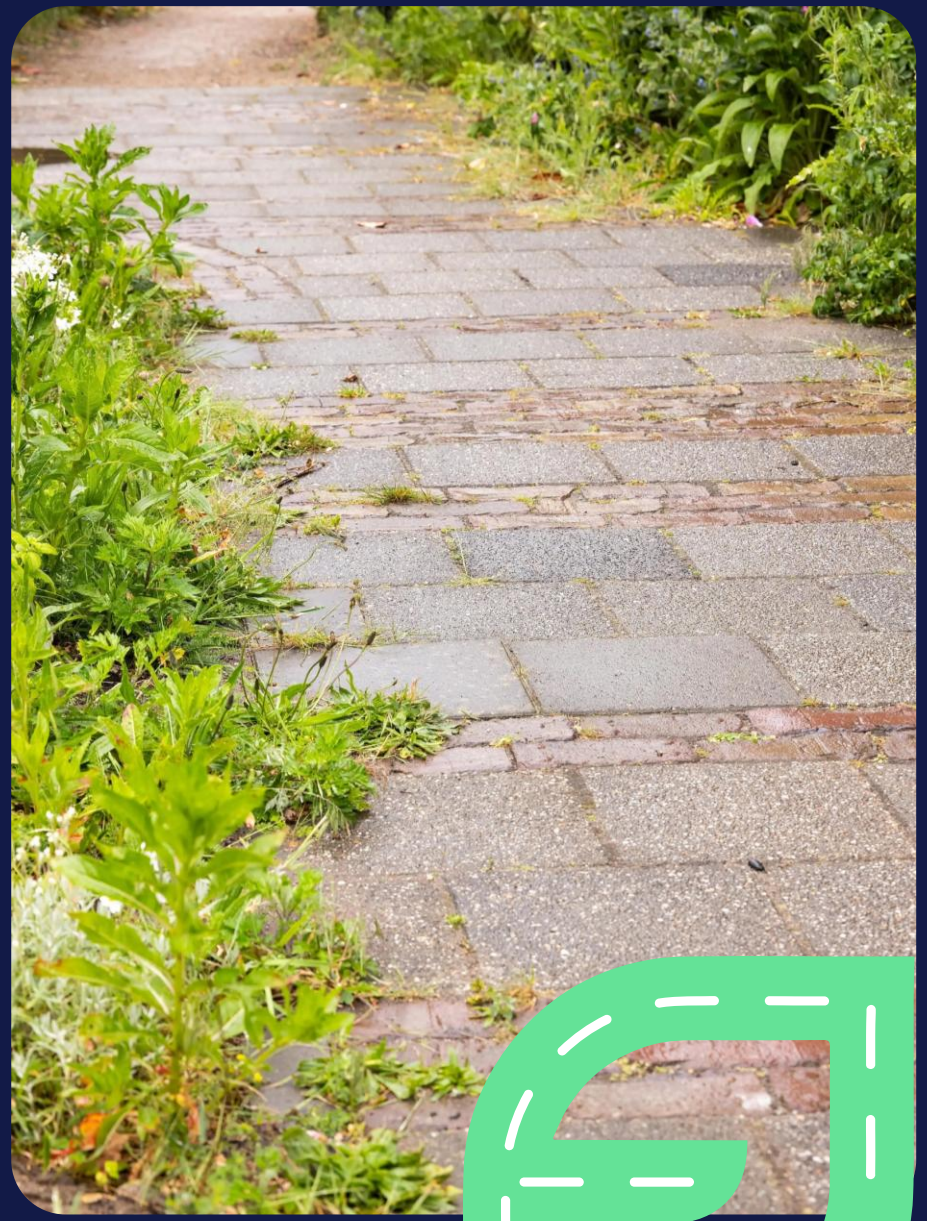
NPDW

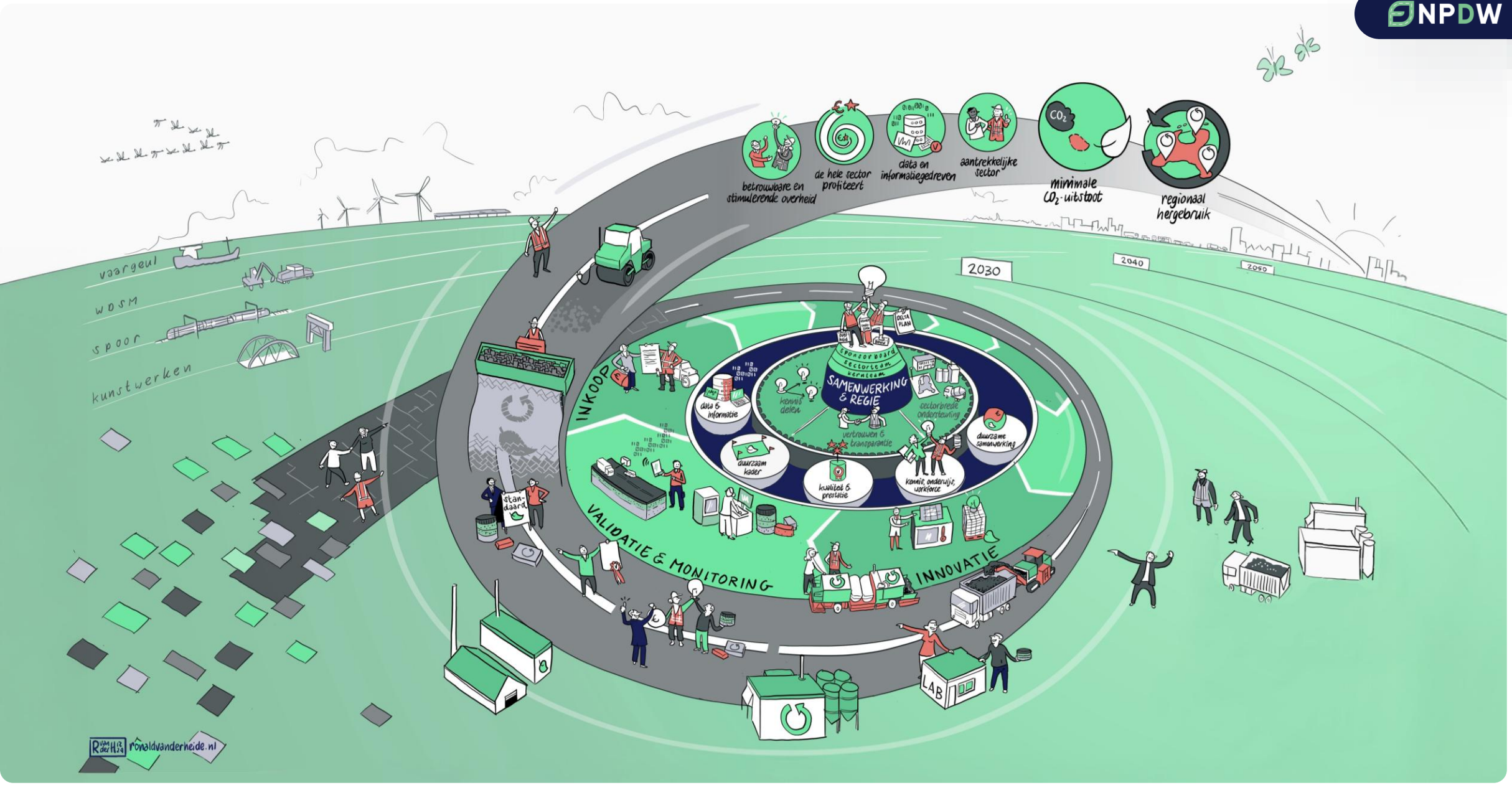
National Platform Sustainable Roads (NPSR)

Building together on sustainable roads



Dutch experiences with CISRAP

Presentation by - **Maarten M.J. Jacobs**


betrouwbare en stimulerende overheid
de hele sector profiteert
data en informatiegedreven
aantrekkelijke sector
minimale CO_2-uitstoot
regionaal hergebruik
2030
2040
2050
vaargeul
wosm
spoor
kunstwerken
INKOOP
VALIDATIE & MONITORING
INNOVATIE
SAMENWERKING & REGIE
sponsor board
sectorteam
vakteam
data & informatie
kennis delen
sectorbrede ondersteuning
vertrouwen & transparantie
duurzame samenwerking
duurzaam kader
kwaliteit & prestatie
kennis, onderwijs, workforce
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National Platform Sustainable Roads (NPSR)

Building together on sustainable roads

Assignment	Sustainable roads that remain in top condition for intensive use.
Target	By 2030, we will use 50% less raw materials and reduce CO_2 by 55%. By 2050, we will operate in a fully circular and climate-neutral manner.
Challenge	Shortage of people, resources and materials. Pressure on the sector from environmental regulations and circular goals.
Solution	NPSR unites governments, businesses and research institutions for a joint approach.

Impact:

- Collaboration saves time, capacity and resources
- More efficient use of national resources
- Reduction of the ecological footprint
- The Netherlands as a leader in sustainable infrastructure
- Delivery and investment certainty throughout the entire chain
- New sustainable revenue models
- Future-proof pavement sector

Building together on sustainable roads

What the NPSR does

1. **Accelerating the transition** to sustainable roads that last longer and require less maintenance.
2. **Collaborating** with existing initiatives and **pooling knowledge and experience.**
3. **Providing clarity** on the impact of interventions with respect to effectiveness of investments in time and resources. This reduces risks and offers investment certainty.
4. **Weighing the interests** of all stakeholders.
5. Apply knowledge directly in practice

Examples of deliveries in 2025

1. Harmonised threshold values for the Environmental Cost Indicator (ECI) for asphalt concrete mixtures.
2. Standardisation of data language (OTL) for national data exchange regarding roads.
3. Standardisation of the validation process for test tracks and monitoring (blueprint).
4. Introduction of a modern quality control system for new pavements using non-destructive techniques.
5. Inspiration book on circular pavements.

NPSR-project CISRAP (1)

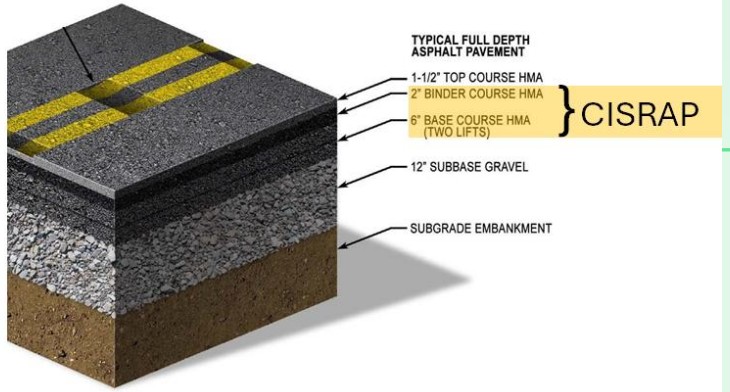
Cold **I**n **S**itu **R**ecycling of **A**sphalt **P**avements (CISRAP)

- One of the 17 interventions covered by the R&D and Innovation sector of the NPSR

- Aim of the CISRAP project:
  - **Develop of a guideline on the cold in situ recycling of asphalt concrete with foamed bitumen**
  - **By establishing a guideline, create support among road authorities and contractors. This will provide a boost for the application of CISRAP products in practice**
  - **The guideline should also enable the comparison of CISRAP products**

NPSR-project CISRAP (2)

Cold **I**n **S**itu **R**ecycling of **A**sphalt **P**avements (CISRAP)



Starting points:

- Only reuse of the asphalt concrete binder and base layers:
  - Surface layers are reused in a new asphalt concrete mixture;
  - Subbase and subgrade layers are considered in a later phase
- Warm or hot reuse of the CISRAP-layer in asphalt concrete should be possible in the future, so no deviant additives allowed
- CISRAP is mixed in situ: on site or in plant
- Is CISRAP a superior performing subbase layer or a poor quality asphalt concrete layer?
- CISRAP layer should not have a very high stiffness modulus (reflective cracking!!)

NPSR-project CISRAP (3)

Cold **I**n **S**itu **R**ecycling of **A**sphalt **P**avements (CISRAP)

Activities:

- Consultation stakeholders and literature review
- Development of a material collecting protocol, a mix design procedure and a structural design procedure
- Applying the protocols and procedures in the construction of test sections
- Development of a quality control system with realistic requirements which guaranties a good performing pavement structure
- Introduction of the developed CISRAP-procedure in the Dutch standard contracts for road paving activities

Project should be finished in 2030

NPSR-project CISRAP (4)

Cold **I**n **S**itu **R**ecycling of **A**sphalt **P**avements (CISRAP)

First phase:

- Consultation of share holders (road authorities, contractors, research institutes)
- Literature review worldwide and experiences in surrounding countries

NPSR-project CISRAP (5)

Cold **I**n **S**itu **R**ecycling of **A**sphalt **P**avements (CISRAP)

Results consultation share holders:

- There are some experiences in the Netherlands with CISRAP roads
- BSM/FSM is a general concept which is used for all kinds of products, introducing misunderstanding and unfulfilled expectations
- If well defined and documented, CISRAP will be used in projects due to its positive ECI-value (CO_2 reduction, circularity and emissions) and its costs
- The development of the CISRAP approach should be a joint venture between road authorities, contractors and consultancies

NPSR-project CISRAP (6)

Cold **I**n **S**itu **R**ecycling of **A**sphalt **P**avements (CISRAP)

Results literature review:

- The BSM (ZA) approach prefers over FSM (AU) due to a low bitumen content, less active filler and therefore an attractive ECI-value
- BSM is considered as an unbound material so no reflective cracking problems
- The structural design of BSM layers is based on permanent deformation which indicates that the surface layer can be relatively simple
- BSM fits better in the Dutch poor quality subgrade situation
- Experiences with BSM roads in surrounding countries are positive
- Maybe CISRAP should be called BSM-AC (Asphalt Concrete)

NPSR-project CISRAP (7)

Cold **I**n **S**itu **R**ecycling of **A**sphalt **P**avements (CISRAP)

Next phase (duration ± 2 years):

- CISRAP will be based on the BSM (ZA) approach
- A consortium of representatives of contractors will develop a material collecting protocol, a mix design procedure, a structural design procedure and a quality control plan
- A group of road authorities will guide and support the developers
- Use daily projects to test the developed procedures in practice
- Implement ecofriendly products (bio-based bitumen, geopolymers, cement replacements, …) in the CISRAP
- If fundamental research is necessary, cooperate with foreign institutes (e.g. within the ART-activities)

NPSR-project CISRAP (8)

Cold **I**n **S**itu **R**ecycling of **A**sphalt **P**avements (CISRAP)

Thanks for your attention!