



Rijkswaterstaat
*Ministry of Infrastructure
and Water Management*

Rijkswaterstaat

Dutch procurement approach for a more Sustainable Infrastructure

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Rijkswaterstaat's mission

Rijkswaterstaat operates to ensure the Dutch inhabitants have

- protection against flooding
- sufficient clean water
- a smooth and safe transport by road and water
- reliable and useful information
- a sustainable living environment

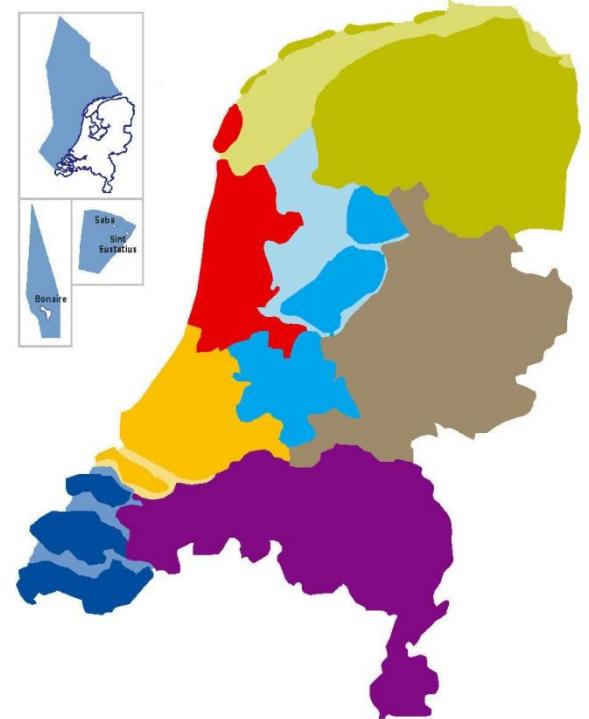
Rijkswaterstaat is fulfilling three social roles: a public-oriented network manager, a leading project manager and an effective crisis manager





Rijkswaterstaat in a nutshell

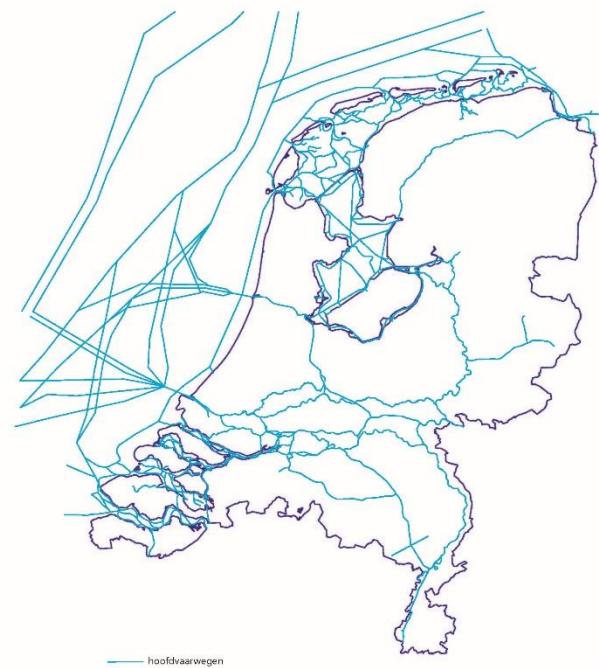
- around 8,800 employees
- 7 regional departments, 16 districts, 4 process departments, 1 department for innovation, 1 department for scope and 1 corporate department
- special departmental agency since 2006
- annual budget: 4.2 billion euro in 2016





Rijkswaterstaat's area of management

Rijkswaterstaat is in charge of three national infrastructure networks





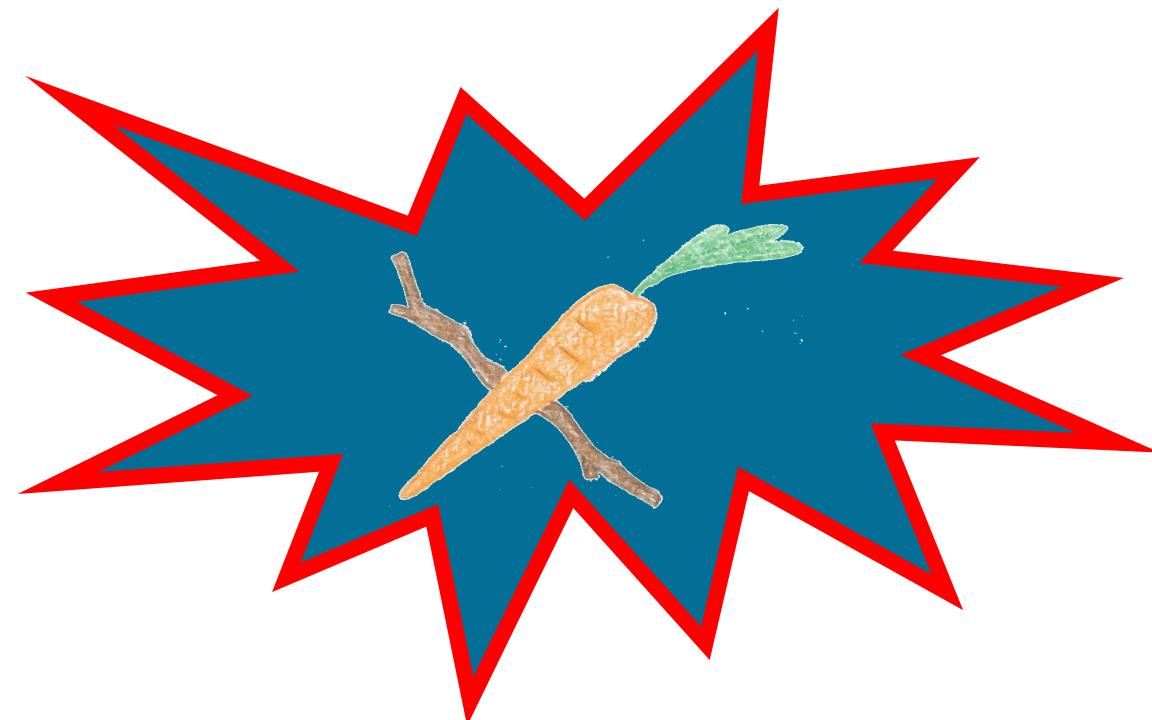
Why Green or Sustainable Procurement?

MAKE SUPPLIERS THINK ABOUT WHAT IS IMPORTANT FOR THE BUYER

Using the procurement process to stimulate our suppliers to deliver different products, use sustainable processes and to deliver extra value

In short: more value for money!

- 1. We want the desired product
but with extra quality aspect**
- 2. Give a reward to innovative companies**





Focus areas for a sustainable living environment





Sustainability goals Rijkswaterstaat

Energie en klimaat



Circulaire economie



Duurzame gebiedsontwikkeling



“Energy Transition”

- 2020: -20% CO2
- 2030 climate neutral infrastructure

“Circular Economy ”

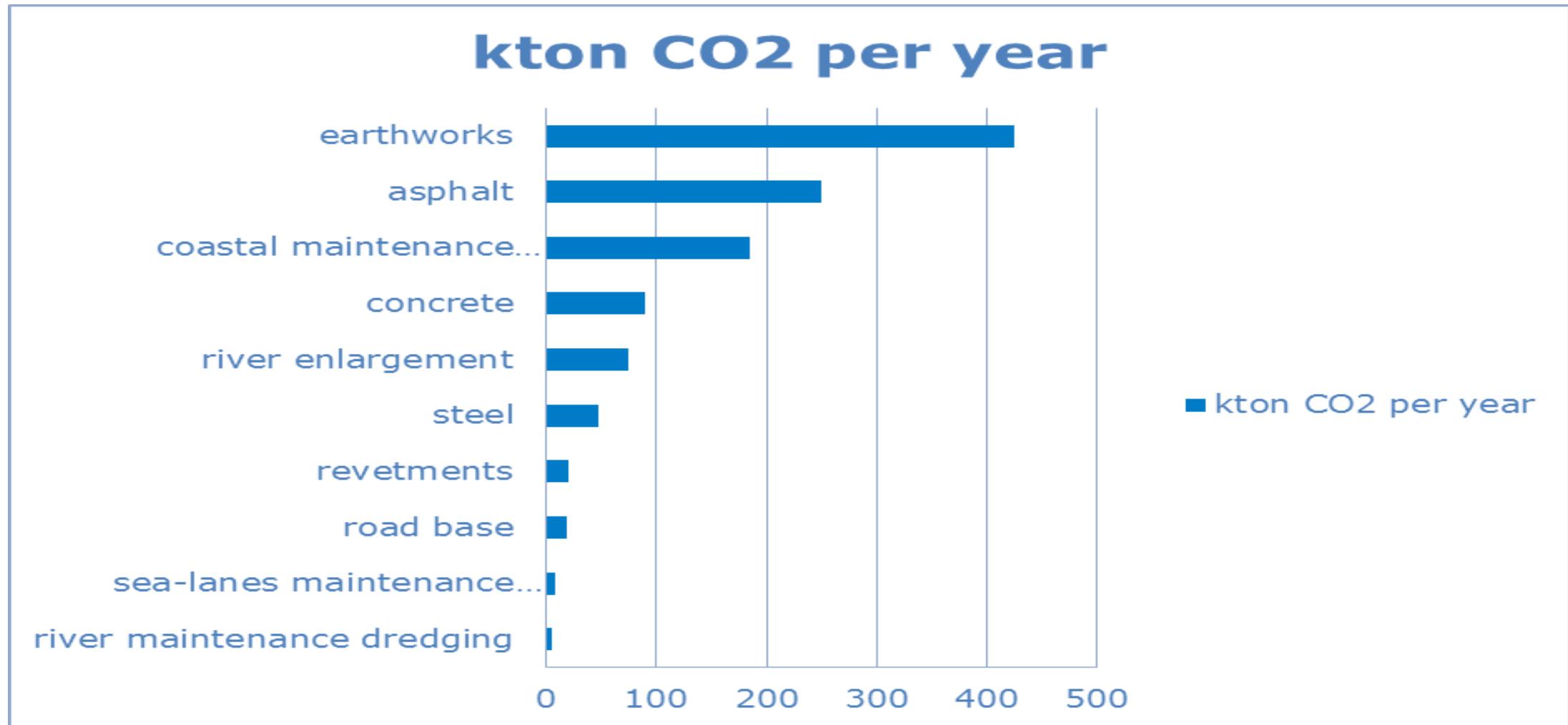
- 2020: ECI value – 20% in RWS projects
- 2030: RWS circular, -50% primary or raw materials
- 2050: Zero waste

“Sustainable development ”

- Integrated solutions for regional challenges*
- Multiple functions, more complex multi-disciplinary projects*
- Co-funded projects will be the standard*



Procurement strategy is important



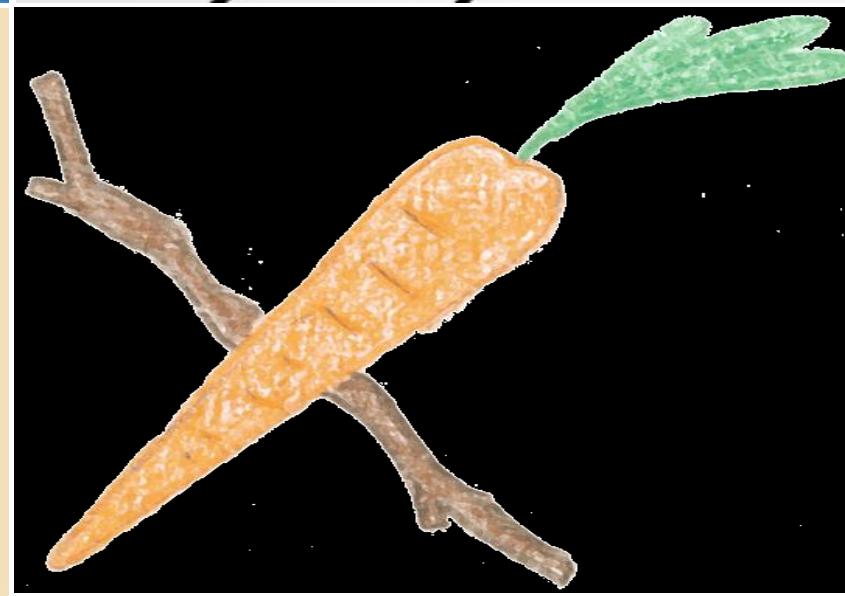


Elements of an effective Procurement strategy

- **Focus on the things that matter (*not as a hobby*)**
 - Choose the right type of purchases
- **Create scale for suppliers**
- **Consistency: improvement takes time**
 - Standardisation in contracting
 - Long term commitment
- **Discuss & develop strategy with valuechain**



Contract specifications, Selection criteria & Awarding criteria





Innovation & Procurement: best friends!

or NOT?

1. Buyer - Client relationship (Procurement)

- in general limited to proven technology
- ***COMPETITION drives & rewards innovation***

2. Cooperative relationship: development of innovation.

- From idea to proven technology

EU guidelines offer new possibilities: innovation partnerships



Cooperation with industry: *asphalt impuls*

Industry and government cooperate for **more and faster innovation**, aimed at **doubling of lifetime, reduction of environmental footprint 50% for the same price or lower**

Examples of activities:

- **National Independent Asphalt Expert-desk**
- **Verifiable technical & environmental quality**
 - Calculation methods, procedures
 - Environmental footprint available as a reference for all standard mixes



Procurement: The theoretical procedure

1. Functional specifications

- **Ideal: no specific technical solutions demanded!!!**

2. All decisions based on Lifecycle Costing and Total cost of Ownership

- **Design, building and maintenance in one contract**

3. Contract specifications

- **Standard in all projects (*NEW for asphalt!!*)**
- **Project specific set of minimal contract specifications (e.g. energy use)**

4. Besides prize, sustainability is an awarding criterion (MEAT)

- **Obligatory tools to be considered: *CO2 ladder* and *DuBoCalc***
- **Optional specifics for project: focus on issues identified in planning phase**



Most Economically Advantageous Tender (=MEAT)

RWS selects tenders on the basis of a combination of price and quality. Quality includes for instance:

- public oriented approach ('less traffic hindrance')**
- sustainability**
- project management**
- design**
- risk management**



Example for procuring HIGHWAYs

- **Fixed specifications for many parts of the road construction**
 - Road layout is political decision
 - Top layer is always very open asphalt
 - Uniformity over the width of the road is Rijkswaterstaat policy
 - Technology is accepted in tenders if quality can be proven
- **What can be varied by the contractor in tender procedures?**
 - the asphalt composition
 - The production process (temperature, sourcing materials, re-use %)
 - Layer thickness in some layers
 - Depending on type of contract we allow the contractor to take risk of innovations (D&C less allowed than in DBFM contracts)



NATIONAL PROGRAM Public –PRIVATE: Standard instruments for use in Tender procedure



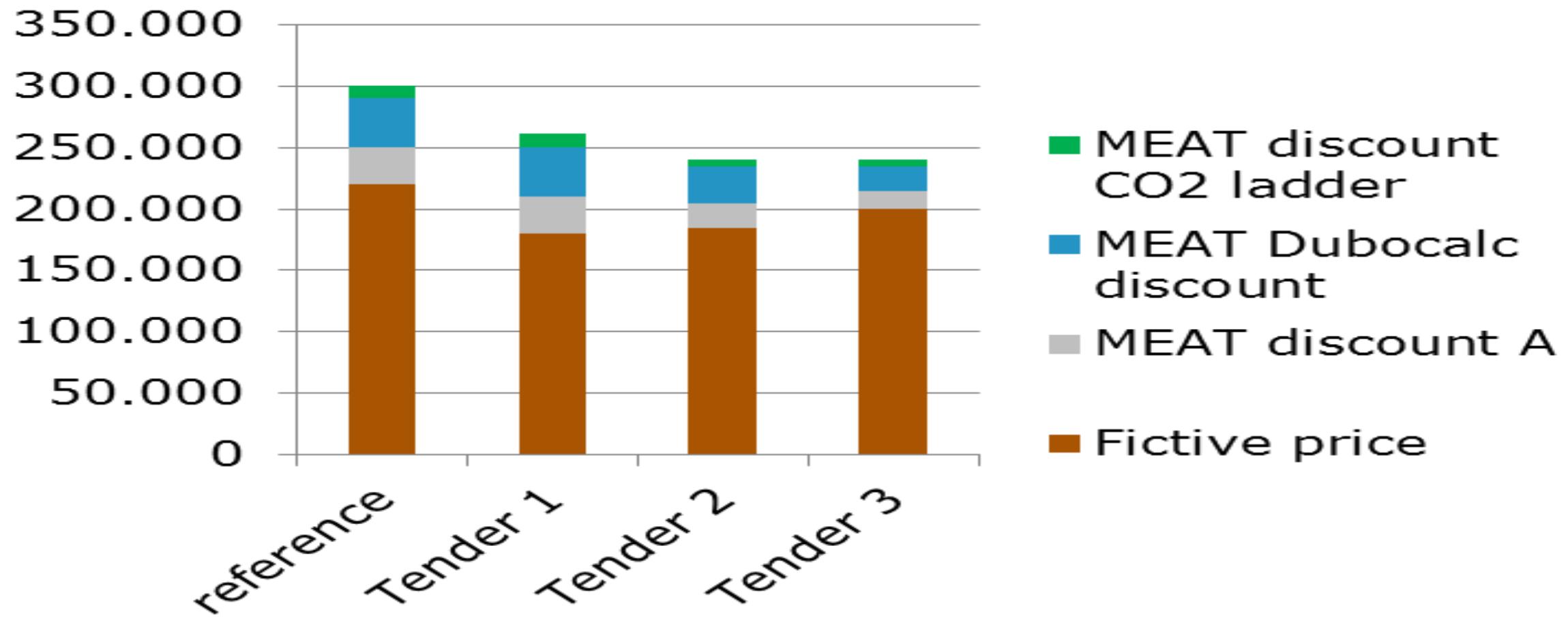


Competition -> Objective comparison of tenders!!



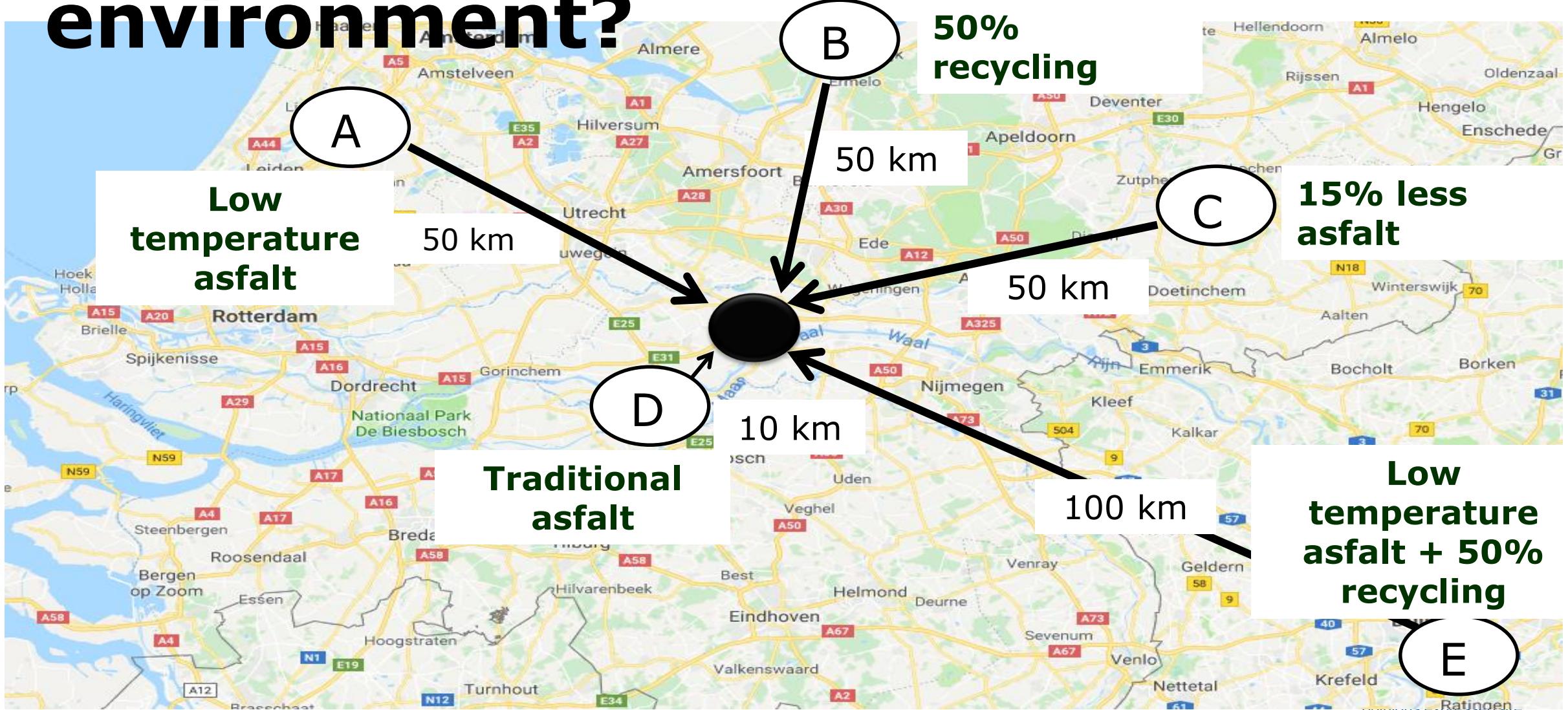


Comparing offers/tenders with reference design





Which asphalt better for environment?



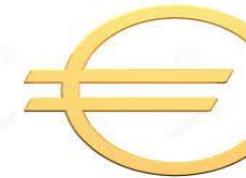


Monetising Environmental impact

- 1. Global warming**
- 2. Ozone layer depletion**
- 3. Human toxicity**
- 4. Fresh water ecotoxicity**
- 5. Marine ecotoxicity**
- 6. Terrestrial ecotoxicity**
- 7. Photochemical oxidation**
- 8. Abiotic depletion**
- 9. Depletion of fossil energy carriers**
- 10. Eutrophication**
- 11. Acidification**

ECI =

Environmental
Cost
Indicator



LOW = good

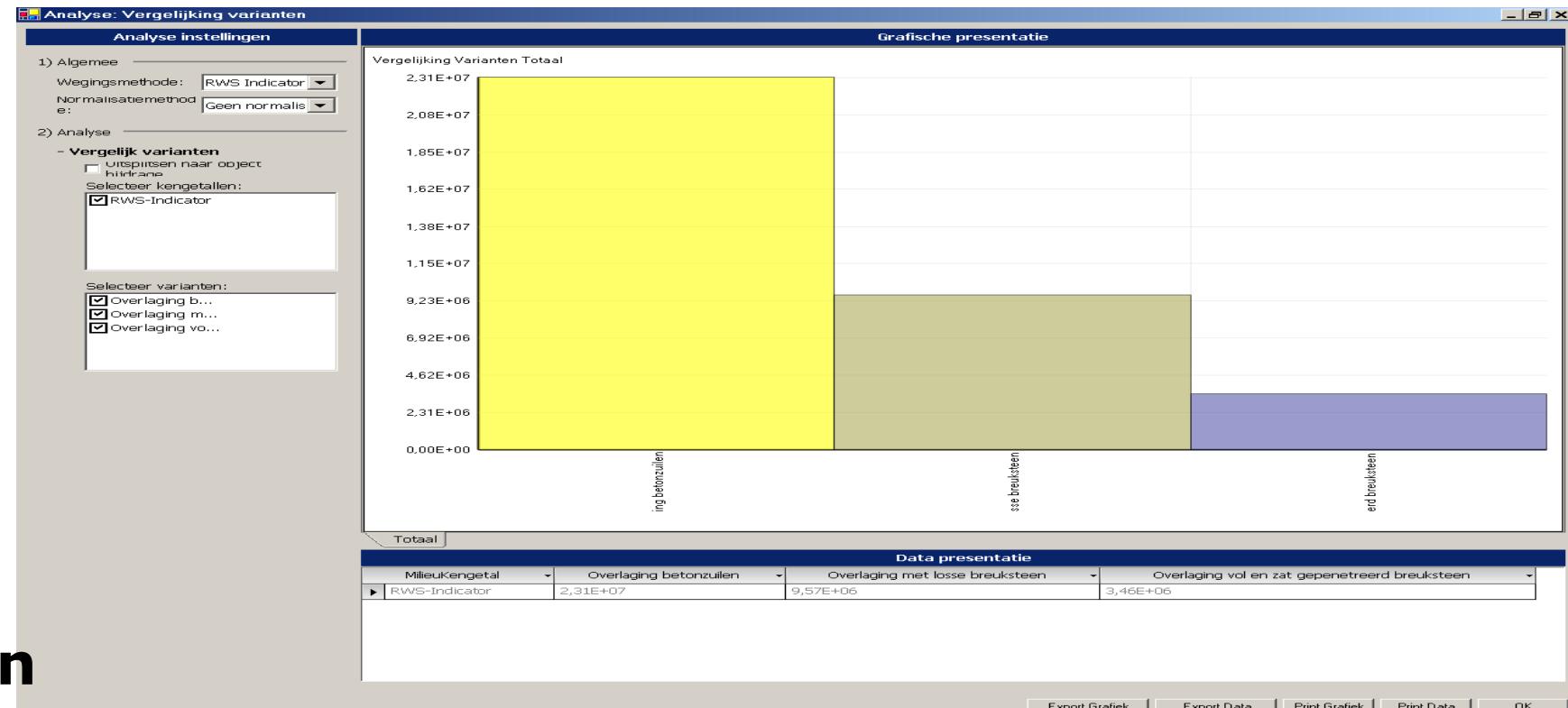


Comparing Designs: Environmental Cost Indicator (ECI)

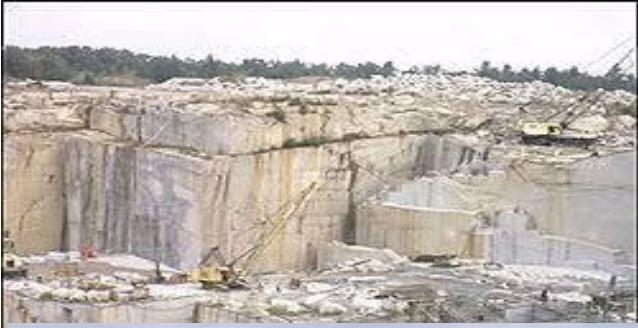


Design

- Materials
- Energy use
- Energy production
- (Building) Process
- Logistics



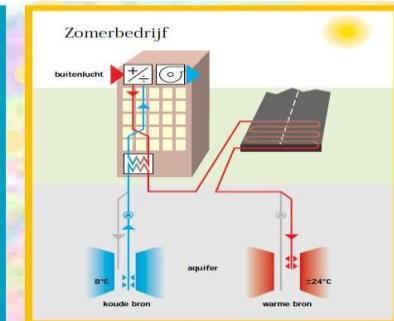
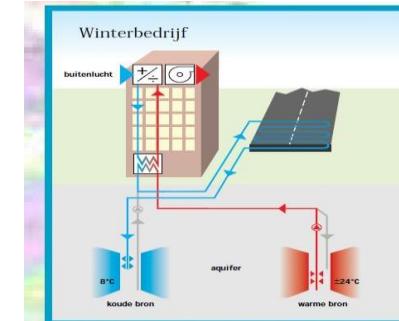
Upstream:
The supplychain



Scope 1 and 2
The road authority



Downstream:
Traffic
Energy production





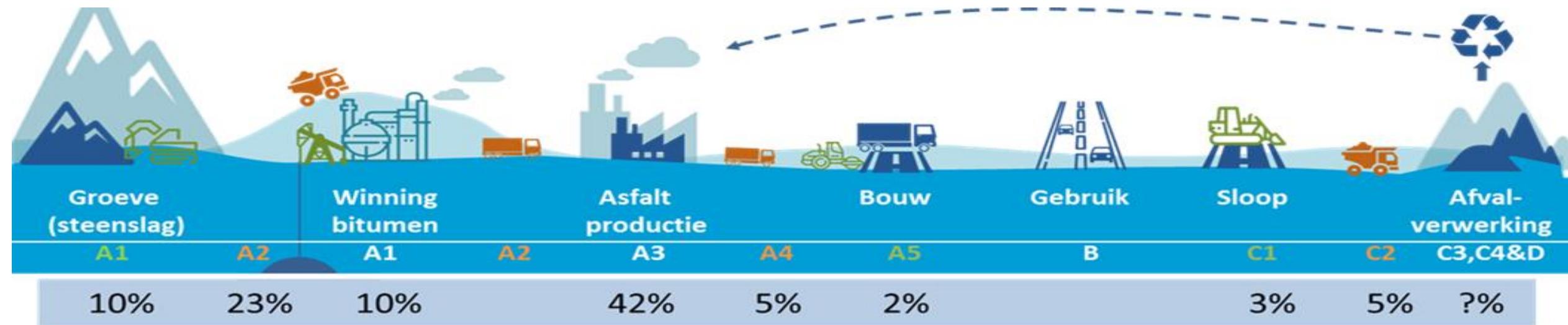
- **Sustainability in construction:**
- **Life Cycle Analysis NEN-EN15804**

Life cycle stages			Product			Construction		Use stage							End-of-life				Benefits and loads beyond the system boundary
Modules		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		
Type of EPD	Raw material supply	Transport	Manufacturing	Transport	Construction	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Demolition	Transport	Waste processing	Disposal	D		
	Cradle to Gate ¹	M	M	M														Reuse / Recovery / Recycling potential	
	Cradle to Gate with option(s) ^{2,4}	M	M	M	O	O	O	O	O	O	O	O	O	O	O	O	O	O	
Key		M mandatory			O optional														
Notes		¹ for a declared unit			² for a declared unit or functional unit														
		³ for a functional unit			⁴ Reference Service Life to be included only if all scenarios are included														





Asphalt: Carbon emission in supply chain





NEN 15804 - Environmental Costs Indicator

Environmental impact categories	Equivalent unit	Weighing factors [€ / kg equivalent]
Depletion of abiotic resources (excluding fossil fuels) – ADP	Sb eq	€ 0.16
Depletion fossil fuels – ADP	Sb eq ⁶	€ 0.16
Global warming – GWP 100 j.	CO ₂ eq	€ 0.05
Depletion ozone layer – ODP	CFK-11 eq	€ 30
Photochemical oxidant creation – POCP	C ₂ H ₄ eq	€ 2
Acidification – AP	SO ₂ eq	€ 4
Eutrophication – EP	PO ₄ eq	€ 9
Human toxicity – HTP	1,4-DCB eq	€ 0.09
Fresh water aquatic eco toxicity – FAETP	1,4-DCB eq	€ 0.03
Marine aquatic eco toxicity - MAETP	1,4-DCB eq	€ 0.0001
Terrestrial eco toxicity – TETP	1,4-DCB eq	€ 0.06



Calculation in DuboCalc: the availability of data

Three levels of data quality:

Category 1 : product-specific (producer/brands), validated

Category 2 data: branche avarage (no brands), validated

**Category 3 data: branche avarage (no brands), NOT validated.
When used the values are increased with 30%**



Using DuboCalc (ECI values)

- 1) As a minimum performance requirement (expressed in max ECI value) NEW *for asphalt***

- 2) As an awarding criterion. The bidder with the lowest ECI (the most sustainable design) is best valued.**

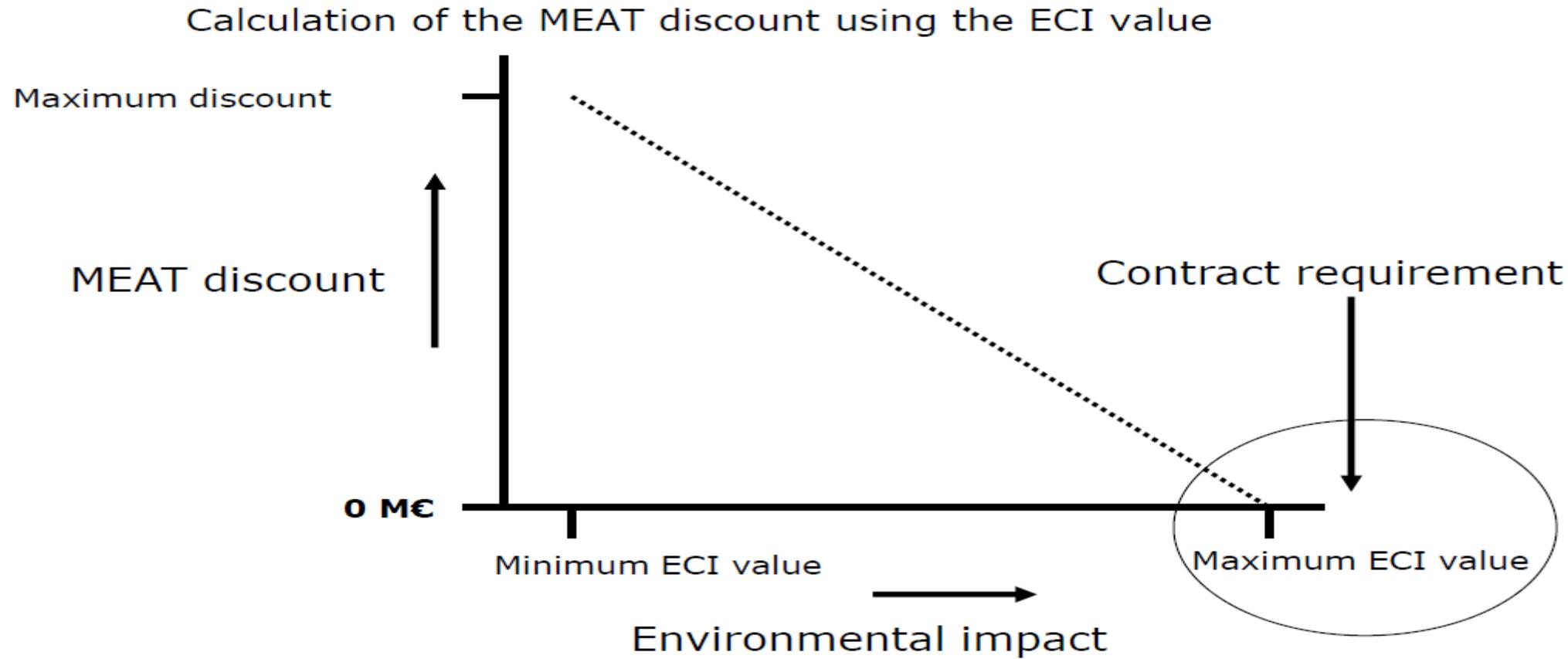
- 3) As a process requirement: optimizing during the design process**

- 4) As a optimizing design tool and verification tool**

No “design” options => do not use DuboCalc!!

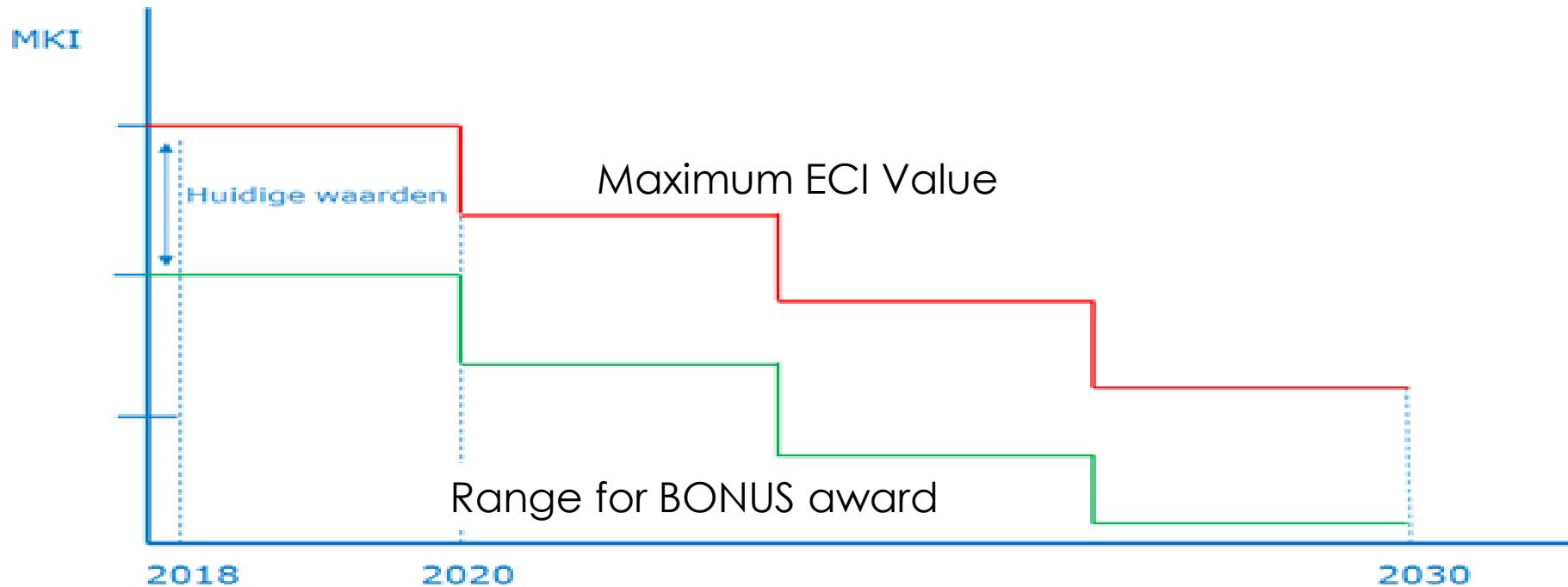


IN TENDER DOCUMENTS: awarding criterium defined



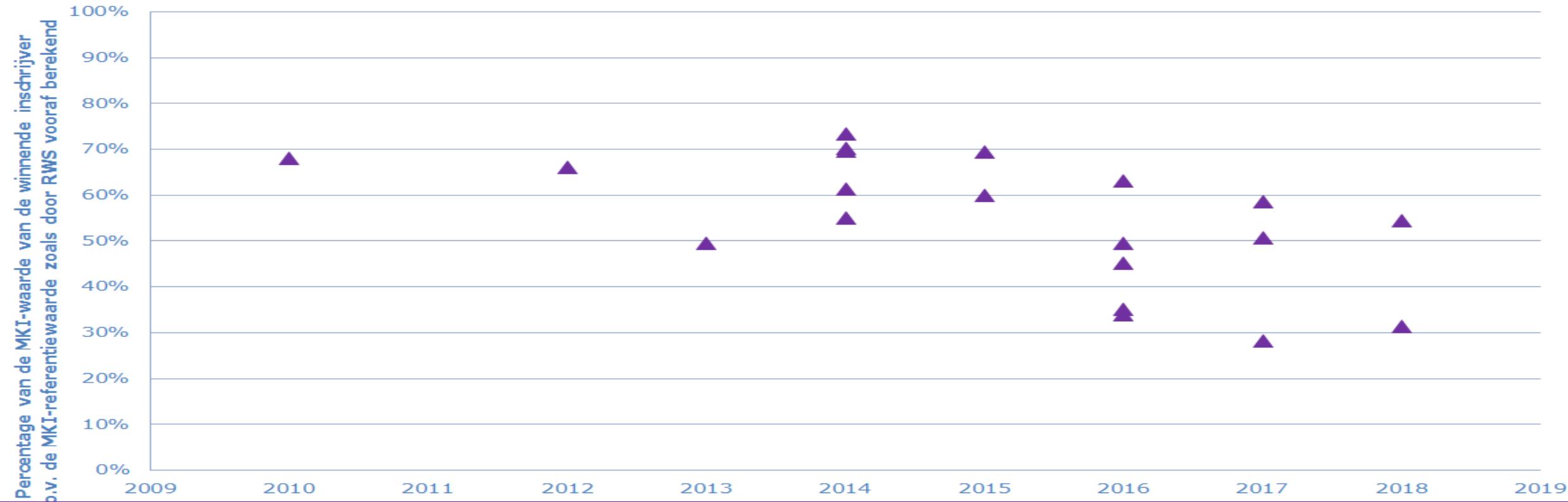


Long term strategy for procurement of Asphalt roads





Quality incentives ARE effective and effect improves with time



Explanation:

- 100% is ECI of reference design
- triangle represents ECI value of awarded contract





The CO₂ Performance Ladder is...

- **A *carbon management system* with 5 levels of certification**
- **A *procurement system* which allows the certificate to be used as proof of project delivery during execution of projects**
 - **Extra effort is rewarded: a higher score on the ladder means a higher advantage in the tendering process**
 - **Fully compatible with European regulations and the Public Procurement (Tendering Rules) Directive.**



The CO₂PL for organisations

Angle:

- A = Insight
- B = Reduction
- C = Transparency
- D = Participation





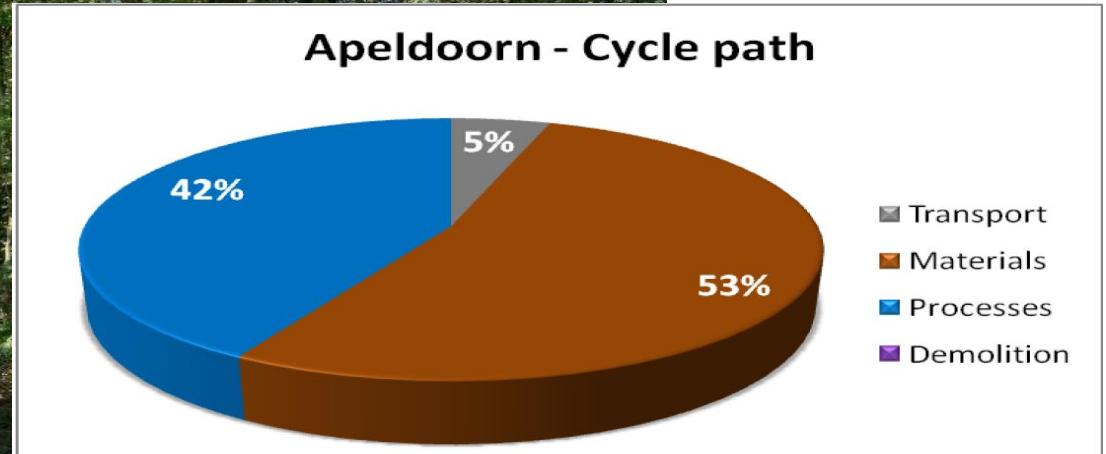
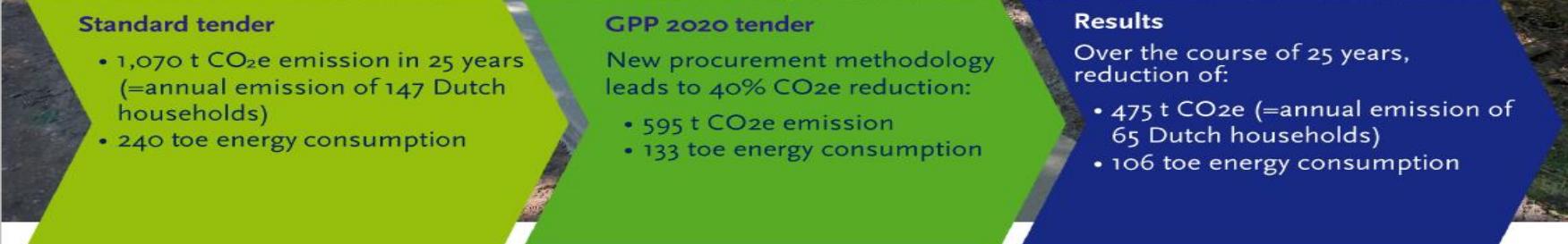
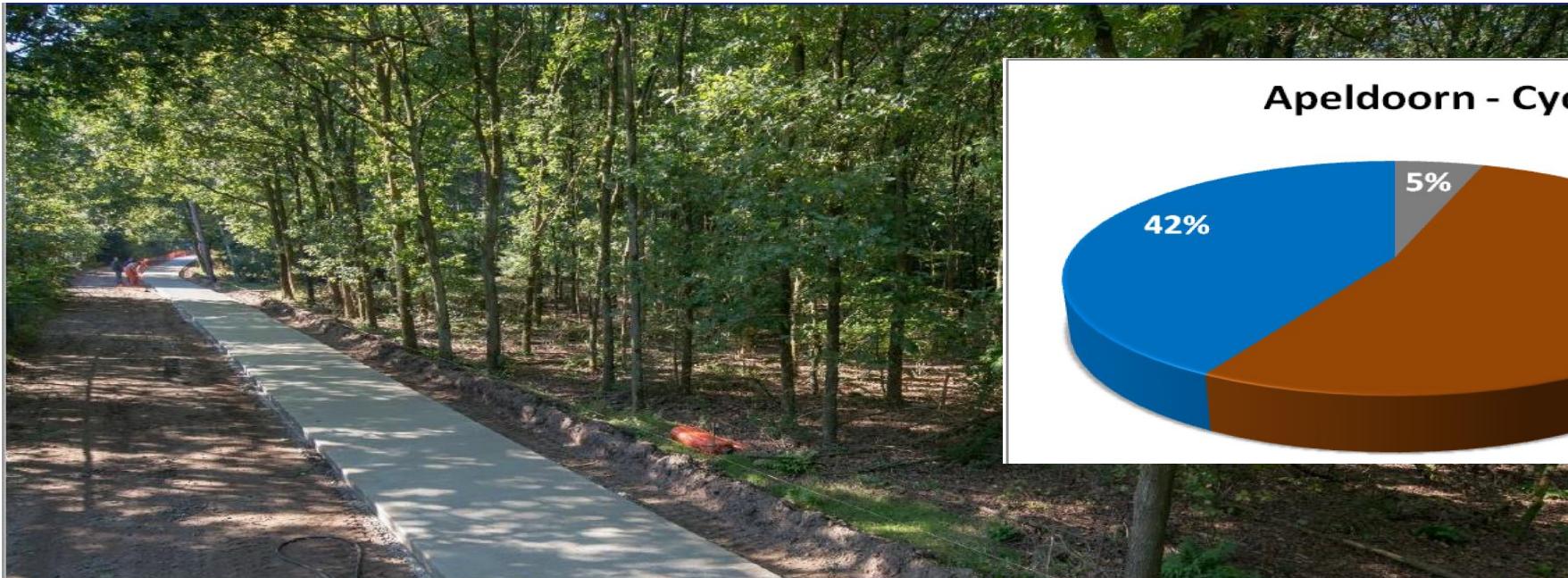
Current state of affairs and results

- **900 certificates (thousands of companies)**
Over 60% is SME, many national and local governmental agencies are now certifying
- **Over 100 (public) commissioning parties**
- **The Ladder transformed the “conservative” Dutch infrastructure sector**
- **Almost all organisations working in infrastructure have:**
 - **Implemented a carbon management system**
 - **A carbon footprint**
 - **CO₂ reduction targets**
- **First results in CO₂ reduction are very promising (PhD research: 3,2%/year, $\mu=1,5\%$)**

Belgium is implementing now!

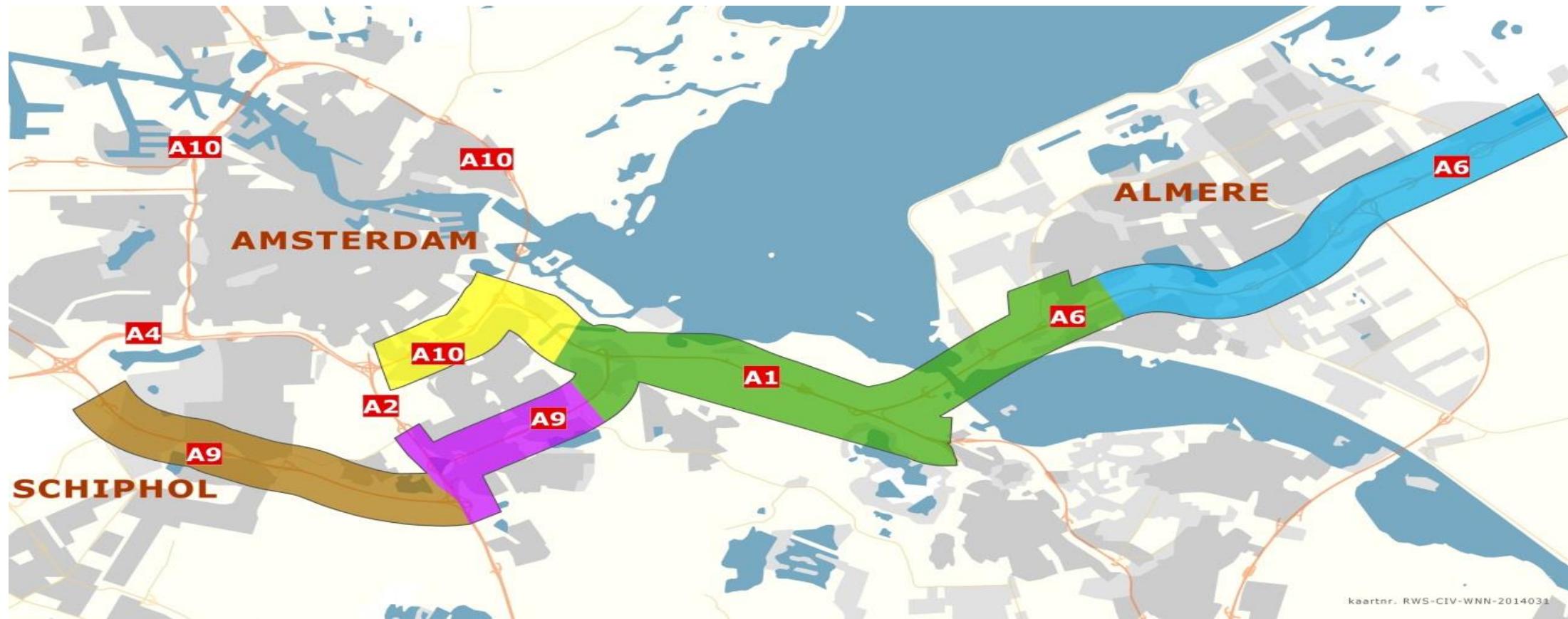


Municipality of Apeldoorn for 9.3 km bicycle path construction





Very large project in NL





Procura+ award
for '*Best tender procedure of 2016*'
Project A6 Almere

- Smart transportation solutions
- Use of recycled materials
- Smart use of asphalt
- Energy neutral



Reduction of 52.800 ton CO2/Energy reduction 15.048 toe





Wishlist in general

- **More sustainable materials and design**
- **Circular economy: re-use (construction, modules, material)**
- **Electrification + using green power**
- **Sustainable fuels when electrification is not possible**
- **Energy production integrated in design**



Conclusions

Cooperation is essential to achieve our common goals.

Procurement is very cost effective & low risk for Public buyers and our suppliers.