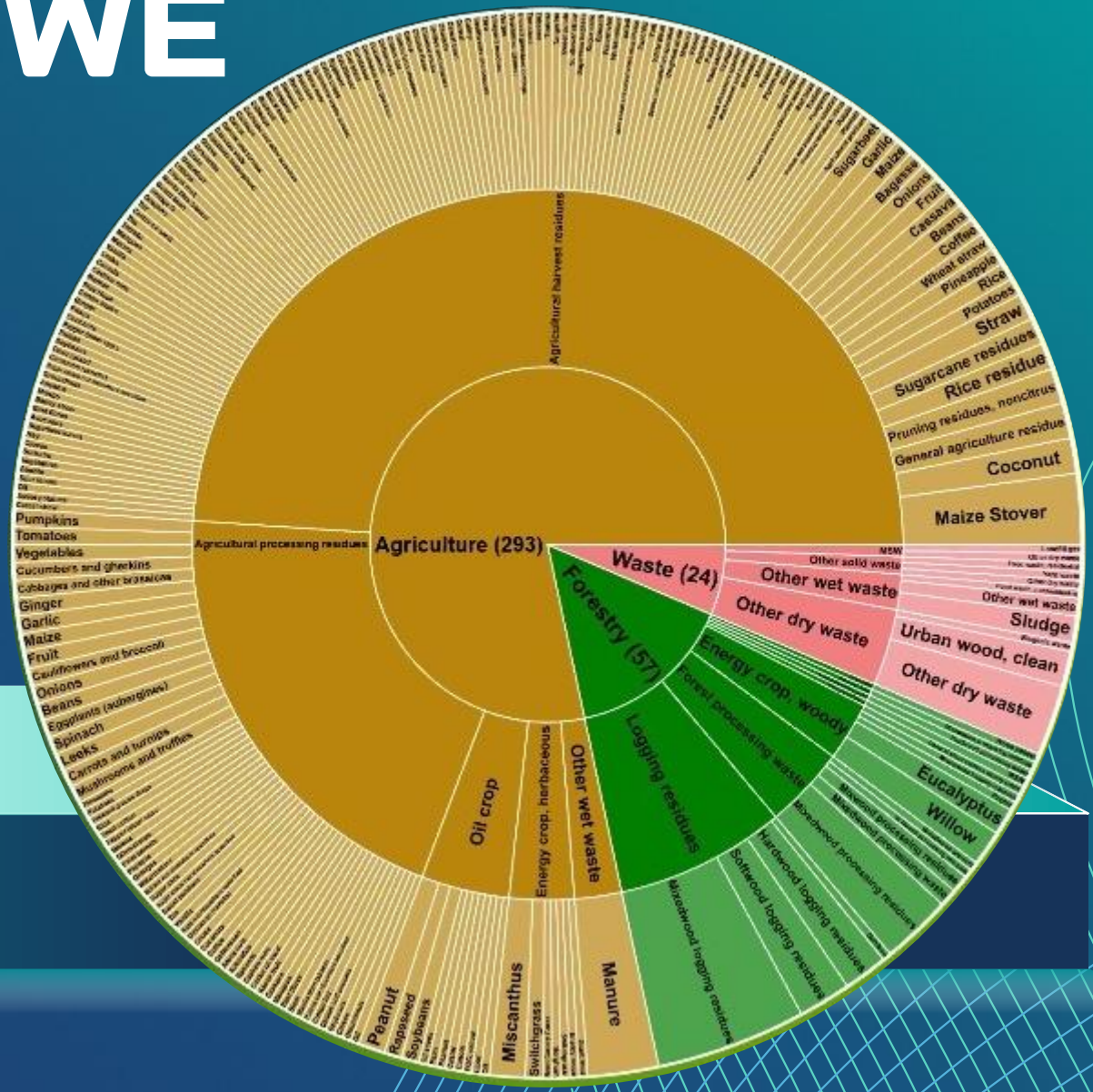
Creating value in the biobased economy 2025.pdf

Biomass availability
Process residues

RWE

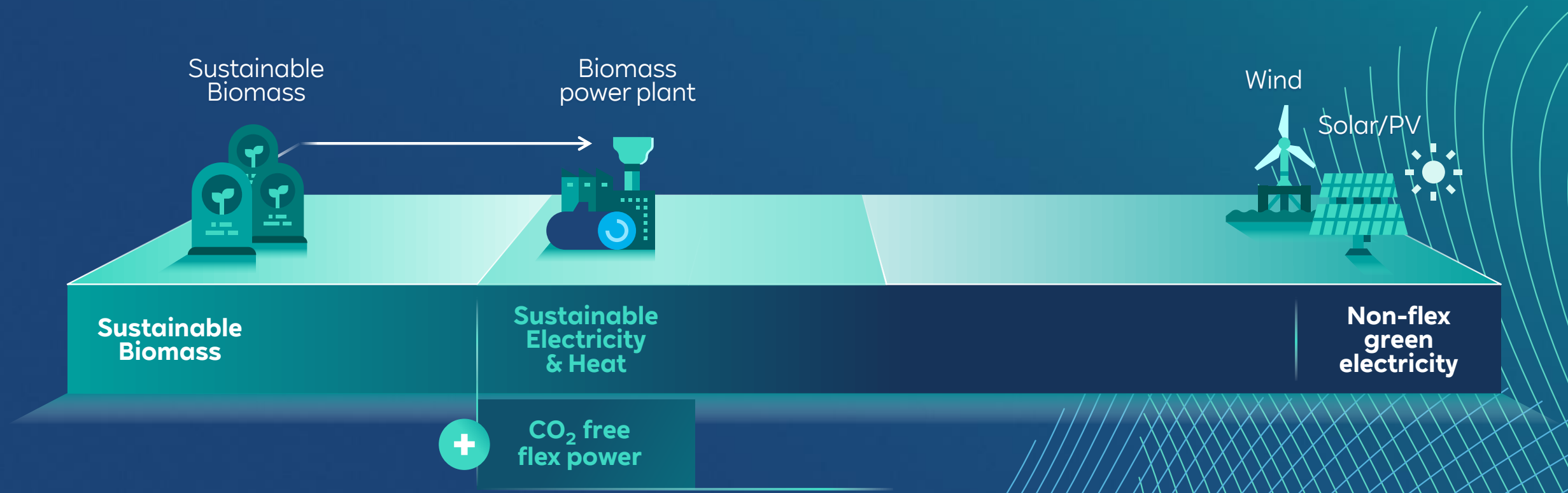
Sustainable Biomass | **Sustainable products** | **Sustainable Electricity & Heat**

+ **CO_2 free flex power**

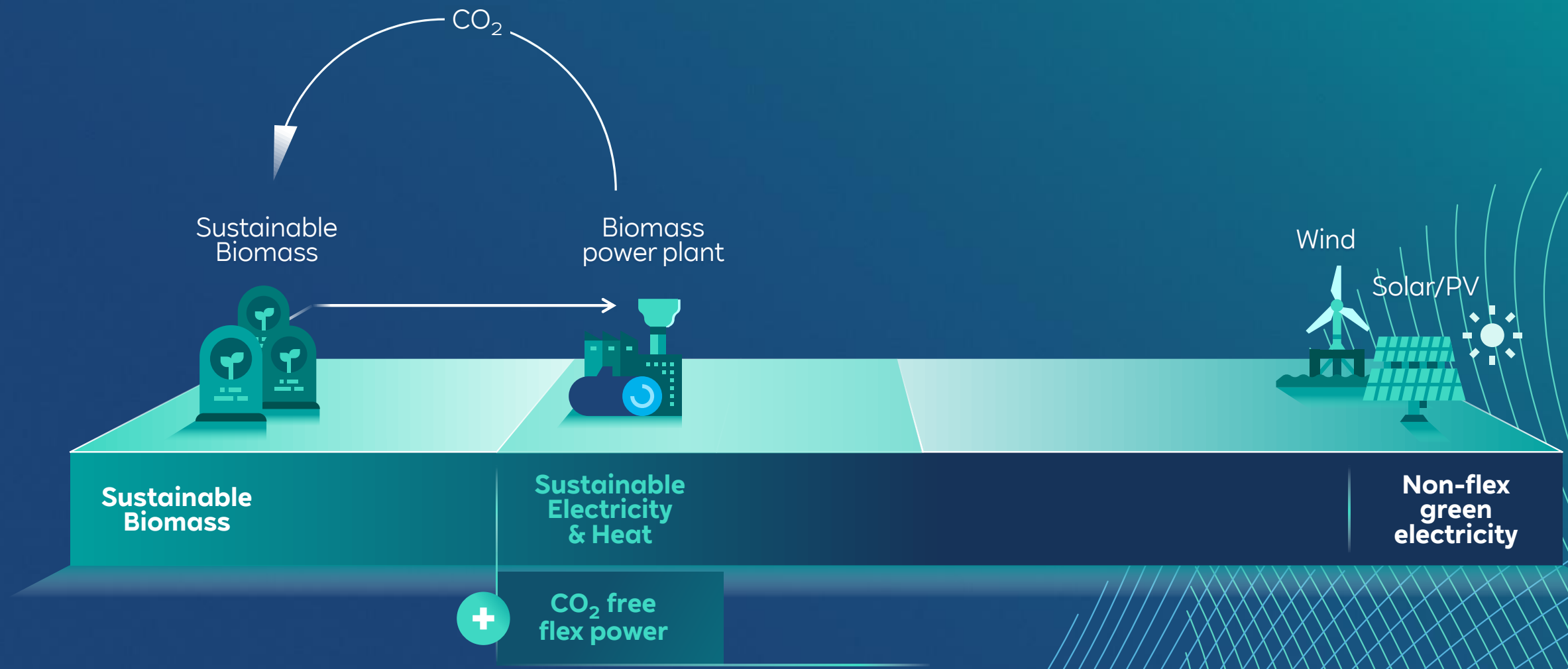


[REF] Oak Ridge Nations Laboratory – IEA BioEnergy – Task 43 - Progress and Challenges in Assessing Biomass Availability

RWE


Sustainable Biomass
Biomass power plant
Wind
Solar/PV
Sustainable Biomass
Sustainable Electricity & Heat
Non-flex green electricity
CO_2 free flex power

RWE


CO_2
Sustainable Biomass
Biomass power plant
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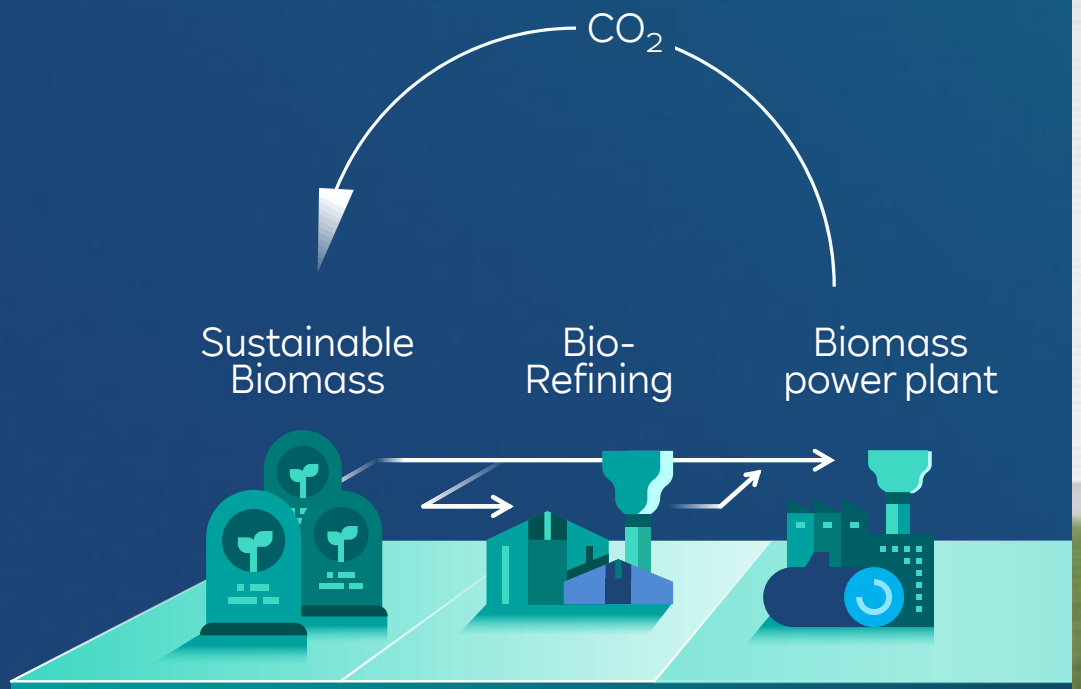
Sustainable Electricity & Heat
Non-flex green electricity
CO_2 free flex power

Biomass availability

Process residues



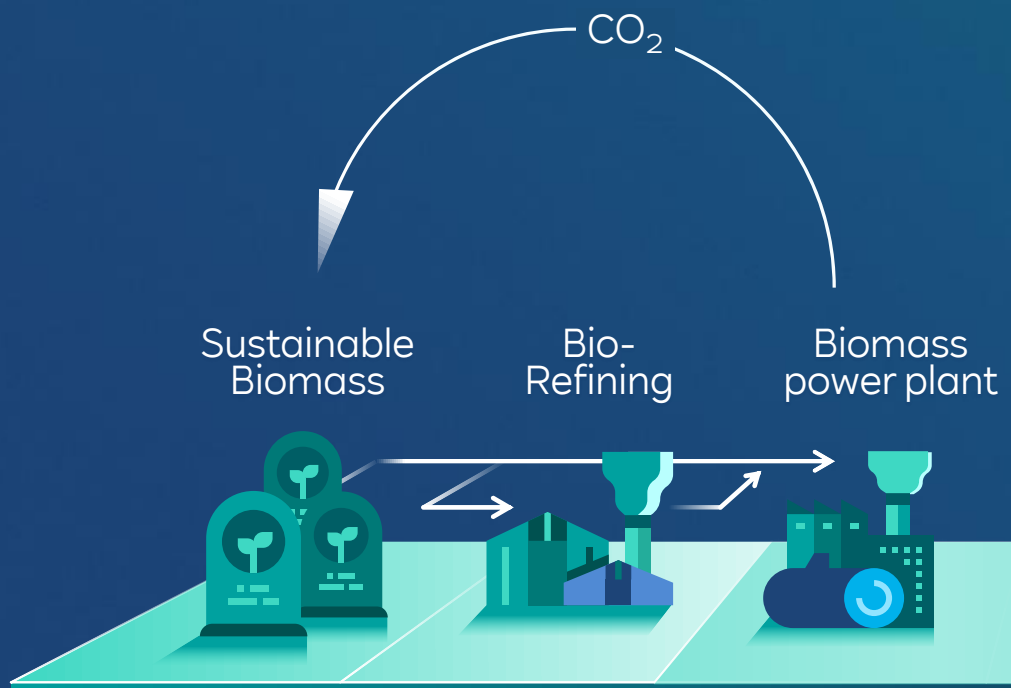
Sustainable Biomass | **Sustainable products** | **Sustainable Electricity & Heat**

+ **CO_2 free flex power**

Creating value in the biobased economy 2025.pdf

Biomass affordability

Cascading



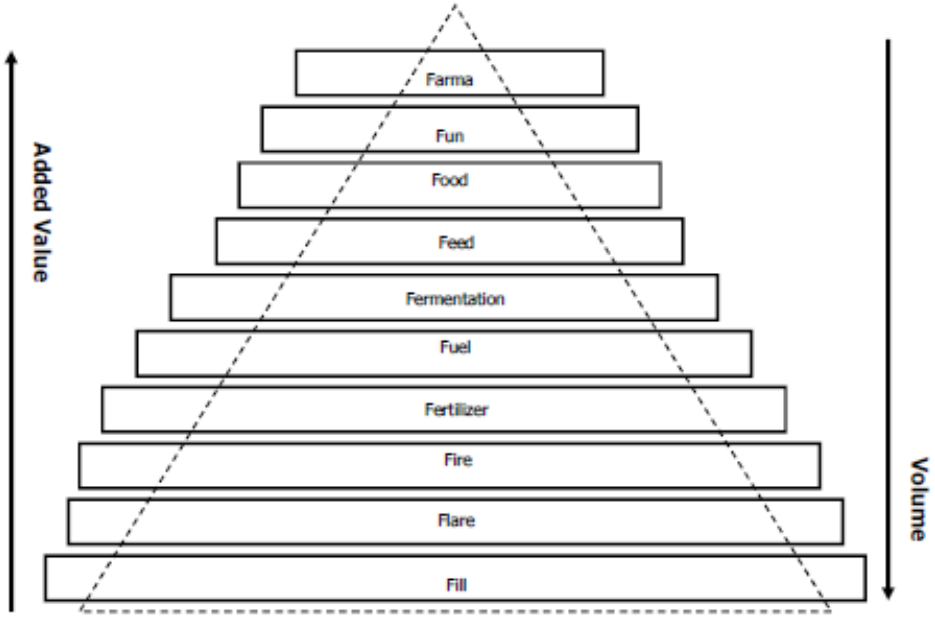


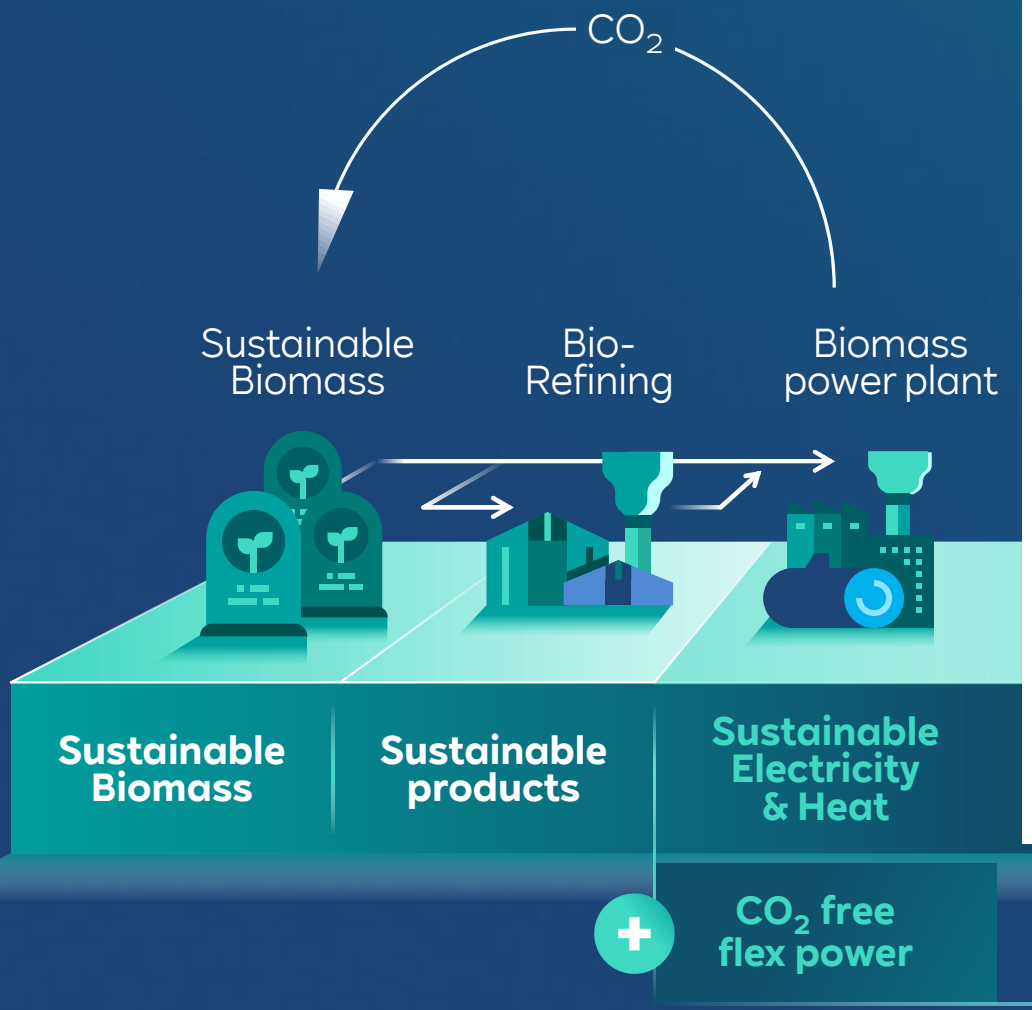
Figure 2: The value pyramid classifying biomass by the value of its applications (derived from WTC-BBE, 2011).

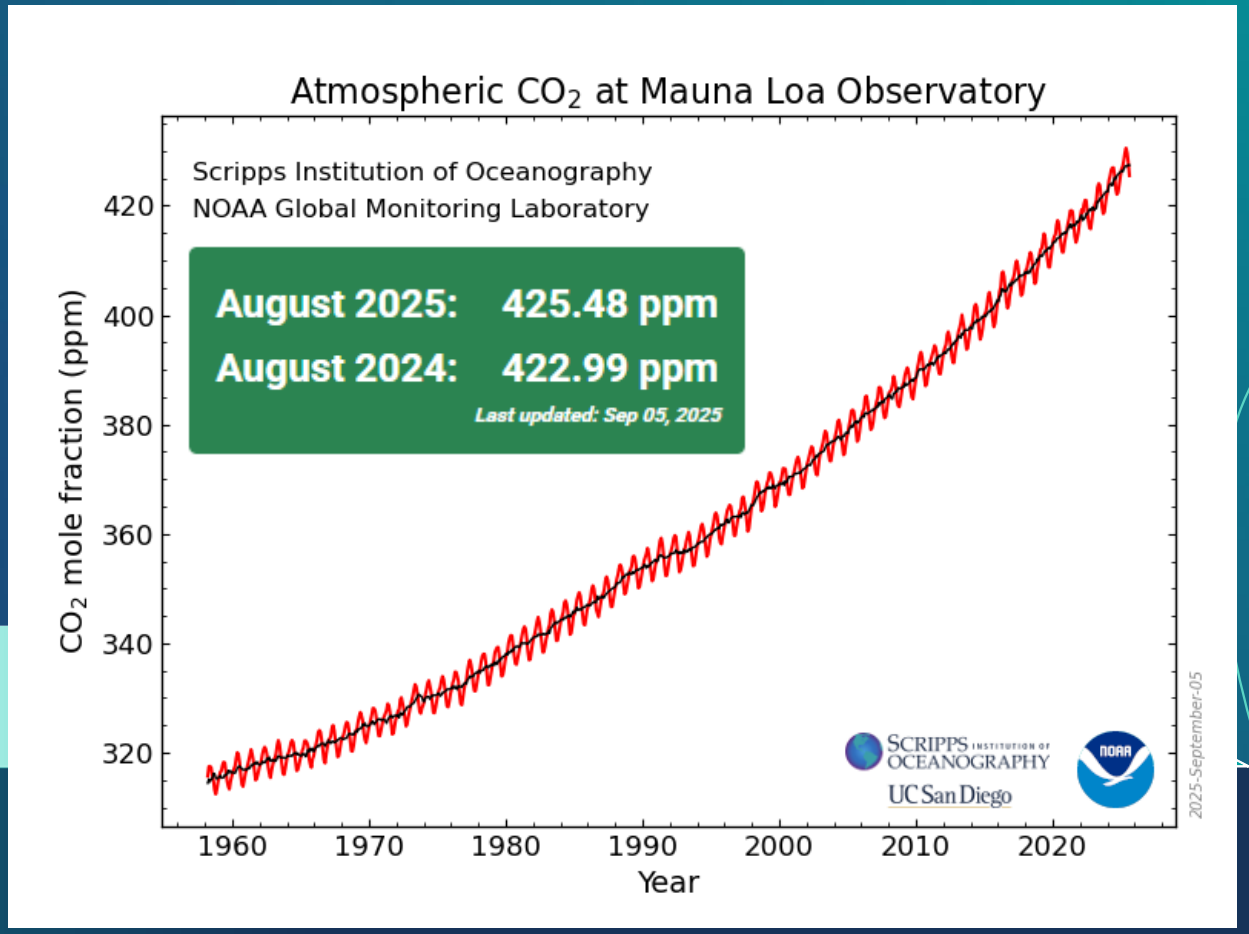
Sustainable Biomass | **Sustainable products** | **Sustainable Electricity & Heat**

+ **CO_2 free flex power**

[REF] 2011 WTC-BBE – Wageningen - value pyramid

RWE

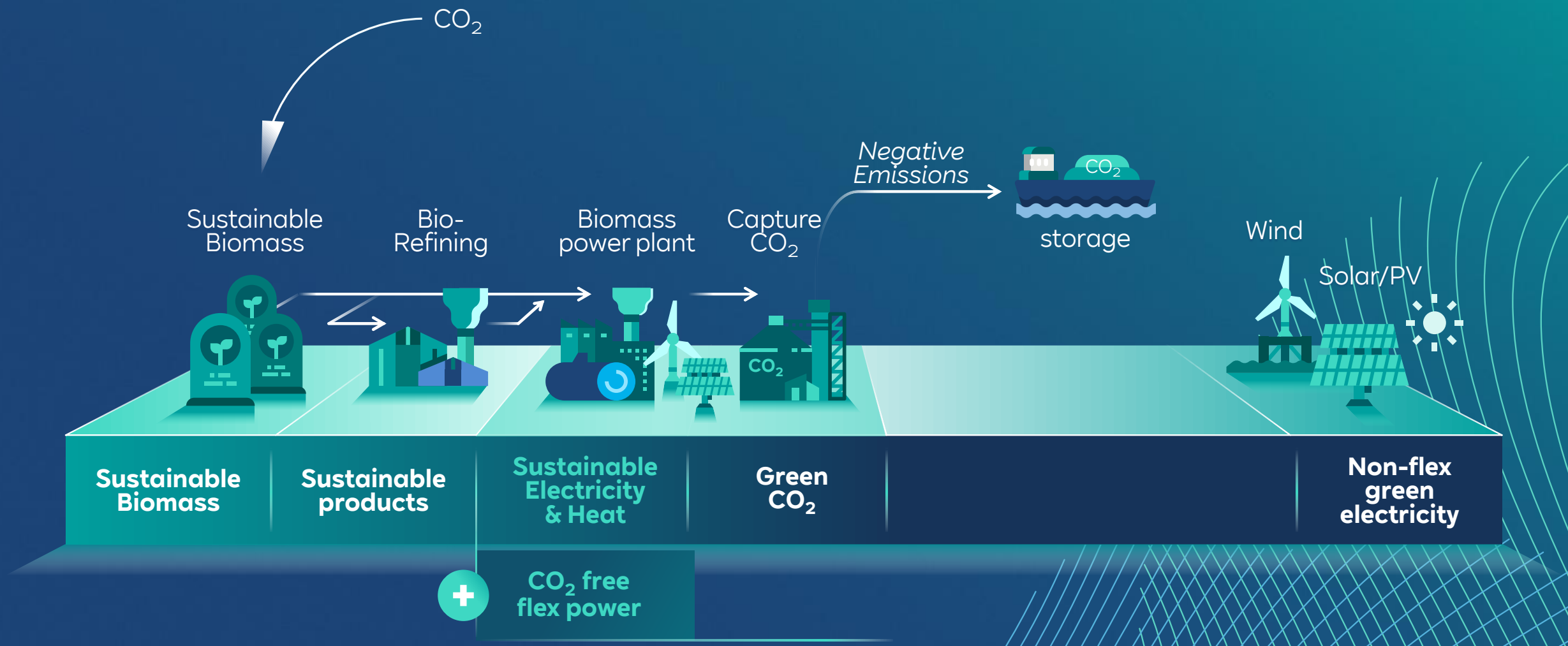




[REF] https://gml.noaa.gov/ccgg/trends/

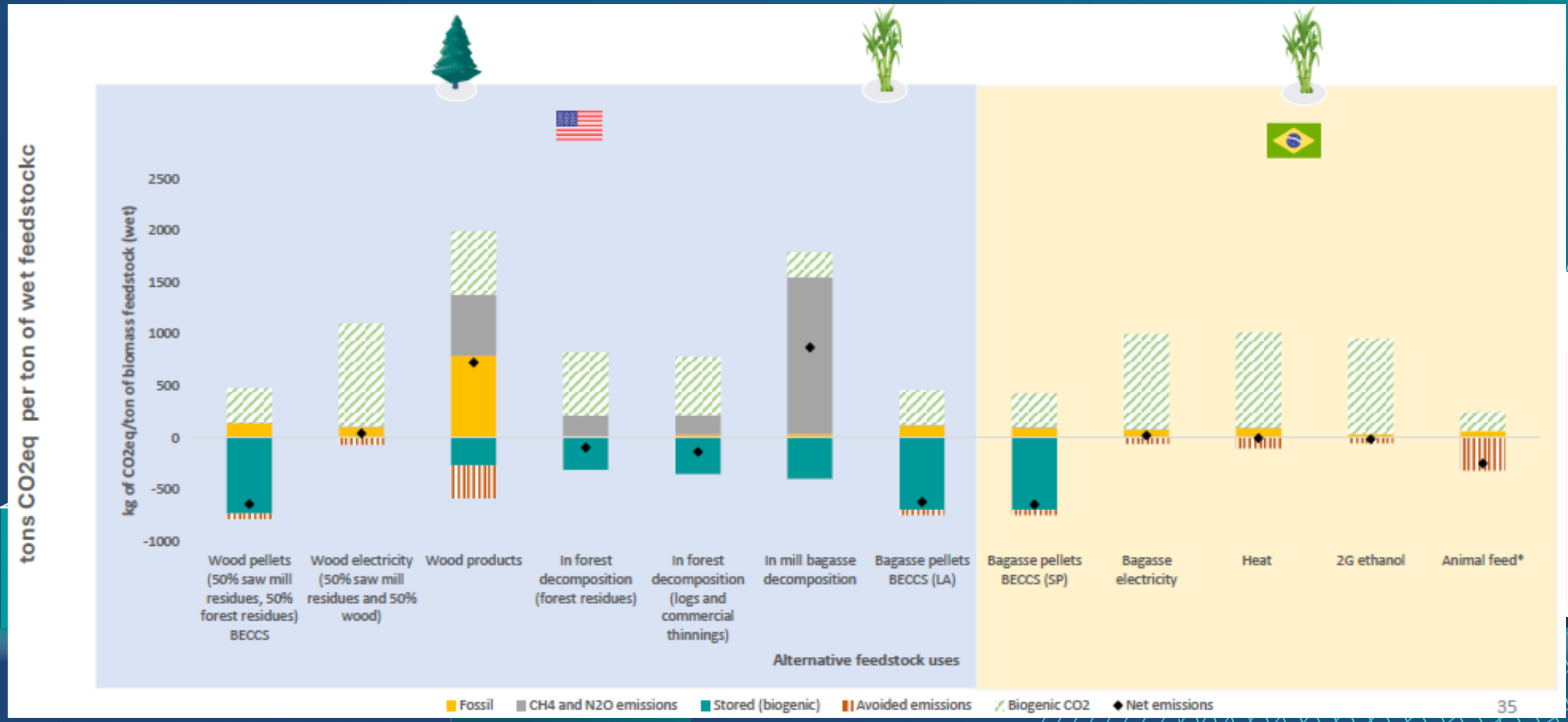
[REF] https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide

Reducing atmospheric CO_2



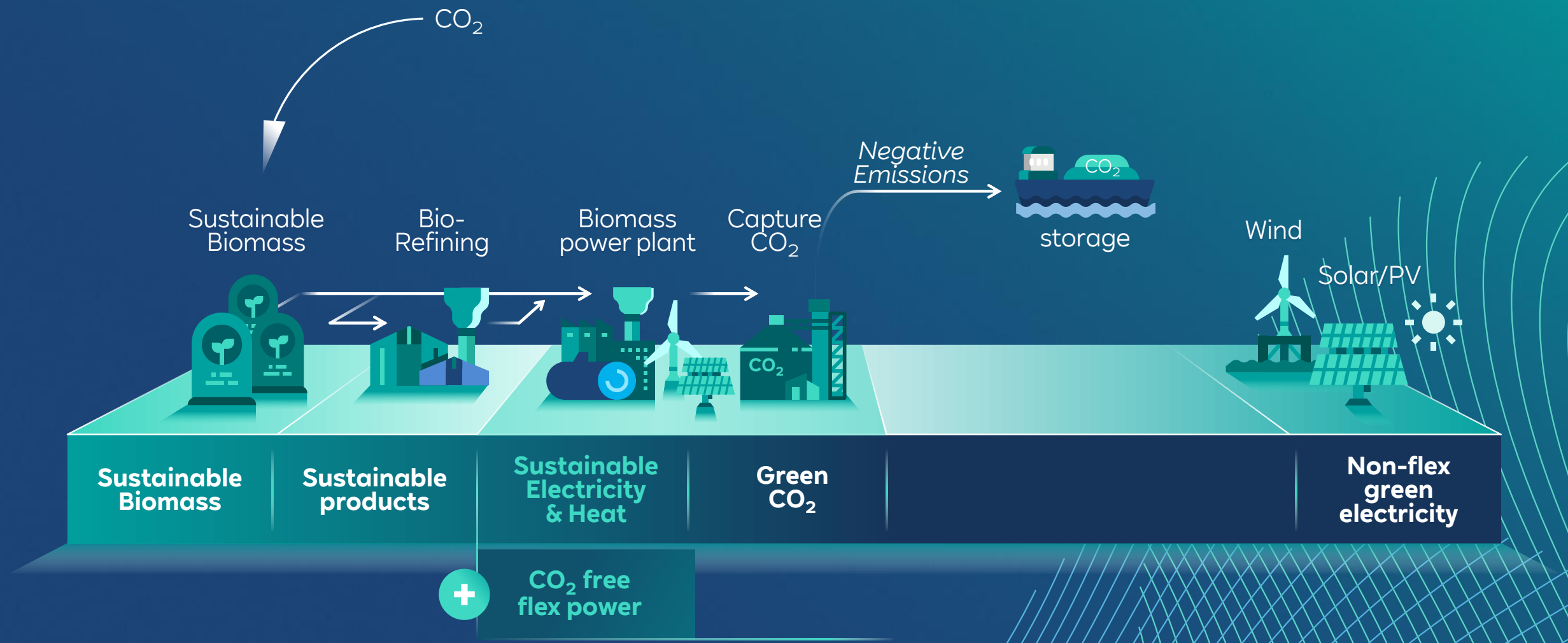
[REF] https://benelux.rwe.com/en/our-energy/biomass/beccus/

Reducing atmospheric CO_2

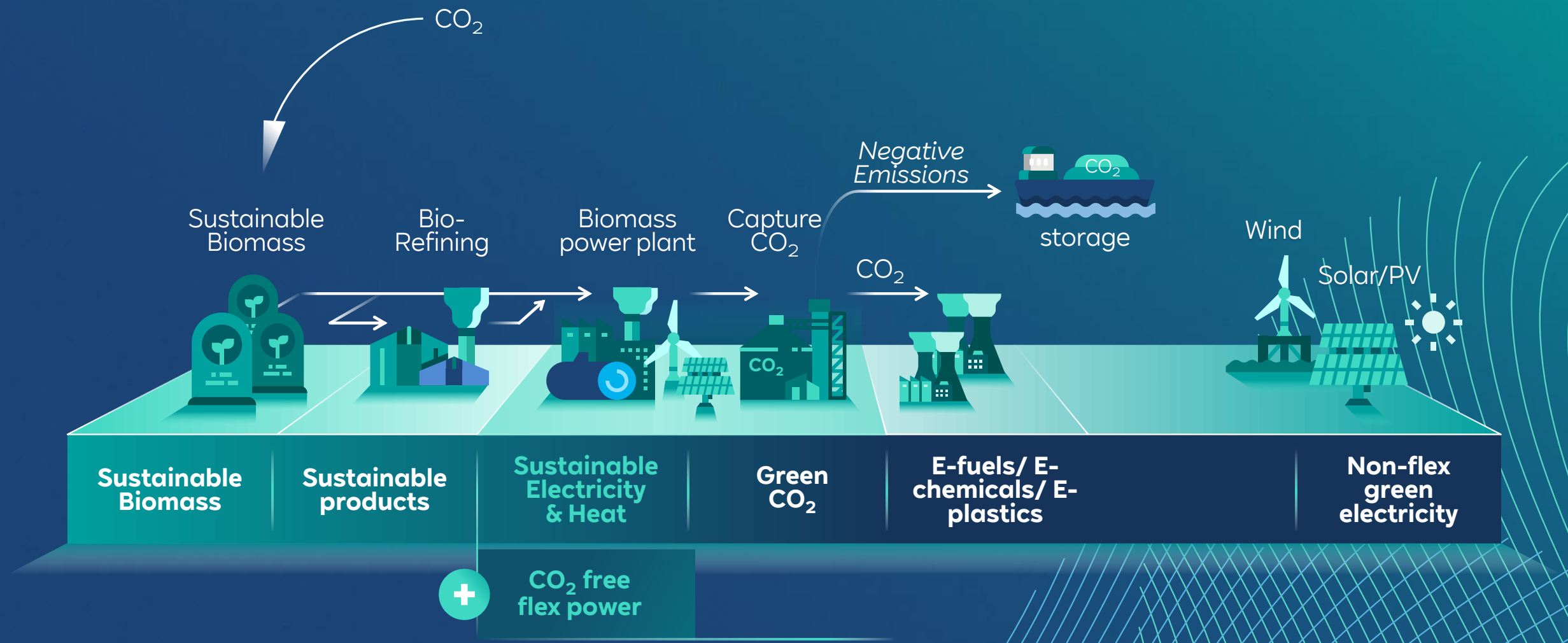


[REF] https://onlinelibrary.wiley.com/doi/10.1111/gcbb.70089

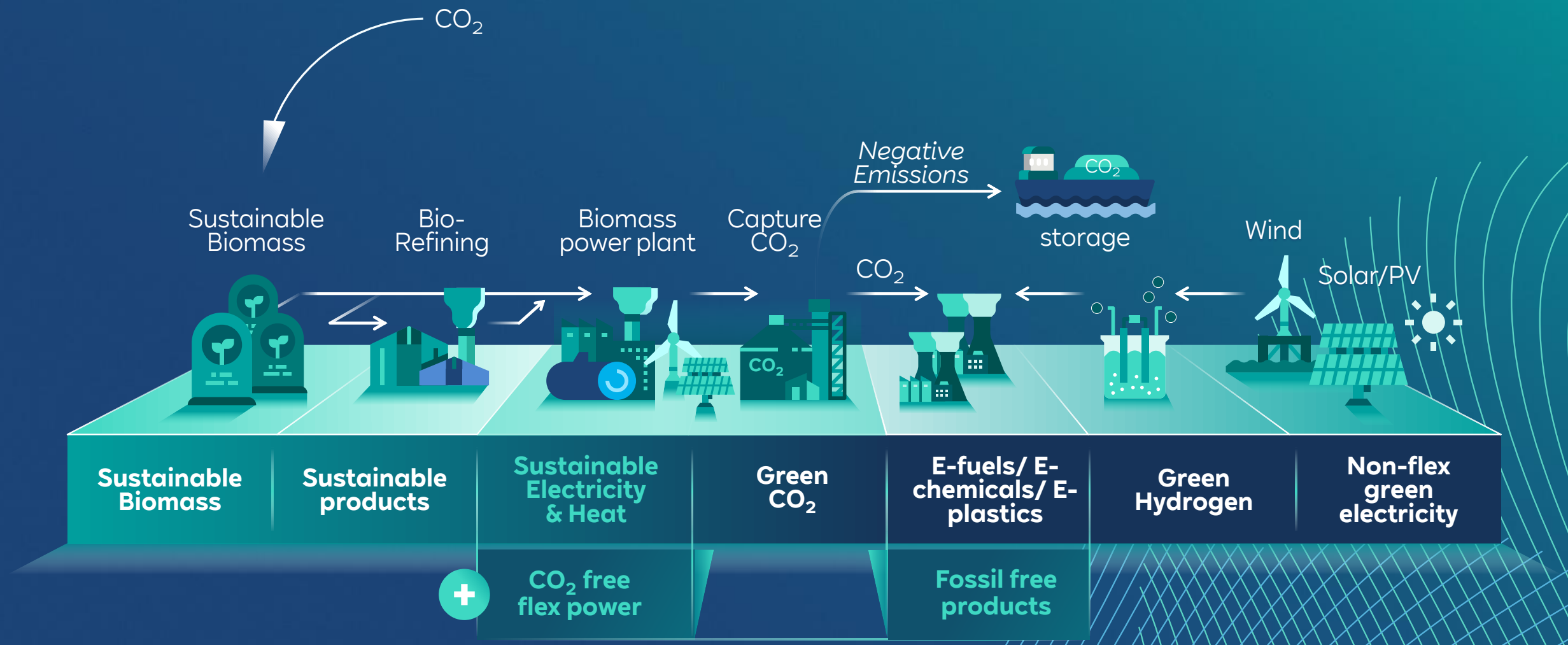
RWE


CO_2
Sustainable Biomass
Bio-Refining
Biomass power plant
Capture CO_2
Negative Emissions
CO_2
storage
Wind
Solar/PV
CO_2
Sustainable Biomass
Sustainable products
Sustainable Electricity & Heat
Green CO_2
Non-flex green electricity
+
CO_2 free flex power

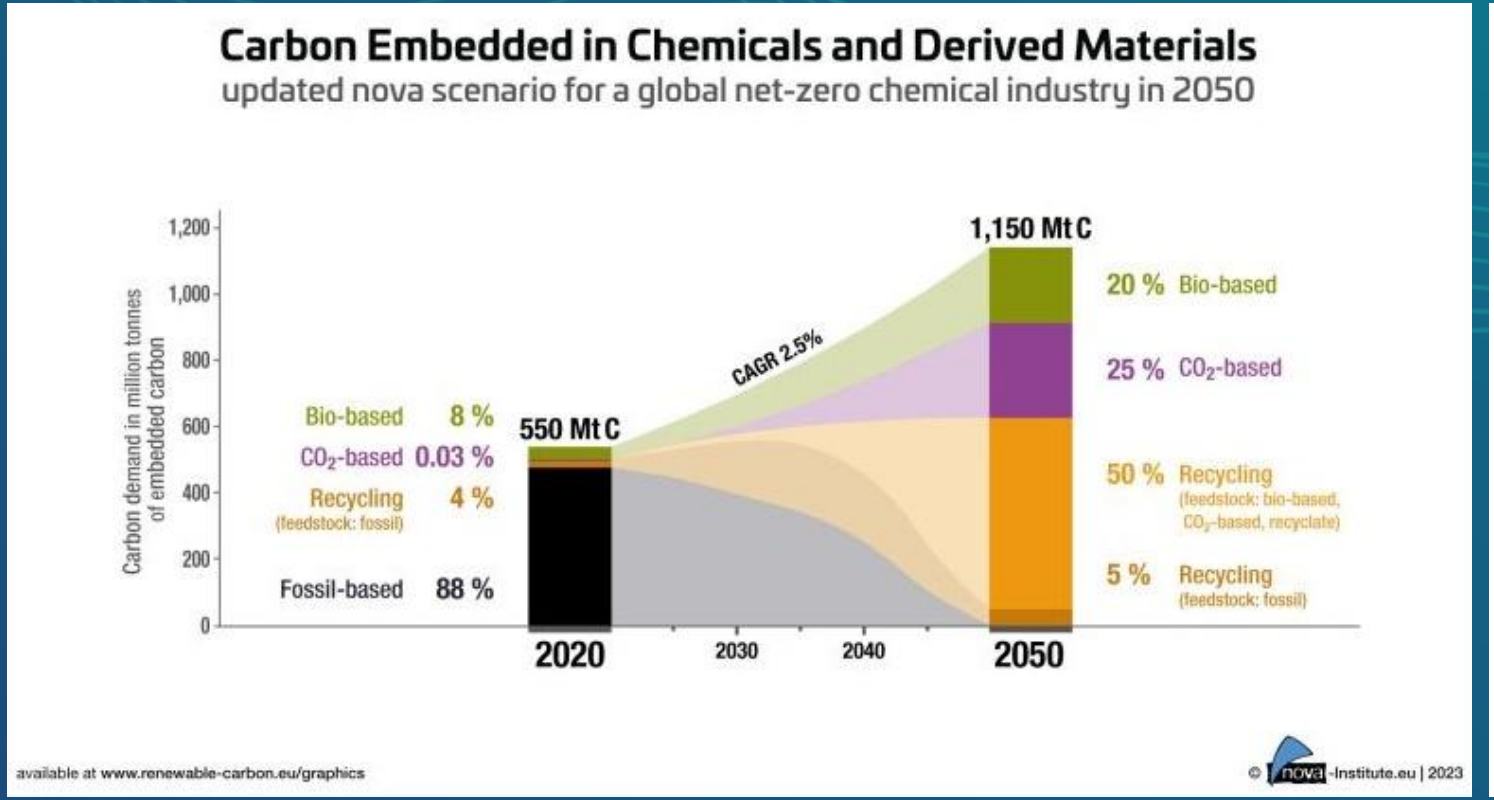
RWE


CO_2
Sustainable Biomass
Bio-Refining
Biomass power plant
Capture CO_2
Negative Emissions
CO_2
storage
CO_2
Wind
Solar/PV
CO_2
Sustainable Biomass
Sustainable products
Sustainable Electricity & Heat
Green CO_2
E-fuels/ E-chemicals/ E-plastics
Non-flex green electricity
CO_2 free flex power

RWE



[REF] https://benelux.rwe.com/en/our-energy/biomass/beccus/



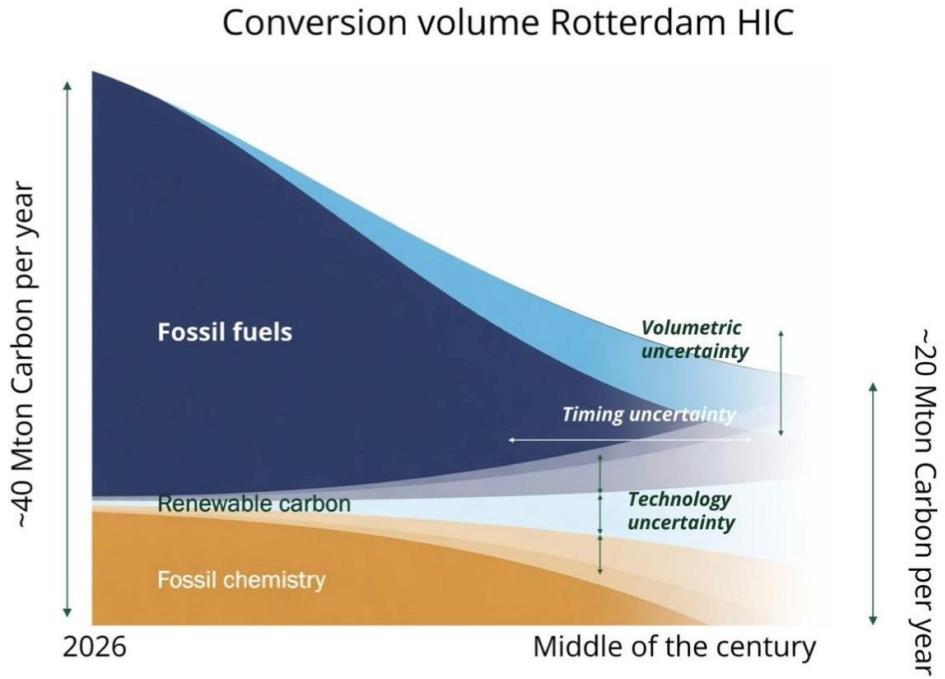
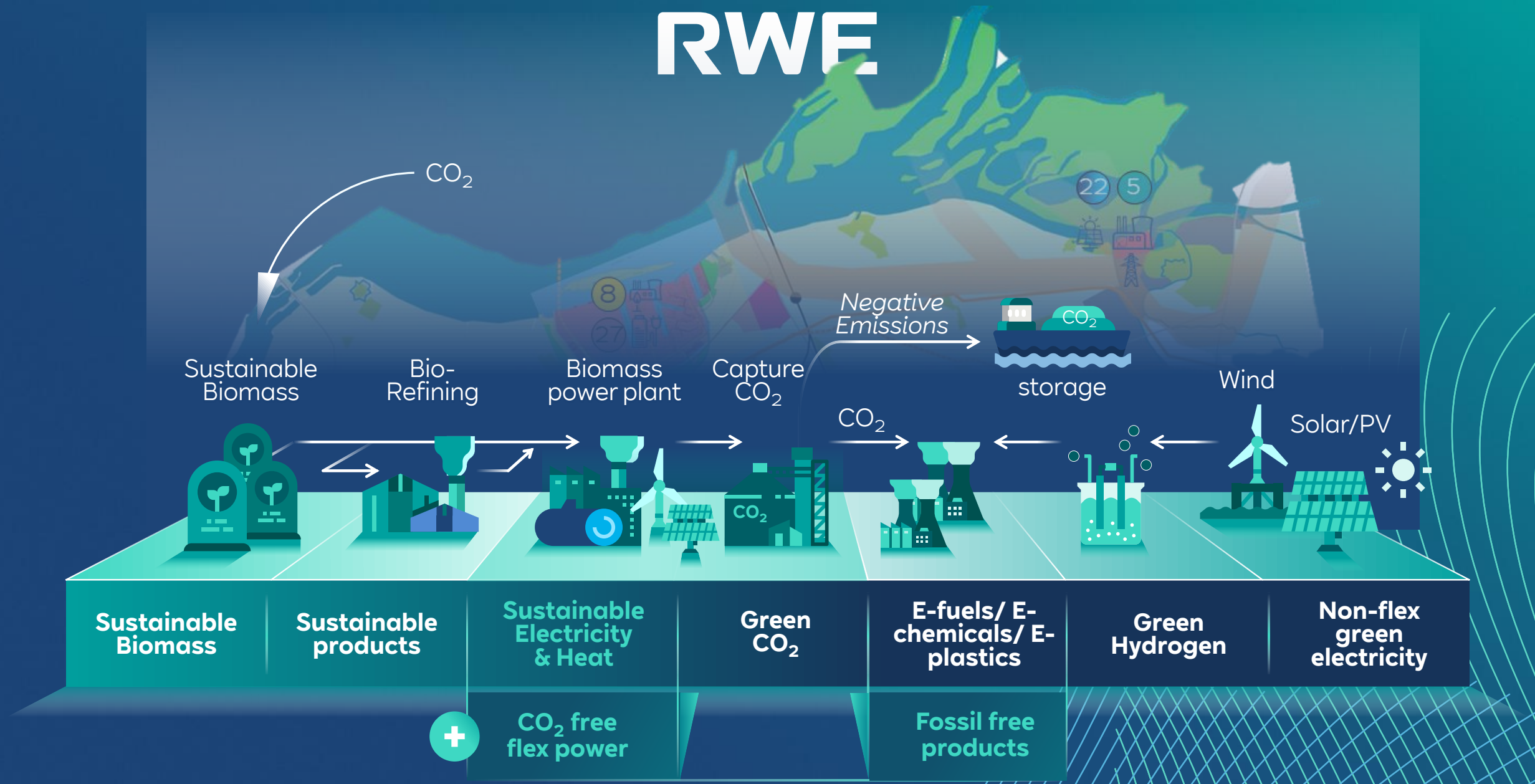


Figure 1: *The future of carbon demand and conversion in The Netherlands[2] . 15-20 Mton/yr of Carbon is still required by 2050.* 260414-Whitepaper-Syngas-Rotterdam.pdf

RWE


Maasvlakte
H₂ backbone
Noord-Nederland
Den Helder
Rotterdam
Zeeland
Antwerpen
Gent
Eemshaven
Velsen
Amsterdam
Geertruidenberg
Borssele
Regio Powerport Moerdijk
Regio Powerport Moerdijk
Regio Powerport Moerdijk
Regio Powerport Moerdijk

RWE



[REF] https://benelux.rwe.com/en/our-energy/biomass/beccus/

Thank you for your attention

Mark Bouwmeester

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http://nl.linkedin.com/in/bouwmeester
http://www.rwegeneration.com

Dutch law and permitting options

Yari Boogaarts
Environmental Advisor

RWE

- Leading multinational in the field of sustainable energy worldwide
- Headquarters: Essen, Germany
- > 400 operational sites
- 2024 – 2030: 45 billion Euro investment in sustainable energy
- Ambition: CO2 neutral by 2040

Australia	Belgium	China	Denmark	England
France	Germany	Ireland	Italy	Japan
Luxemburg	Netherlands	Poland	Scotland	Sweden
Spain	Türkiye	USA	Wales	

RWE has been producing electricity for over 125 years

And now we are shaping a new energy era

1898
The future began more than 120 years ago.

Brown coal as fuel for affordable electricity
1914

Affordable

1928
RWE is constructing the first interregional high-voltage power line.

Electricity for the "Wirtschaftswunder"
Years 1950's

Reliable

1955
Ludwig Erhard opens the Weisweiller lignite-fired power station.

Security of supply thanks to nuclear energy
Years 1970's

1976
Research, development and testing of sustainable energy sources.

CO2 reduction thanks to lignite-fired power Stations with optimised Station technology (BoA).
2002

Clean

Seite 7

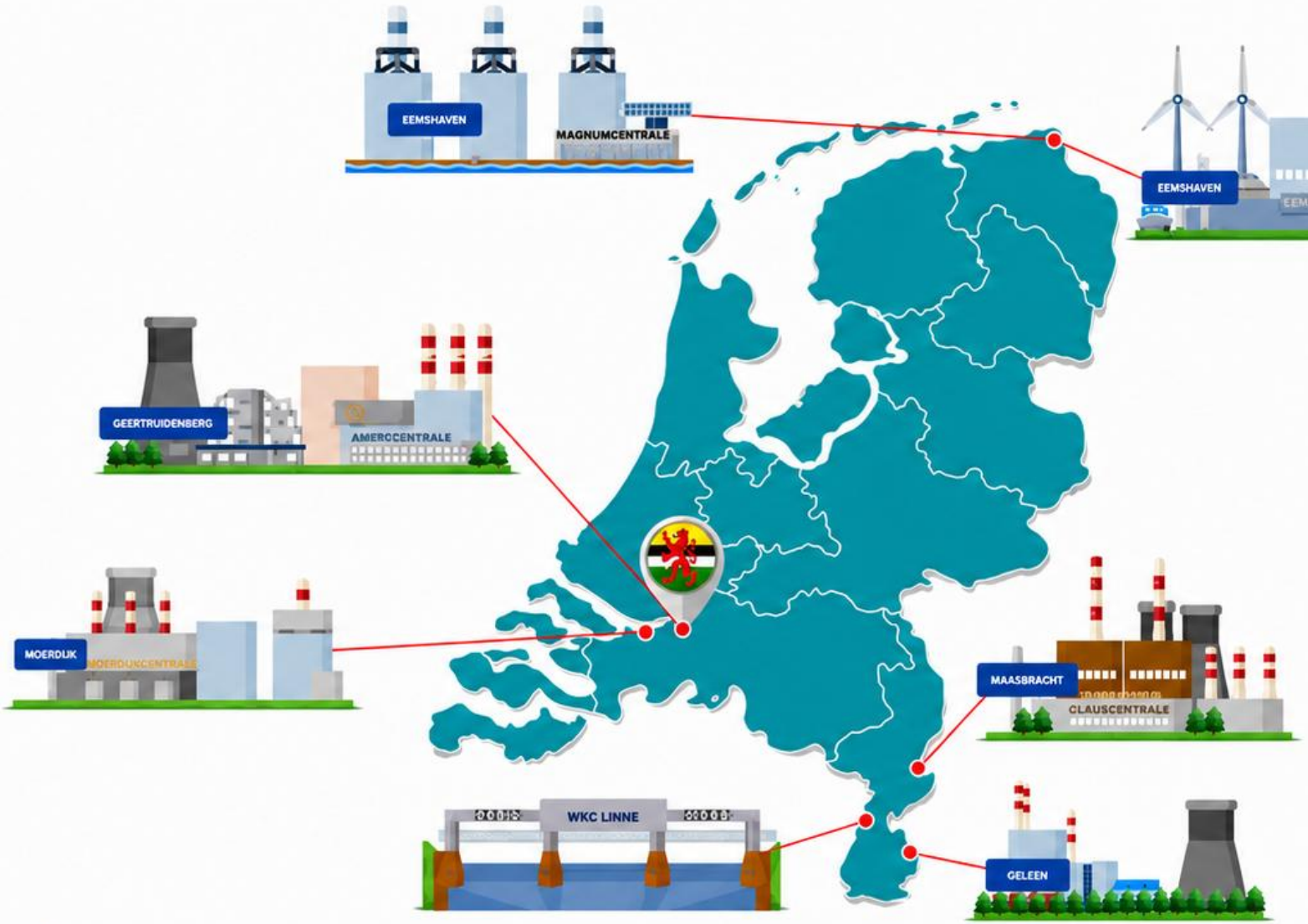
innogy

2016
Establishment and listing of innogy SE.

2019
Transaction with E.ON

2019 – heden
RWE is one of the world's leading producers of renewable energy.

RWE Generation
Team Environment Netherlands



Active in three Dutch provinces

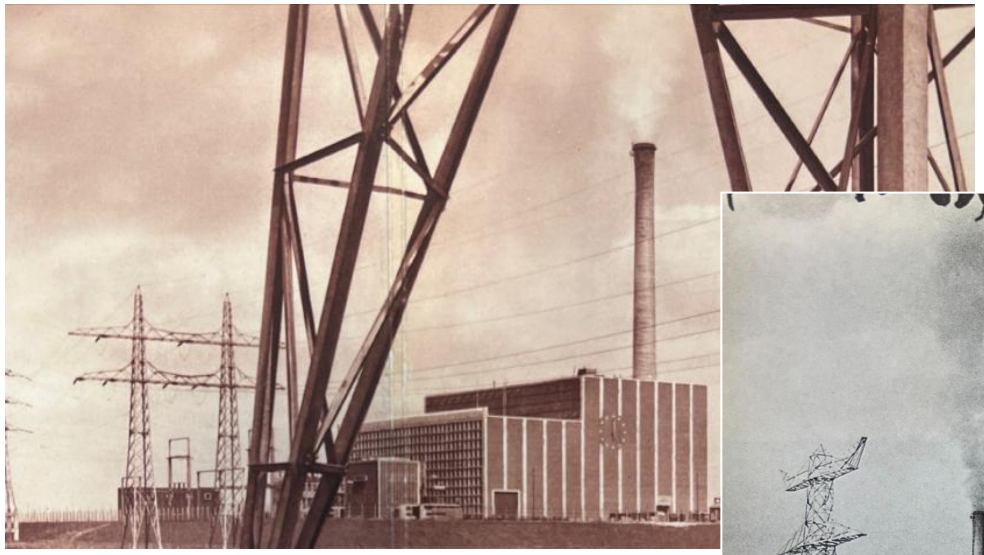
Groningen
Driving the energy transition in the north

North Brabant
Powering industry and communities

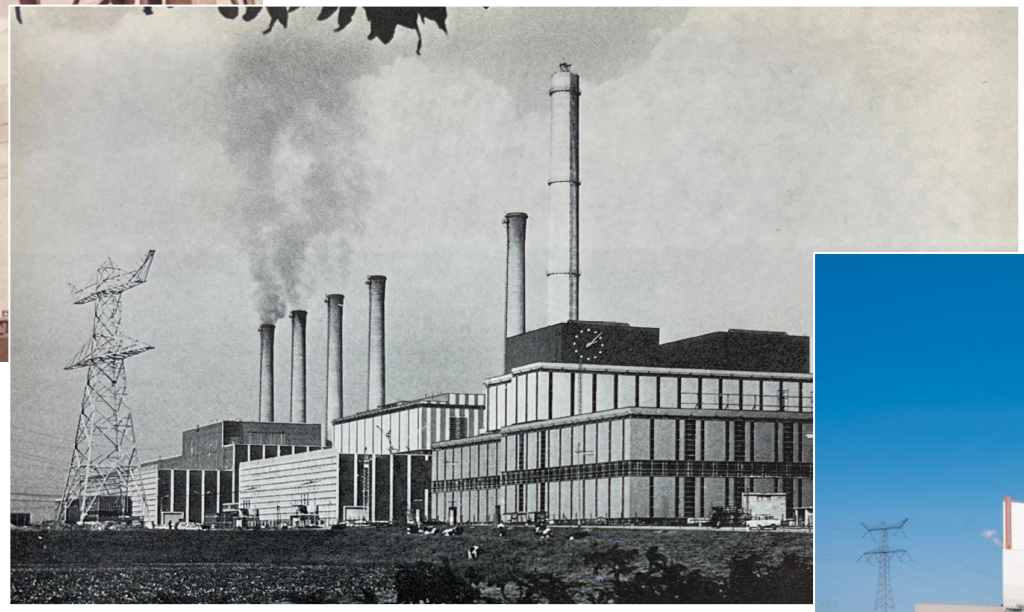
Limburg
Building a sustainable energy future

The History of the Amer site

>70 year



From 120MW
in 1952



...and 1717 MW
in 1972

...to 630 MW
renewable in 2025

Potential Future Developments at the Amer Site

Powering the energy transition while strengthening the living environment

Strategic energy projects

- Expansion of the **TenneT 380 kV substation**
- **Nederwiek 3** offshore wind connection
- **Large-scale battery** energy storage system (BESS)
- **Electrolyser /** hydrogen production ambitions
- Potential **data center** developments
- **Carbon Capture installation (BECCUS)** Biomass-based CO_2 capture and storage
- **HPP (HeatPumpProject)** for sustainable district heating
- Future energy infrastructure integration








Integrated Area Vision

Working together for a future where energy, nature and communities thrive – today and for generations to come.

In partnership with regional authorities, stakeholders and local communities

Integrated area development vision

Together with regional authorities and stakeholders, RWE is contributing to a broader future vision for the Amer region, where energy infrastructure, sustainability and spatial quality are developed in balance.

- Strengthening nature and biodiversity
- Water management and climate adaptation
- Space for recreation and public accessibility
- Potential flood retention and resilience areas
- Integration of industry and landscape quality
- Long-term cooperation with public and private partners

Our ambition | Creating an industrial energy hub that supports both the energy transition and a sustainable, liveable environment.

The Dutch Legal Framework
Core structure

HIERARCHY OF LEGISLATION

1. **Constitution**
   Fundamental law of the Kingdom of the Netherlands
2. **Acts of Parliament**
   Primary legislation adopted by the States General
3. **Orders in Council / Decrees**
   Adopted by the Government (Council of Ministers)
4. **Ministerial Regulations**
   Detailed rules issued by Ministers
5. **Provincial and Municipal Rules**
   Local regulations within their competences

LEVELS OF GOVERNMENT

National Government	Provinces	Municipalities	Water Authorities
Sets national policy and legislation	Responsible for regional policy and supervision	Responsible for land use, permits and local regulations	Manage water systems and water quality

INFLUENCED BY EUROPE AND INTERNATIONAL LAW

- European Union legislation has direct effect in the Netherlands
- International treaties and conventions are part of Dutch law

KEY LEGAL DOMAINS

Civil Law
Regulates private law relationships between individuals and organizations

+

Criminal Law
Regulates offenses and sanctions to protect public order and safety

+

Administrative Law
Regulates the relationship between government authorities and citizens or companies

=

Environmental & Planning Law
Regulates the physical environment, spatial planning and sustainability

THE RULE OF LAW | The Dutch legal system is based on the rule of law, legal certainty and independent courts.

The Dutch Legal Framework

Administrative Law (the law of governing)

PURPOSE

Governs how authorities take decisions and exercise public powers.

CORE PRINCIPLES

- Lawfulness and legal certainty
- Equal treatment
- Proper motivation of decisions
- Proportionality and reasonableness
- Right to objection and appeal

KEY GOVERNMENT ACTIONS

- Permits & licenses
- Enforcement actions
- Subsidies
- Inspections & supervision
- Administrative sanctions

IMPORTANT LEGISLATION

- General Administrative Law Act (Awb)
- Sector-specific legislation, including environmental law

THE ADMINISTRATIVE LAW PROCESS

1. APPLICATION
Applicant submits request to authority.

→

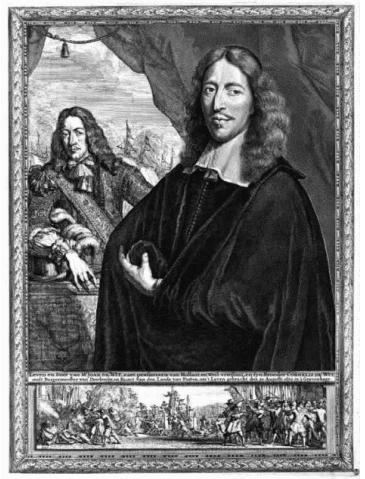
2. DECISION
Authority assesses and issues decision.

→

3. OBJECTION
Applicant can object to the decision.

→

4. APPEAL
Decision can be appealed to the administrative court.



Based on:
The Disaster Year of 1672

PRACTICAL RELEVANCE

Administrative law forms the legal basis for:

- Environmental permits
- Spatial planning decisions
- Industrial supervision and enforcement

The Dutch Legal Framework

The Environmental and Planning Act (Omgevingswet)

1 JAN 2024

In force since
1 January 2024

The Omgevingswet introduces a fundamental reform of Dutch environmental legislation with one integrated framework for the physical living environment.

OBJECTIVES

- Simplification of legislation and procedures
- Faster and more predictable decision-making
- More room for local and integrated decision-making
- Balanced approach between environment, economy and spatial development

SCOPE: THE ACT REGULATES

KEY CHARACTERISTICS

- One integrated environmental permit
- Increased decentralisation to municipalities
- Digital permit system (DSO)
- Focus on integrated assessment of impacts on the physical environment

FROM FRAGMENTED TO INTEGRATED

OLD SYSTEM
Multiple sectoral laws and permits
Separate procedures and assessments

→

OMGEVINGSWET
One integrated legal framework
One permit, integrated approach

The Dutch Legal Framework

Key Decrees Under the Omgevingswet

The Omgevingswet sets the framework. Four main decrees (besluiten) provide the detailed rules for implementation.

OMGEVINGSWET
(Environmental and Planning Act)
General framework and principles

1 BESLUIT ACTIVITEITEN LEEFOMGEVING (BAL)

- Rules for activities in the living environment
- Environmental standards and permit requirements
- Directly applicable operational rules

2 BESLUIT BOUWWERKEN LEEFOMGEVING (BBL)

- Technical building regulations
- Construction safety
- Building standards and requirements

3 BESLUIT KWALITEIT LEEFOMGEVING (BKL)

- Environmental quality standards
- Assessment frameworks for authorities
- Standards for noise, air, water, soil and external safety

4 OMGEVINGSBESLUIT (ENVIRONMENT DECREE)

- Procedural and administrative rules
- Coordination between authorities
- Environmental impact assessment procedures

PRACTICAL IMPORTANCE

Together, these decrees determine:

- Which activities require permits
- Applicable environmental standards
- Responsibilities of authorities and operators
- Practical compliance obligations

Licensing, supervision and enforcement in the Netherlands

The competent authorities for the Amer power station

The Amer power station is a complex facility.

The Amer site is checked and inspected by the following authorities:

National government/ ministries

Province of North Brabant

Brabantse Delta Water Board

Municipality of Geertruidenberg

- Rijkswaterstaat
  Ministerie van Infrastructuur en Milieu
- Nederlandse Voedsel- en Warenautoriteit
  Ministerie van Landbouw, Visserij, Voedselzekerheid en Natuur
- Autoriteit Nucleaire Veiligheid en Stralingsbescherming
- Inspectie Leefomgeving en Transport
  Ministerie van Infrastructuur en Waterstaat

- VEILIGHEIDSREGIO Midden- en West-Brabant
- Omgevingsdienst Midden- en West-Brabant
- odbn Omgevingsdienst Brabant Noord
- Samen Sterk in Brabant Handhavingsteam Buitengebied

- Waterschap Brabantse Delta
- brabant water

- Gemeente Geertruidenberg
- Handhaving Nederland

Permitting Under the Omgevingswet
Environmental Permitting in Practice

WHY COMPLEX?

Multiple legal topics combined in one permit
Environment, construction, nature, water, spatial planning

Several authorities involved
Municipalities, provinces, water authorities, national regulators

Strong influence of EU and nitrogen regulations
Natura 2000, EU directives, climate policies

Increasing technical and societal scrutiny
More studies, more stakeholders, more appeals

TYPICAL STUDIES

EIA / MER
Environmental Impact Assessment

Nitrogen assessments
Natura 2000 impact

Noise and air studies
Air quality, odour, noise

External safety analyses
Risk and safety of the environment

Water studies
Discharges, water permits and groundwater

TYPICAL TIMEFRAME*

Standard procedure
± 8 weeks

Extended procedure
± 6 months

Large industrial or infrastructure projects
Often 1 – 3+ years
Including studies, participation and appeals

** Indicative timeframes*

SUCCESS FACTORS

Early and strategic planning

Strong stakeholder coordination

Robust legal and technical substantiation

Integrated approach and clear communication

TYPICAL PERMITTING PROCESS

1. INITIATION
Project definition & initial screening

2. STUDIES
Environmental and technical assessments

3. PARTICIPATION
Stakeholder engagement and consultation

4. PERMIT APPLICATION
Submission via DSO (Digital System)

5. DECISION
Authority decision (standard or extended)

6. APPEAL
Objection and possible appeal to court

OVERALL TIMEFRAME
Highly project-dependent

Weeks – months	1 – 3 months	8 weeks	Up to 6 months	Months – years
Initiation & studies	Participation	Standard procedure	Extended procedure	Appeals (if applicable)

Total: often 1 – 3+ years

Permitting Under the Omgevingswet

Participation and Stakeholder Management

WHY IT MATTERS

- Builds trust, transparency and legitimacy
- Identifies concerns early
- Reduces objections, delays and legal risks
- Improves project quality and societal acceptance
- Supports faster and more predictable decision-making

KEY STAKEHOLDERS

THE REALITY TODAY

Projects are no longer only technical or legal projects.

They are also social and political processes.

Public perception and stakeholder support can significantly influence project success.

PARTICIPATION IS NO LONGER OPTIONAL – IT IS A STRATEGIC NECESSITY.

EFFECTIVE STAKEHOLDER MANAGEMENT APPROACH

1. START EARLY
Engage stakeholders at the beginning of the project.

2. COMMUNICATE CLEARLY
Provide clear, honest and timely information.

3. LISTEN & RESPOND
Actively listen to concerns and show how input is used.

4. MANAGE EXPECTATIONS
Be realistic about possibilities, impacts and timelines.

5. MAINTAIN DIALOGUE
Keep stakeholders involved throughout the project lifecycle.

STRONG PARTNERSHIPS. BETTER DECISIONS. SUCCESSFUL PROJECTS. | Good stakeholder management creates value for the project, the environment and society.

Calypso BESS Project

Accelerating Permitting Through Stakeholder Management

Case study: How collaboration and transparency enabled a first-of-its-kind battery storage project in the Netherlands

1 THE CHALLENGE

Large-scale battery energy storage systems (BESS) were still relatively new in the Netherlands and lacked a clear legal and permitting framework.

- Unclear legal framework and permitting category
- Uncertainty for authorities, grid operators and emergency services
- Delays, fragmented decision-making and legal risks for strategic energy projects

2 THE APPROACH

RWE approached the Calypso project not as a standard permit application, but as a collaborative development process.

Early and continuous stakeholder engagement

- Provincial authorities
- Environmental agencies
- Safety regions
- TenneT
- Local stakeholders
- National policymakers

Key principles

- Full transparency and open communication
- Parallel processes instead of sequential procedures
- Joint knowledge development and sharing
- Early alignment on safety, spatial integration and legal interpretation
- Building trust between all involved parties

3 THE RESULT

This approach enabled:

- **Faster** permitting and decision-making
- **Reduction** of uncertainty and procedural bottlenecks
- **Stronger** stakeholder support and cooperation
- Development of **practical knowledge** for future BESS projects
- A **legally robust** and future-proof permit framework

KEY TAKEAWAY

Early stakeholder alignment, transparency and parallel coordination can accelerate complex energy projects while maintaining legal robustness and public support.

COLLABORATION | TRANSPARENCY | ACCELERATION | ROBUST & FUTURE-PROOF

The Calypso project became a national case study showing that innovative energy projects can be accelerated through collaboration, transparency and proactive stakeholder engagement – even in a developing regulatory environment.

RWE

Questions?

Here to help!

Yari Boogaarts
Environmental Advisor
RWE Generation NL B.V.

How the society look at RWE

Relevance of Biomass Cofiring to RWE

Some Facts

2 Power Stations

- Amer 640 Mwe, 350MWth
- Eemshaven 1600 MWe

4 SDE+ grants

- 2018 (starting year)
- 8 years + 1 banking year
- 2.67 billion Euro total max

~2.5 Mmtons biomass (yearly) Mainly residues : cat 5

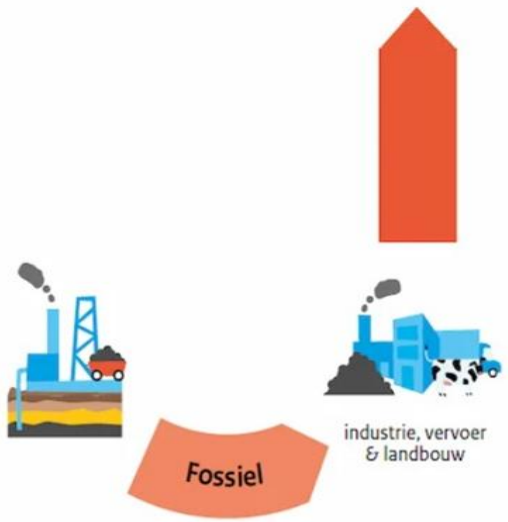
- ~19 PJ
- ~9% of total renewable energy share (2020)
- 4 million tons reduction in CO_2 emissions

Bioenergy CO2-neutral

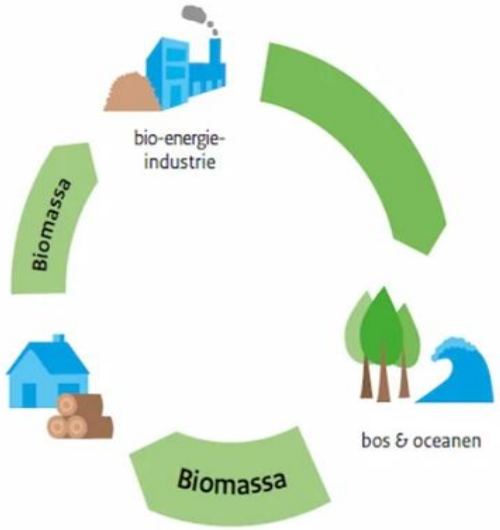
Rijksdienst voor Ondernemend Nederland

Rol van bio-energie in reductie van CO_2

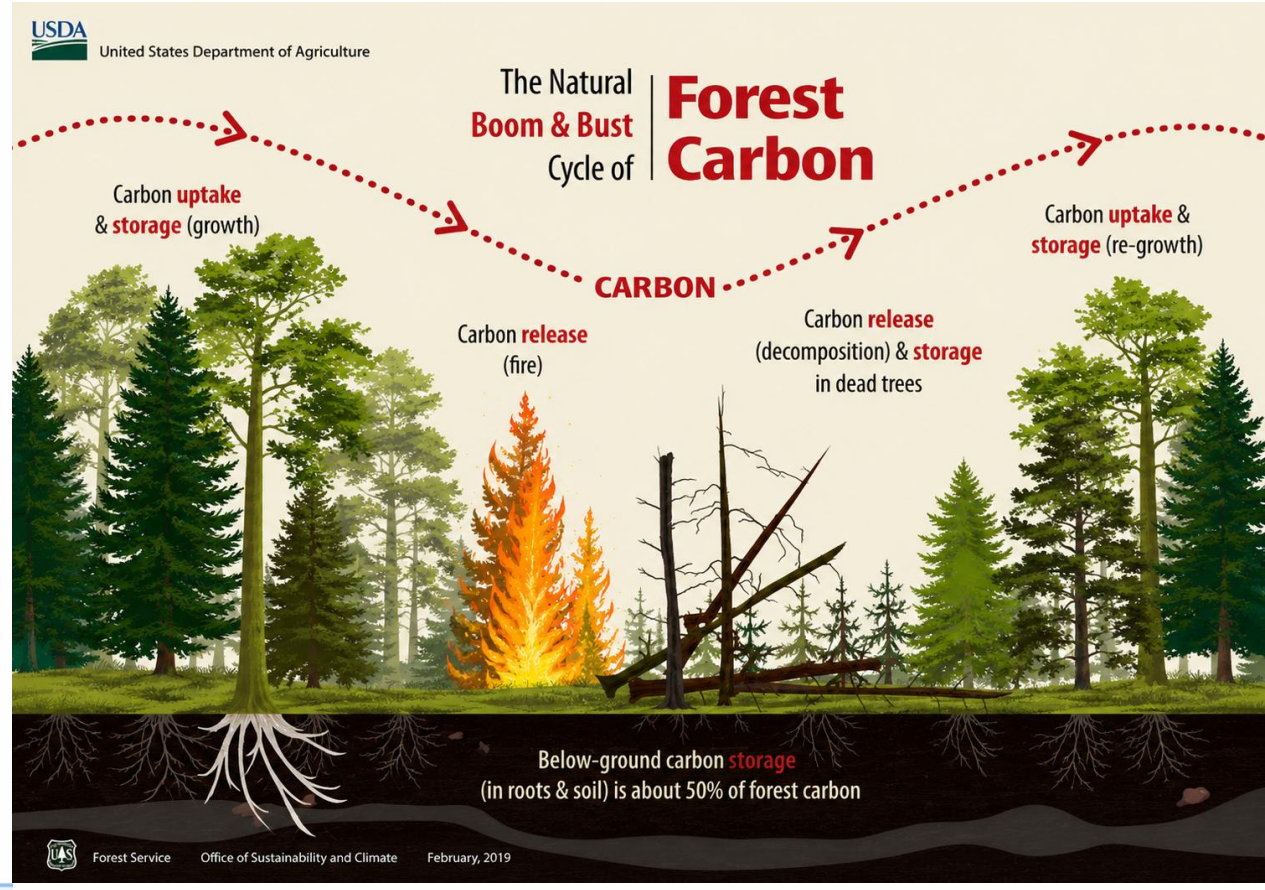
Lange CO_2-cyclus
Verbranden van fossiele grondstoffen betekent een lange CO_2-cyclus: het duurt immers miljoenen jaren voordat deze grondstoffen zijn aangevuld.



Korte CO_2-cyclus
Door biomassa te verbranden, ontstaat er een korte CO_2-cyclus. Dat komt doordat biomassa in korte tijd weer is aangegroeid en weer CO_2 opneemt.



https://www.fs.usda.gov/inside-fs/delivering-mission/sustain/carbon-dynamics-research-initiative-opens-new-pathways



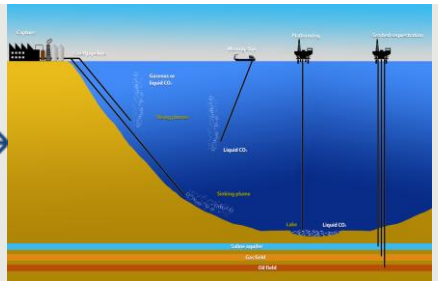
https://www.projectgreensand.com/en

GREEN ENERGY

Trees absorbCO2 from the atmosphere

This CO2 is released again through combustion in the Amer = CO2 neutral

Storing CO2 = removing CO2 from the atmosphere or negative CO2



Large-scale commercial forests supply a great deal of timber to the construction and furniture industries

Biomass pellets are made from sawdust and forest waste

It uses the power stations to generate electricity as a substitute for coal

CO2 can be captured from flue gas. The CO2 is stored beneath the seabed or reused

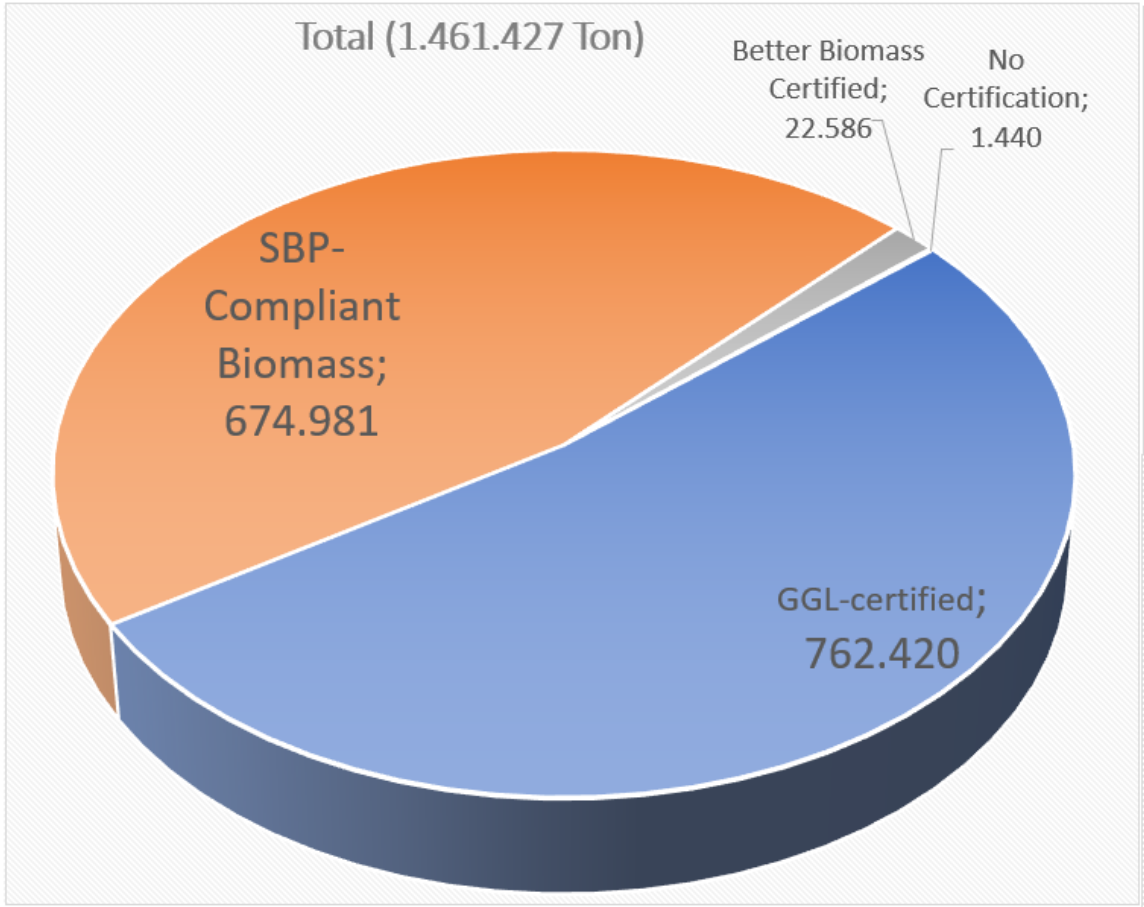
Outlook
Opportunities for biomass supply

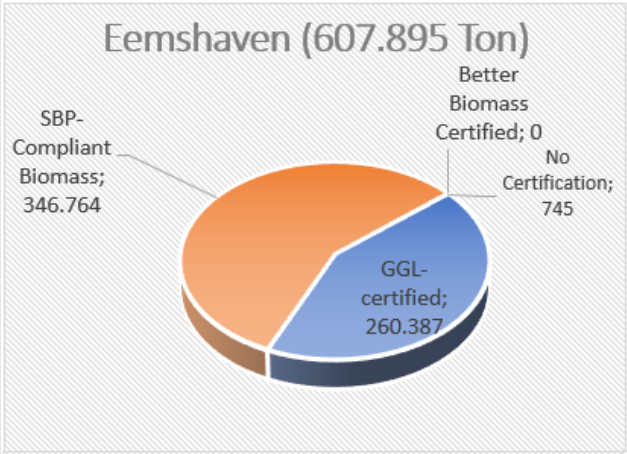
Woodpellets
Americas, Asia, Europe

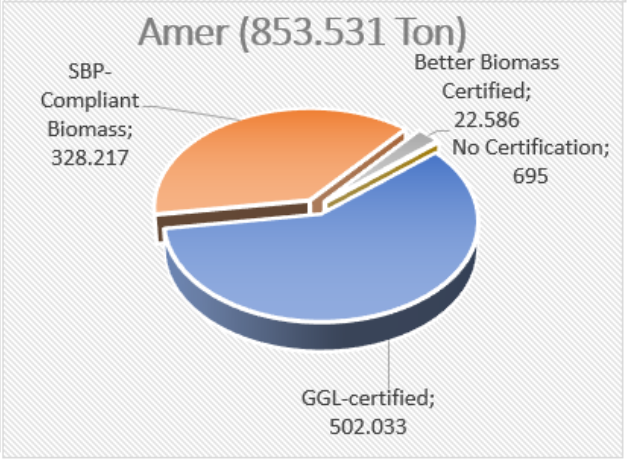
Sugercane residues
Bagasse, lignine
Louisiana, São Paulo

Food / feed residuen
shelling, peeling

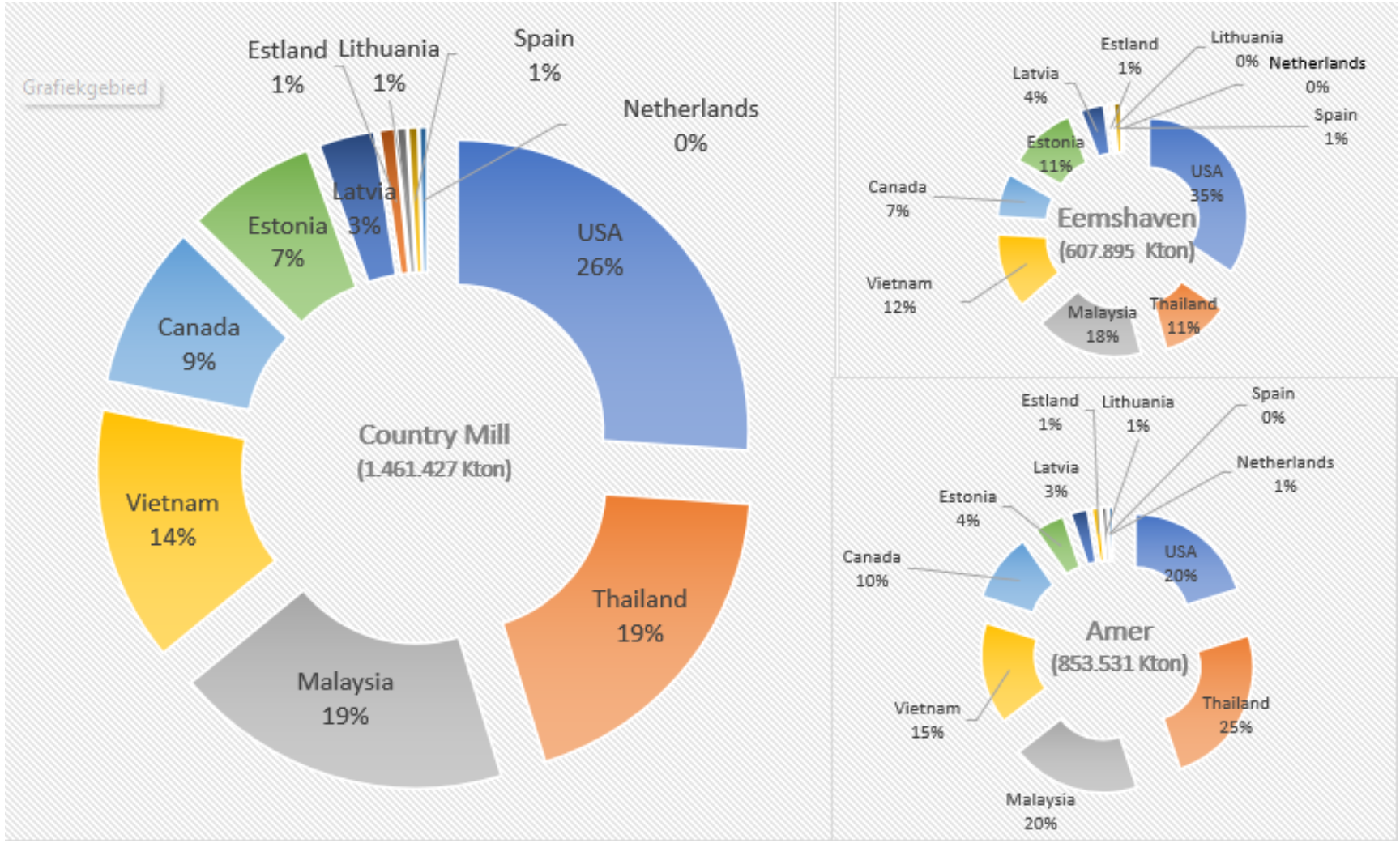
Overview 2025





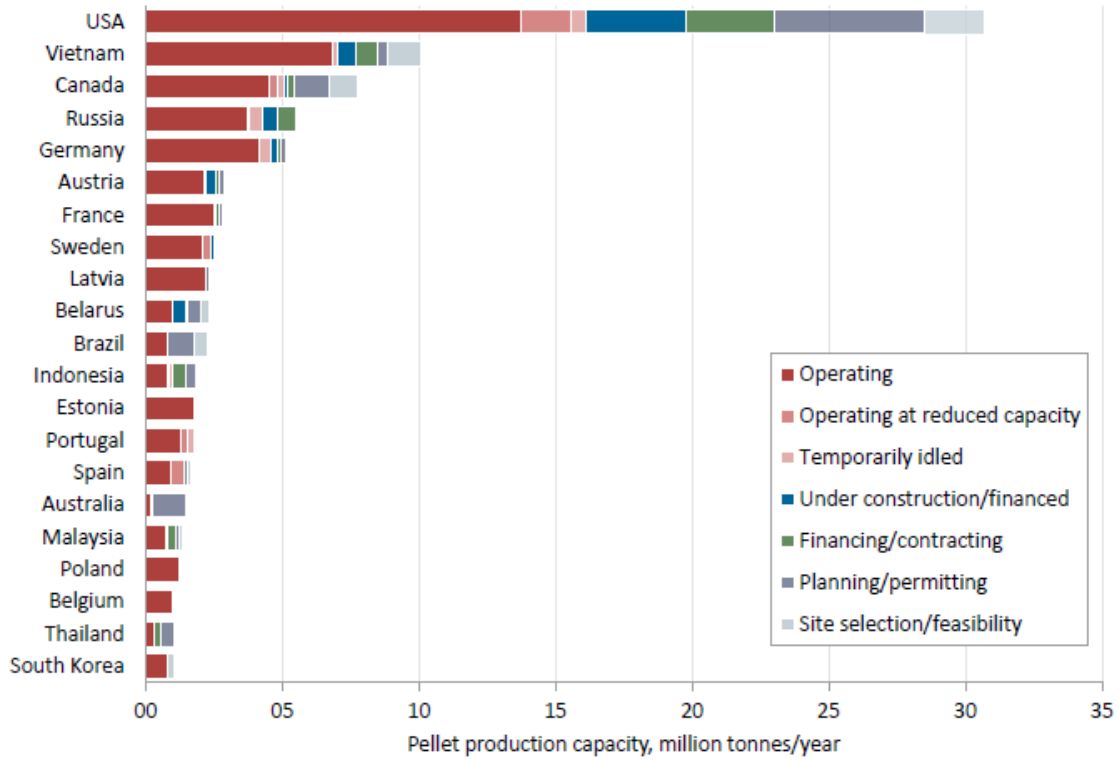


Overview 2025



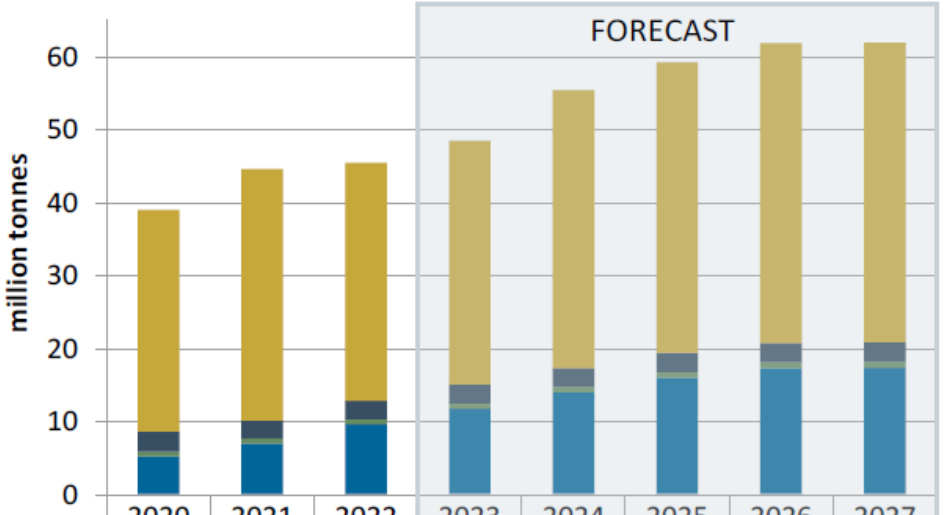
Overview of Global Wood Pellet Supply and Demand

Figure 14: Wood pellet capacity and planned projects, by country



Source: Hawkins Wright

Figure 7: Central global pellet demand forecast (all sectors) to 2027



	2020	2021	2022	2023	2024	2025	2026	2027
WORLD TOTAL	39.0	44.6	45.5	48.5	55.4	59.2	61.9	61.9
Europe	30.4	34.5	32.6	33.4	38.1	39.8	41.1	41.0
North America	2.7	2.4	2.5	2.5	2.6	2.6	2.6	2.7
Russia & CIS	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Asia	5.1	7.0	9.6	11.7	13.9	15.9	17.2	17.2
Oceania	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2

Source: Hawkins Wright

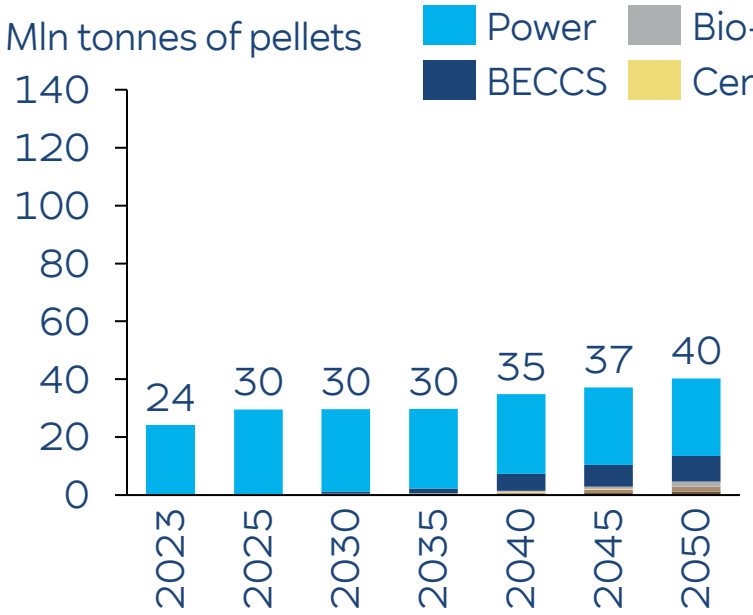
White pellets demand analysis

demand

Demand is expected to increase; Power sector expected to remain dominant; other sectors lack willingness-to-pay and have slow and delayed growth

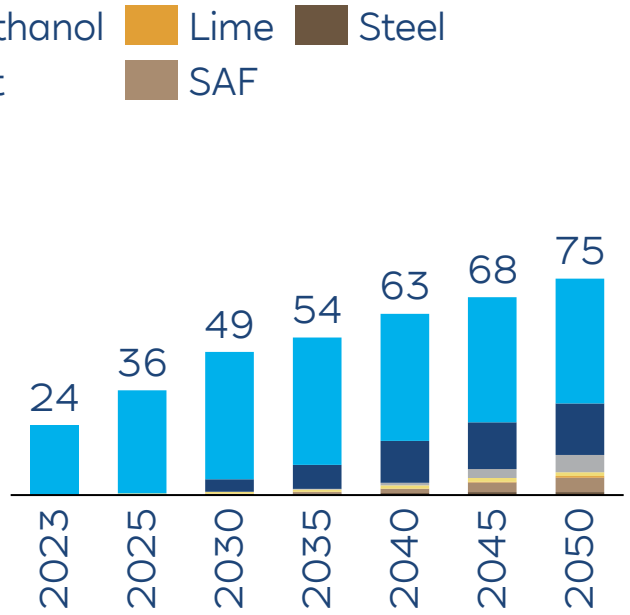
Growth market scenario: Global pellet demand by sector

Low scenario



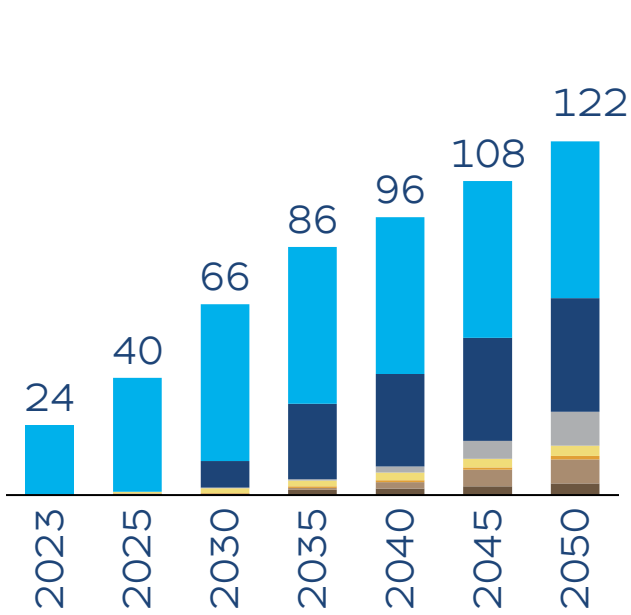
- Limited growth is expected in all the sectors except for BECCS[1]

Central scenario



- Driven by the power sector, wood pellet demand is set to triple by 2050

High scenario



- Driven by growth in all sectors, demand is set to mutliply by factor 6 by 2050

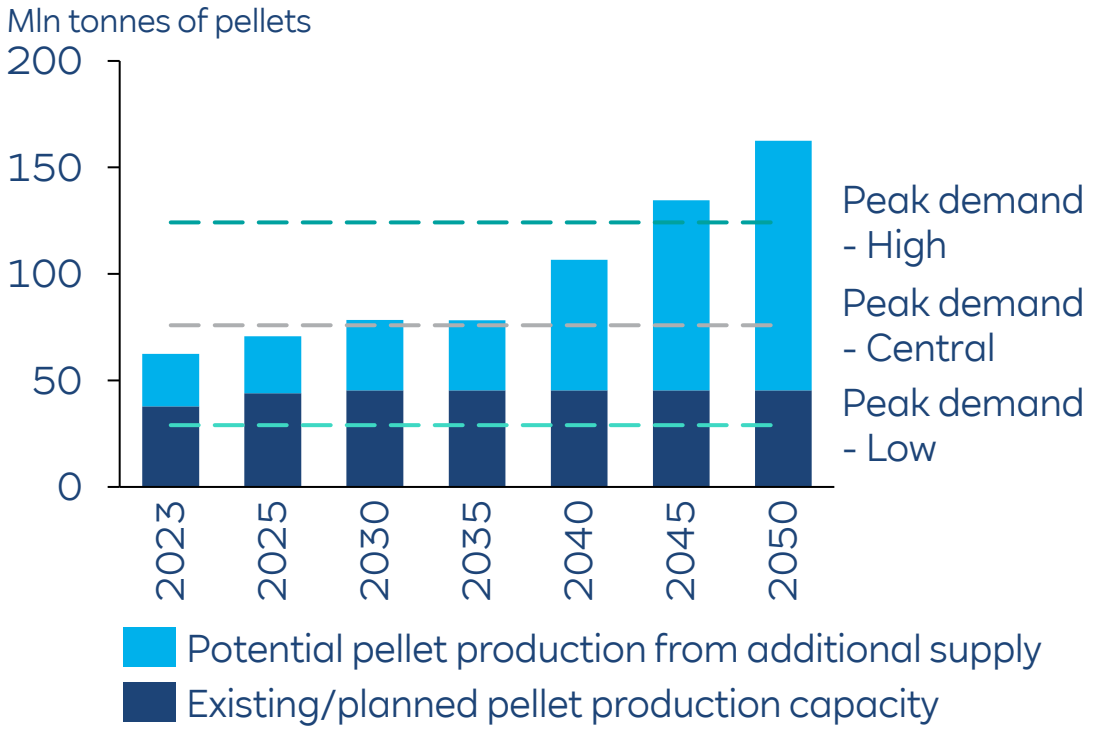
White pellet demand is expected to grow, mainly driven by power and BECCS demand

Reference Afry-study

White pellet supply analysis

Potential additional demand can be met with the additional surplus supply from new plantations
White pellet market is a buyer's market operating at close to marginal costs for suppliers

Sustainable industrial wood pellet production globally



Key points

- Additional pelletiser capacity is possible, but not built due to limited demand
- Additional surplus from potential plantation along the coast from the selected countries have been considered.
- Due to oversupply potential, the white wood pellet market is **a buyer's market**, now and in the future. This is confirmed by signals of insolvency.
- At significant loss of load margin order for pelletiser will shut down high-cost-pellitisers first
- White wood pellets is a relatively liquid market with relatively long-term contracts, although not a financially traded market
- Short term price drops can occur due to short term oversupply, but are not sustainable

Supply can meet demand growth, by increasing pelletizer capacity.
It remains buyer's market, pressuring prices to the marginal costs

RWE

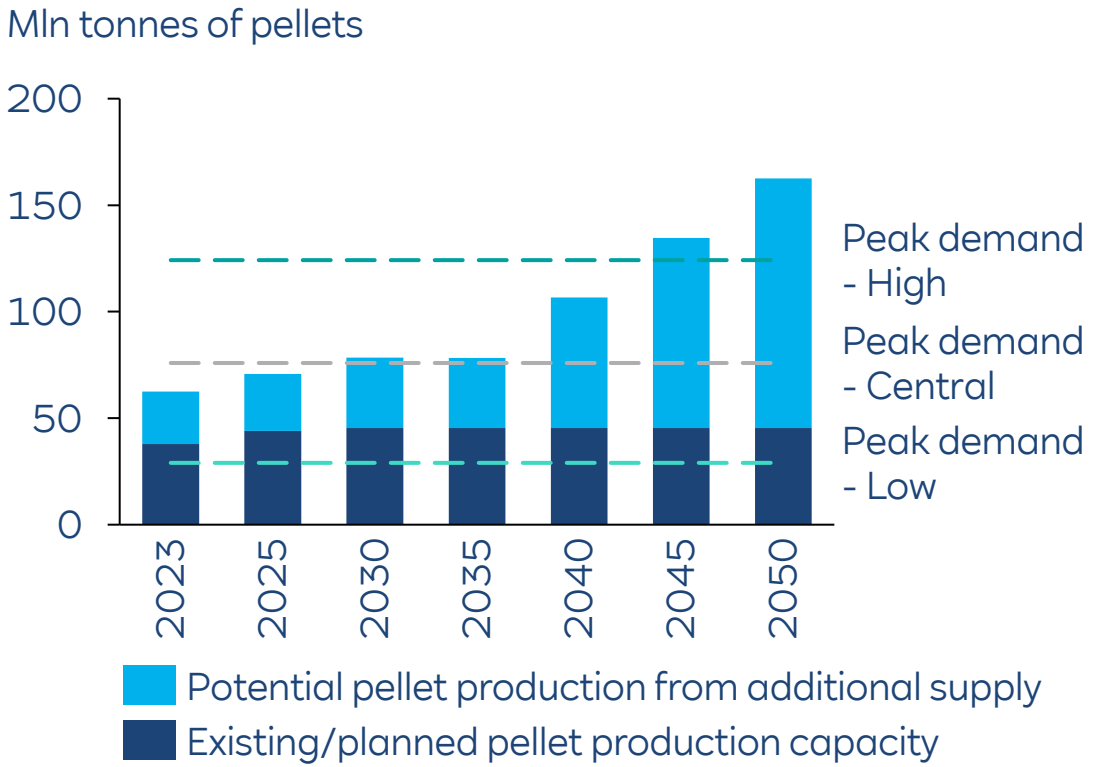
1. Wood fiber is small diameter roundwood and sawmilling residues.

Supply evaluation is based on the Afry study

Supply

Potential peak demand in the High scenario can still be met with the additional surplus supply from new plantations

Sustainable industrial wood pellet production globally



Assumptions

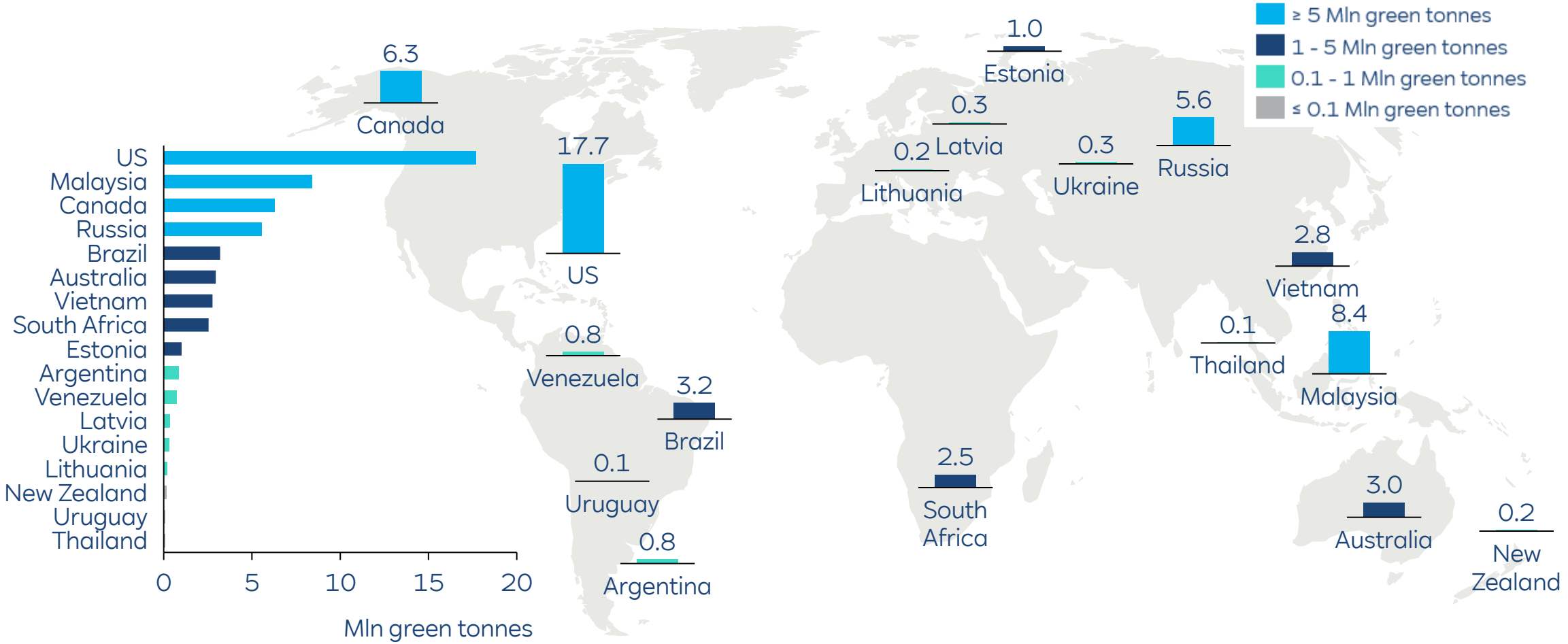
- Current and planned pellet production capacity with utilization rate of 90%
- Future surplus wood fiber[1] which is available for exports have been considered
  - Future wood supply and demand have also been considered
- Additional surplus from potential plantation along the coast from the selected countries have been considered.
  - This volume is assumed to start ramping up until 2050
  - 20% of the volume is assumed to be available for pellet production, the rest is absorbed by other applications
- Peak demand for each scenario is from the Growth market scenario

1. Wood fiber is small diameter roundwood and sawmilling residues.: Afry-study

Supply

The highest level of current wood fiber surplus supply can be found in the US, remaining an attractive region for expansion

Current regions with a surplus of wood fiber[1]



1. Wood fiber is small diameter roundwood and sawmilling residues : Afry-study.

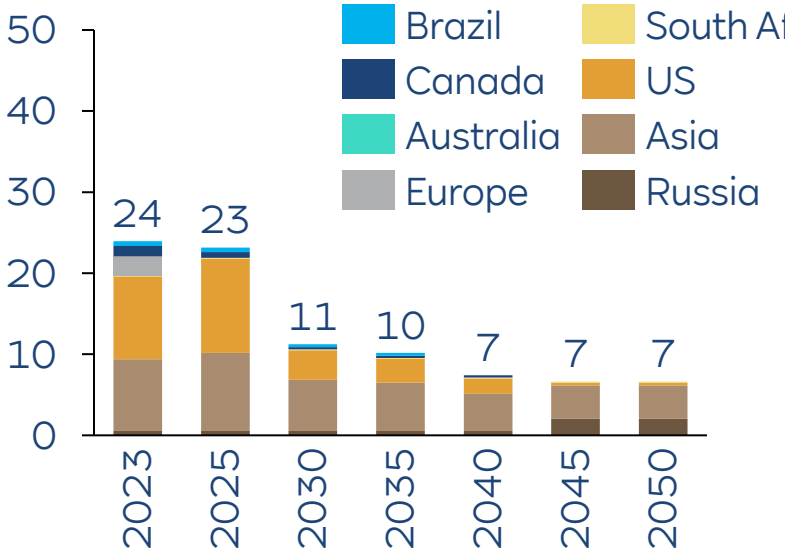
Supply

US and Asia will continue to be the main supply regions for global pellet demand

Supply to global demand by region

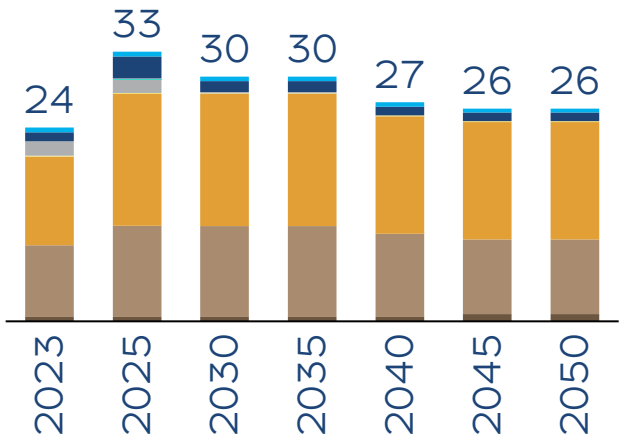
Low scenario

Mln tonnes of pellets



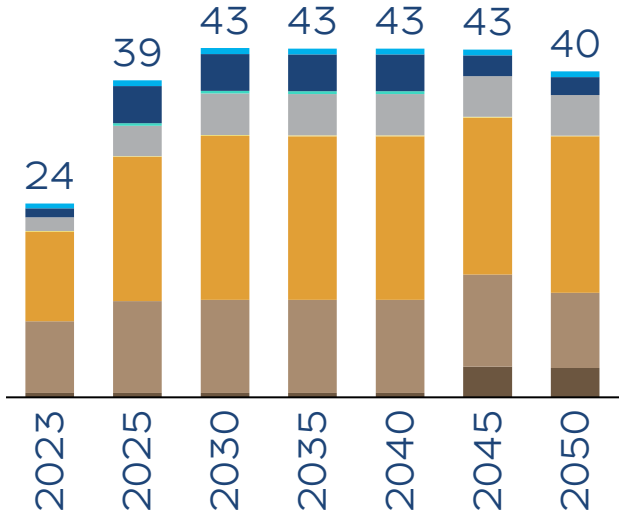
- Asia supply the most of the remianing demand after 2030, as only Asian demand remains

Central scenario



- Supply from the US and Asia grows in the short term and stabilises afterwards

High scenario



- All the supply regions grow until 2030, but after 2040 Canadian supply is reduced

Note: Asia includes Indonesia, Malaysia, Thailand and Vietnam. Europe includes Portugal and Baltics : Afry-study

RWE takes a leading role in the development of new certification schemes and industry standards

To **access Biomass subsidies** in Europe, documentation of chain of custody and certification of sustainability are required. Together with other industry players and partners we **proactively develop transparency standards in the wood market**. This is an opportunity for us to **improve the Biomass image**.

EUDR extends existing certification schemes

→ **RWE co-founded two certification schemes:**
Green Gold Label & Sustainable Biomass Program that document chain of custody and ensure certified biomass is sourced legally and sustainably

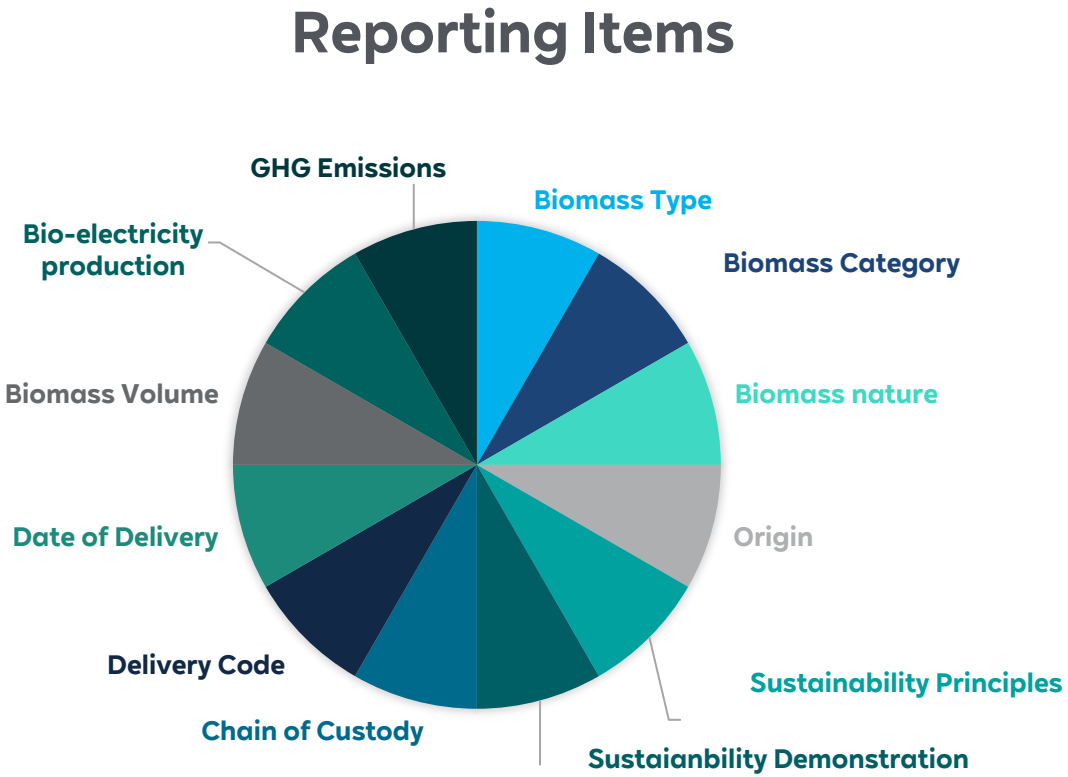
Driving Industry Standards: USIPA & Bioenergy Europe

→ **RWE is a member of industry association** that have led initiatives with other wood industries (pulp, packaging, paper) importing into Europe, who are less familiar with documenting their chain of custody

→ Despite EUDR not reflecting practices in the Americas, industry associations **could help develop national standards**

Accounting for 100% Compliancy - Chain of Custody

Secure the traceability of all sustainability information for every individual biomass consignment



- ✓ The term "consignment" refers to a specific quantity of biomass with the same sustainability characteristics.
- ✓ Certification and/or verification
- ✓ Full transparency (≠ fully public)

RWE must meet RED II & III standards by 2026

RWE will need to demonstrate that its **biomass meets European Renewable Energy Directives II and III in 2026**. to meet to get subsidies in NL. It is needed for biogenic carbon emissions to be **zero rated for EU ETS.**

RED II

Use existing schemes that have been approved by the EU

- ❑ Reduce timeline available for allocating feedstock to each shipment
- ❑ Track GHG more closely with 70% limit for each vessel
- ❑ Track sustainability in an alternative way for non-residues

RED III

Biggest changes are:

- ❑ Increased GHG savings thresholds (from 70% to 80%) and lowered capacity threshold (from 20 MW to 5 MW)
- ❑ Phase-out of support for electricity-only biomass plants, focusing more on efficient CHP applications
- ❑ Caps on the use of primary forest biomass and prioritization of waste and residue-based biomass
- ❑ Stricter sustainability criteria for forest biomass and detailed guidelines to protect biodiversity and carbon sinks
- ❑ Clearer classification of high- and low-risk biomass sources and promotion of low-risk feedstocks like agricultural residues

Questions ?

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