



Use of secondary building materials

Situation in the Netherlands

Dr. ing. Marian Langevoort

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Who am I?

- Marian Langevoort
- Consultant Soil & groundwater and Circular Economy
- Geochemist, hydrologist
- Projects on the edge between soil and application of building materials and soil
- 15+ years of experience



TAUW: Leading European environmental consultancy firm

Turnover



144.1

Employees

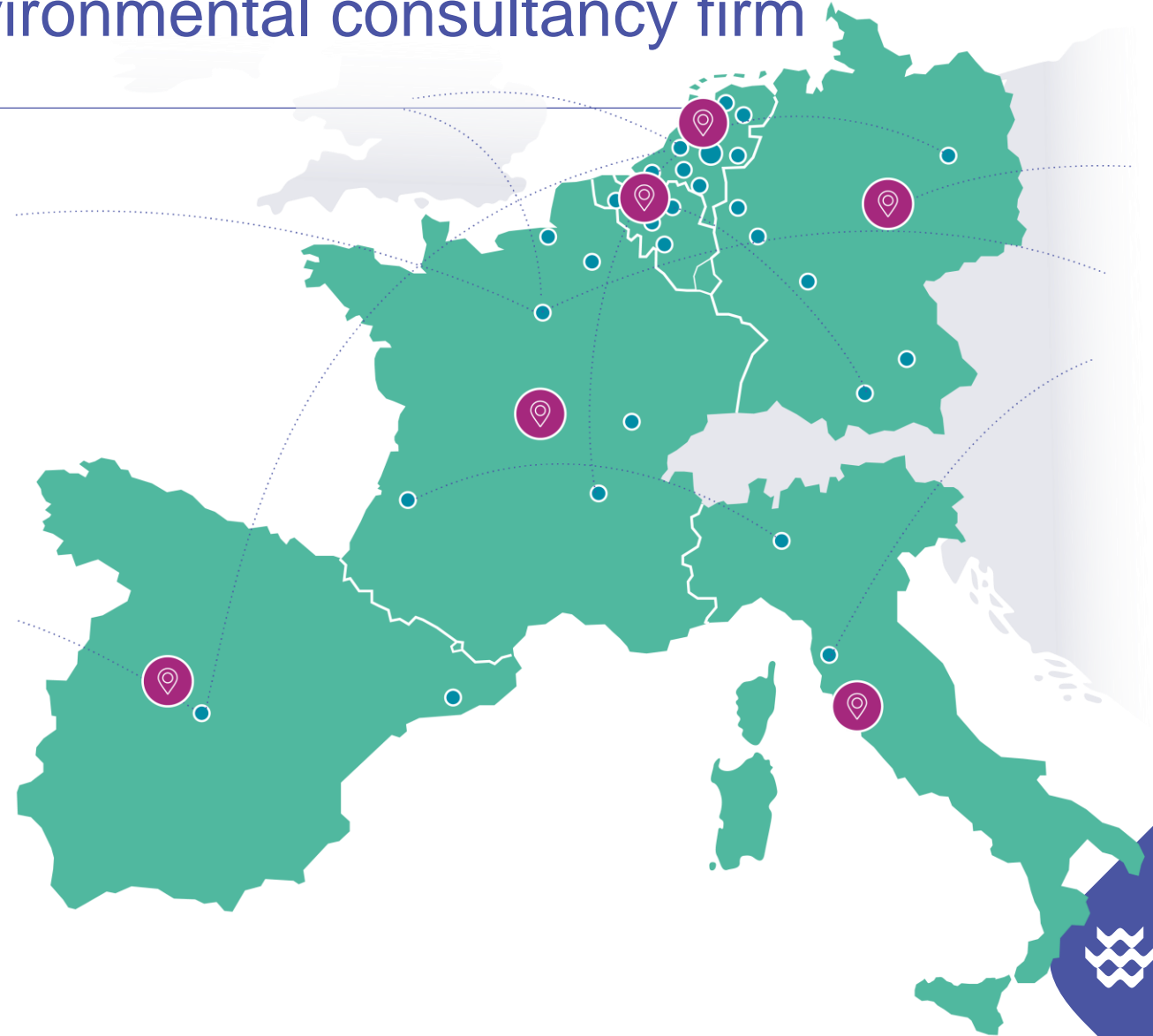


1,229

Offices



30



Check for more information [our living ambition report](#)

*Amounts 2020 in thousands





Application of secondary building materials in the Netherlands

Application of secondary building materials

Content

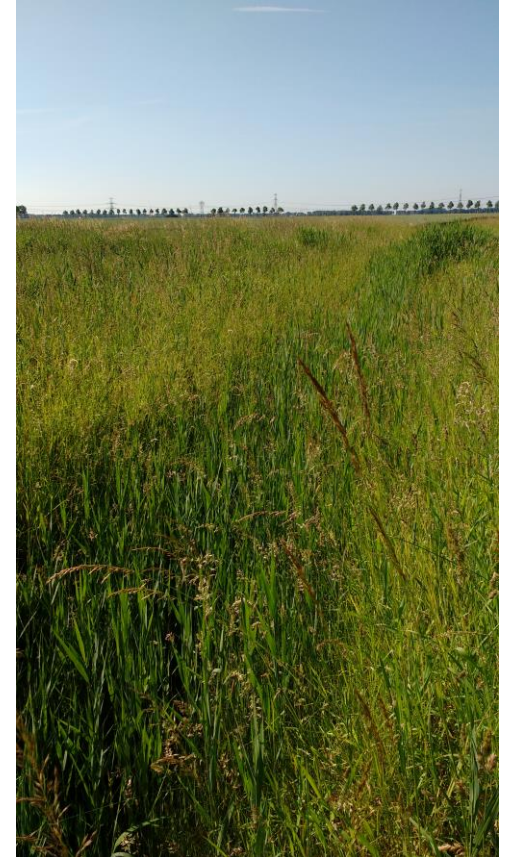
- Introduction – importance of soil
- Legislation
- Discussion about applications



Importance of soil

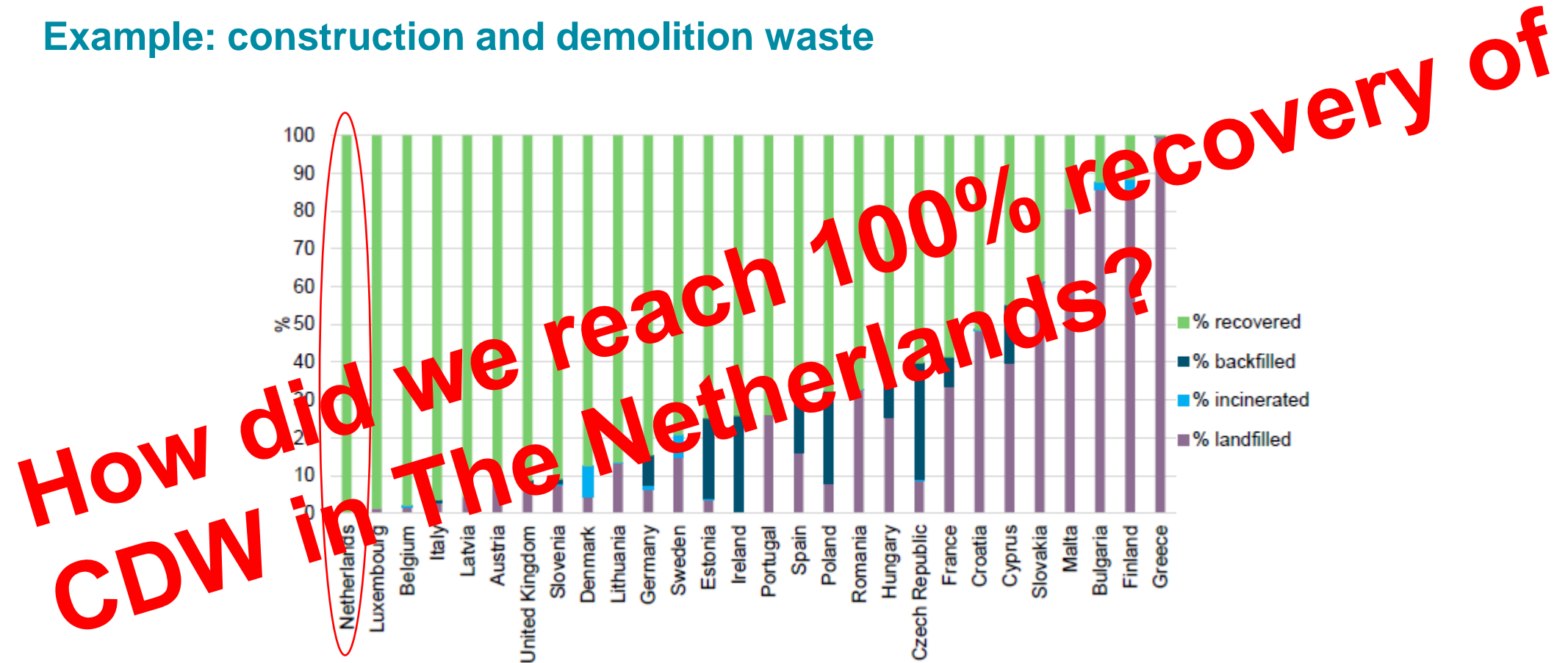
Introduction

- Soil gives us:
 - Carrying capacity
 - Production
 - Regulation
 - Information
- [Onder het maaiveld film | Officiële Website | Trailer en tickets](#)



Comparison NL with other EU member states

Example: construction and demolition waste



Resource efficient use of mixed wastes improving management of construction and demolition waste - Publications Office of the EU (europa.eu) (2017)

Integrated legislation

A push in the right direction in every step of the cycle

1. Detailed legislation on the application of secondary building materials from the 90
2. Ban on landfilling
3. Environmental permitting of waste processors (in many different regulations)
4. System with accreditation of companies and certification of products



Besluit bodemkwaliteit / Soil quality decree

Regulation on soil quality

- **The Decree strives for a balance between healthy soil quality for people and the environment (protection) and space for social developments (use), such as housing or road construction.**
- A distinction is made between building materials (stony building materials such as concrete, asphalt, bricks and slags) and soil/dredging sludge
- An important condition is that it must always be a functional application and for soil and sludge the application should be useful.



Besluit bodemkwaliteit / Soil quality decree

Regulation on soil quality

- Definitions for soil, sludge and building material
- There are conditions that need to be fulfilled for application of secondary building materials and soil/sludge on/in soil or in surface water
- Working in/with soil is regulated, only certified companies/persons are allowed to do so.
- Building materials can't be mixed with soil and must be removed after the end of use. The application must be functional.
- Building materials are divided in shaped and unshaped (aggregates) materials
- Leaching of building materials needs to be measured and is regulated.



Examples of applications with discussion (1)

Discussion about functionality of application



Picture from Afvalzorg

MSWI bottom ash can be applied in the IBC work Het Groene Schip.

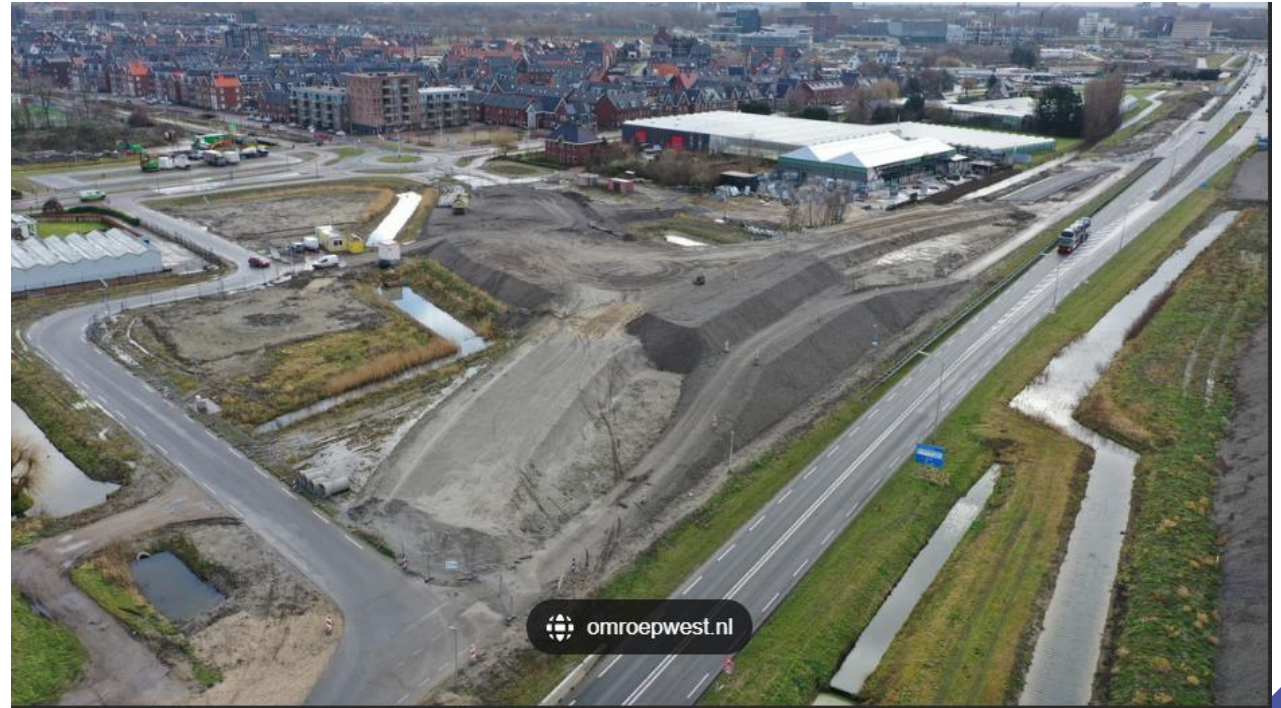
Het Groene Schip will form a large nature and recreation area and a natural border between the busy adjacent western harbor area of Amsterdam and the green buffer zone Spaarnwoude.



Examples of applications with discussion (2)

Discussion about remaining fractions and quality

- MSWI bottom ash applied as free applicable building material after separation and washing
- Road reconstruction and extension
- Observations of batteries and plastics



Examples of applications with discussion (3)

Thermal treated soil



- A dike near Bunschoten has been excavated after installation.
- Cattle died
- High concentrations salts (Cl, Br, SO₄), heavy metals and benzene
- Quality was not in agreement with requirements for at least one producer
- Soil quality is mainly assessed by content and not by leaching
- Some parameters occur increased that are not standardized (no obligation for analysis, no limits set)
- Compared to natural soil, thermal treated soil has different characteristics



Examples of applications with discussion (4)

Steel slag

- Special requirements for the application of steel slag:
 - Only application on soil or large surface water
 - No application in contact with groundwater
- Requirements not always fulfilled
- Some parameters occur increased that are not standardized
- Discussion about functioning supervision and control



Analysis

Problems occur and there is not always a violation of rules

Causes of the problems are:

- Substances are released that are not standardized
- The materials may contain residual fractions (e.g. metal particles, plastic). A remaining fraction and quality needs to fulfil standards. However, observations of residual fractions leads to concerns among citizens
- Quality is controlled at the moment of application. Due to chemical reactions the quality may change in time
- Indirect effects can occur. For example, leaching of salts can mobilize metals

Effect of the problems are:

- A decrease in support for the application of secondary materials
- Less application of secondary materials



Suggestions

- More legislation (for some materials / applications)
 - Registration of applications
 - Certain restrictions (minimum amount)
 - Larger scheme of analyses
- Application framework
- Better functioning of supervision and control



To conclude

- Reuse and application of secondary building materials and (treated) soil is necessary to become a 100 % circular economy in 2050
- Yearly millions of tons of primary building materials are saved and unnecessary landfilling of wastes is prevented
- There is a need for applications without discussion, such that there is support for these applications
- The framework of legislation, supervision and control in the Netherlands is overall good, but some refinements are necessary.

Know
what
you are
doing!





Contact

 Marian Langevoort

 +31 62 00 12 77 7

 Marian.langevoort@tauw.com

 www.tauw.com