



Hrvatsko asfaltno društvo

Croatian asphalt association

*Dutch procurement approach for a
more sustainable Infrastructure*

*Pristup nabavi u Nizozemskoj za
održiviju infrastrukturu*

Harald Versteeg

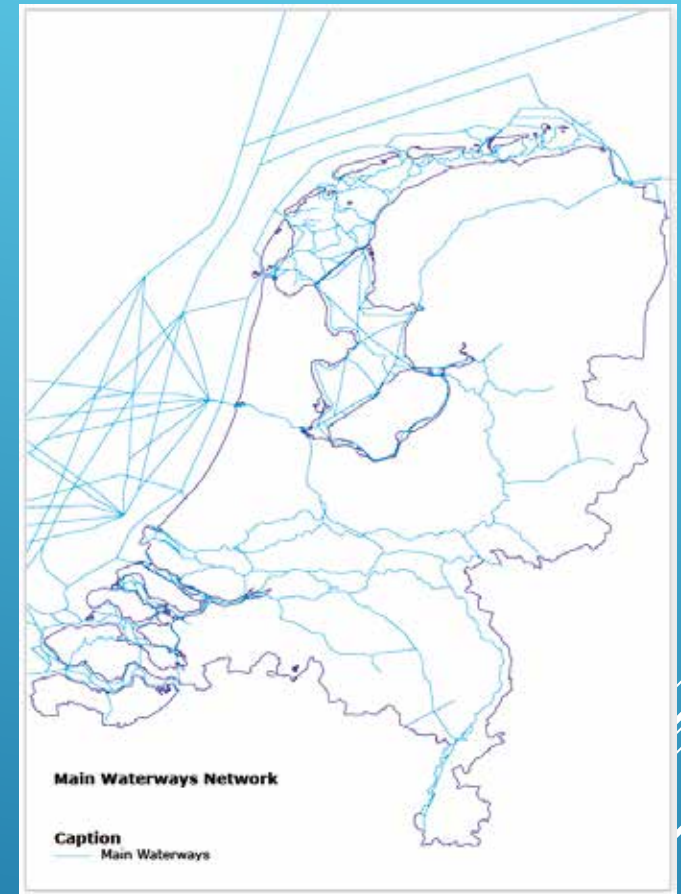
Ministry of Infrastructure and Watermanagement

Međunarodni seminar ASFALJNI KOLNICI 2019

International seminar ASPHALT PAVEMENTS 2019

Opatija, 04.-05. 04. 2019.

Rijkswaterstaat is executive Agency of the Ministry of Infrastructure and Watermanagement

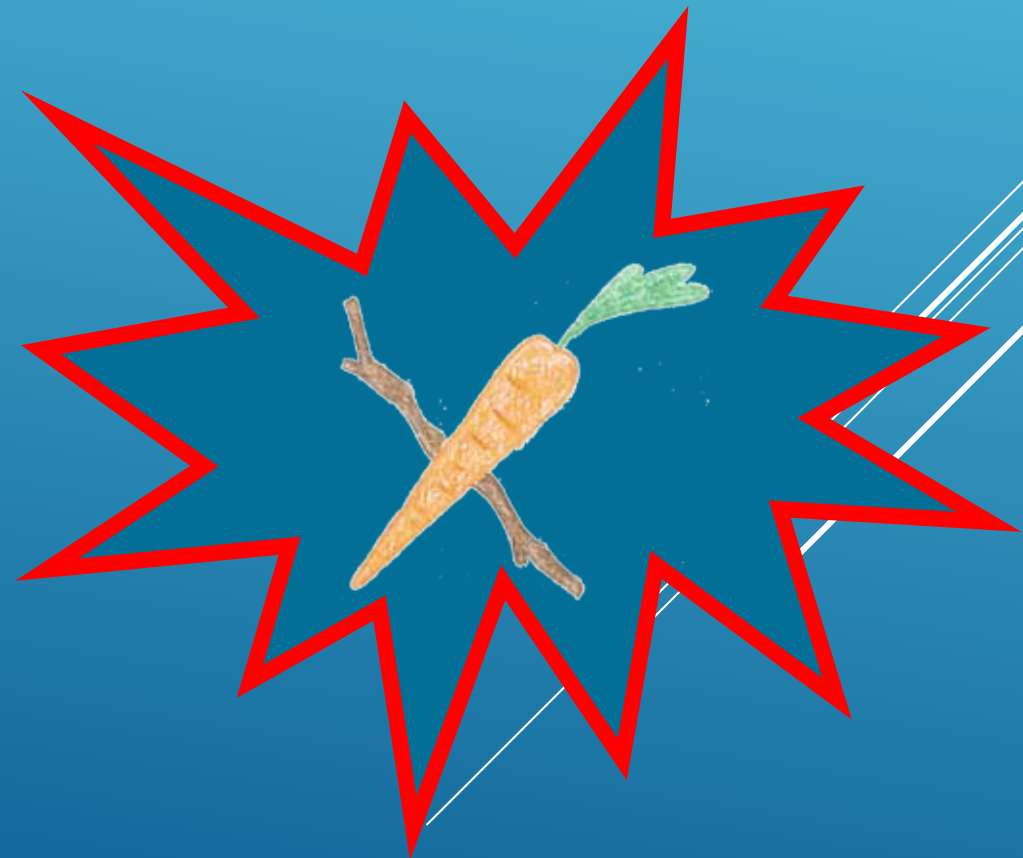


WHY GREEN OR SUSTAINABLE PROCUREMENT?

Using the procurement process to stimulate our suppliers to deliver different products, use of more 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



Sustainability goals Rijkswaterstaat



"Energy Transition"

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

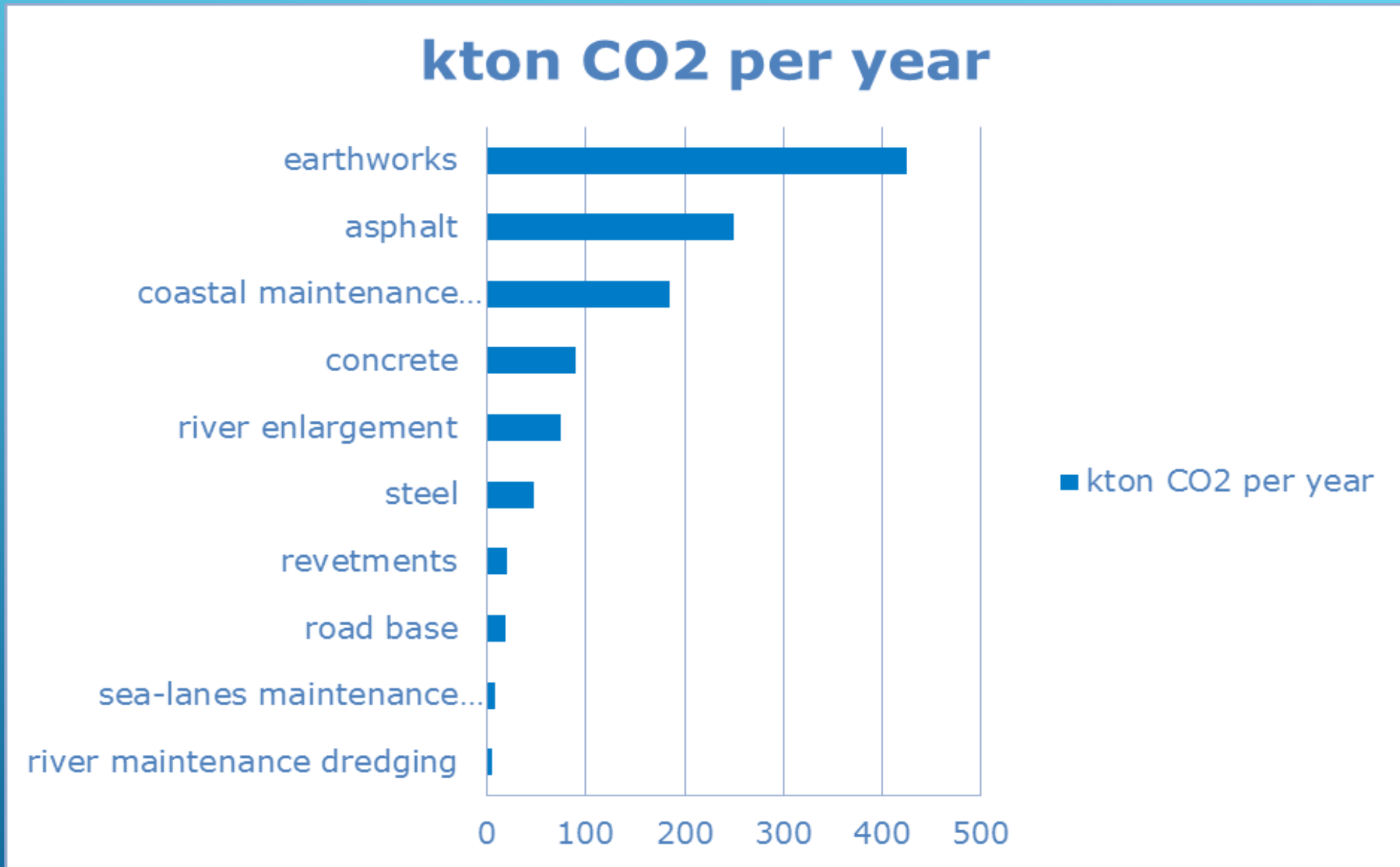
"Circular Economy "

- 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



Total: 1122 kton CO₂/y

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

ELEMENTS OF AN EFFECTIVE STRATEGY

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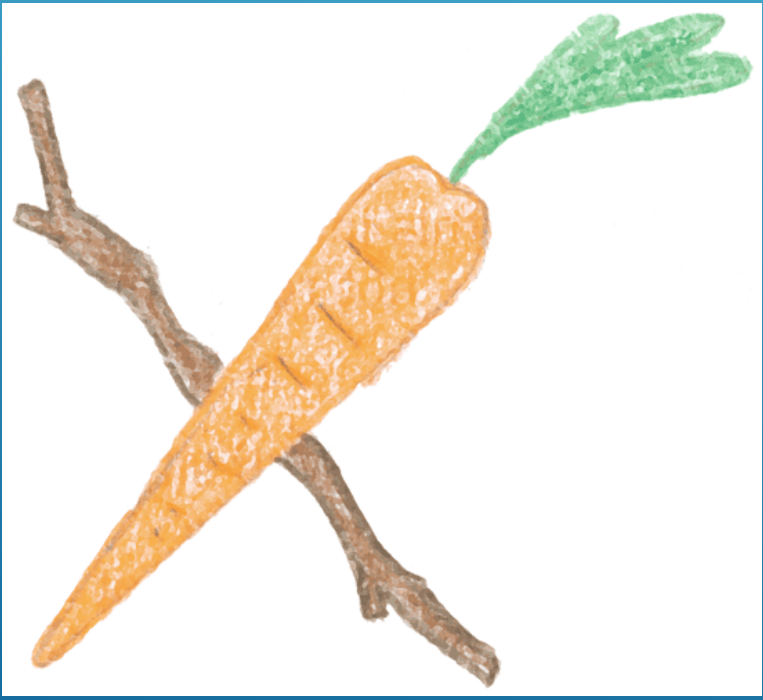
WORK IN PROGRESS: ASPHALT IMPULS

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
 - „ for validation of claimed properties of innovative measures/ products
- „ Verifiable technical & environmental quality
 - „ Calculation methods, procedures
 - „ Environmental footprint available as a reference for all standard mixes

CONTRACT SPECIFICATIONS, SELECTION CRITERIA & AWARDING CRITERIA



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: focus on issues identified in planning phase

NATIONAL PROGRAM PUBLIC –PRIVATE: TWO INSTRUMENTS FOR USE IN TENDER PROCEDURE

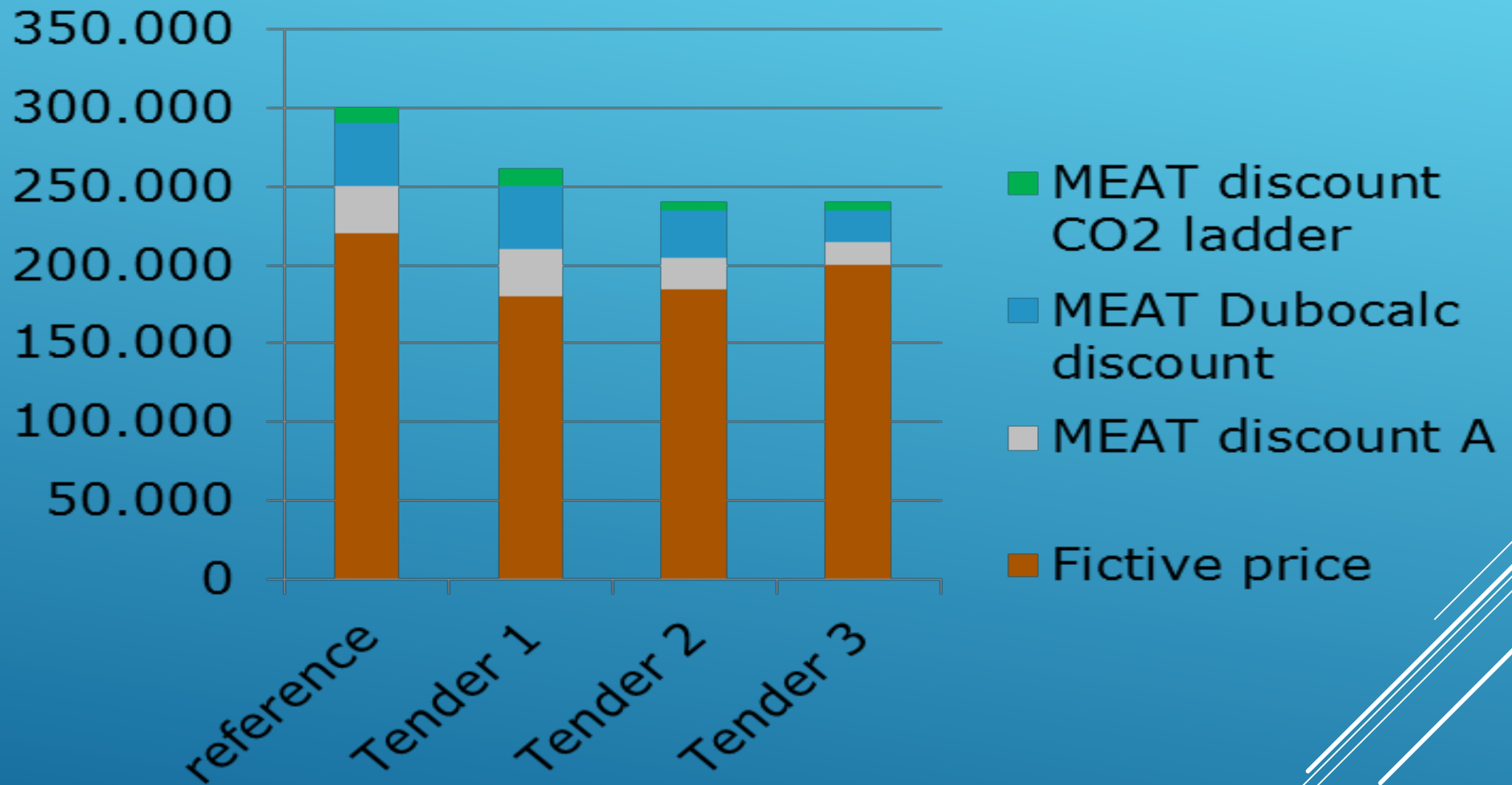


EXAMPLE FOR PROCURING HIGHWAYS

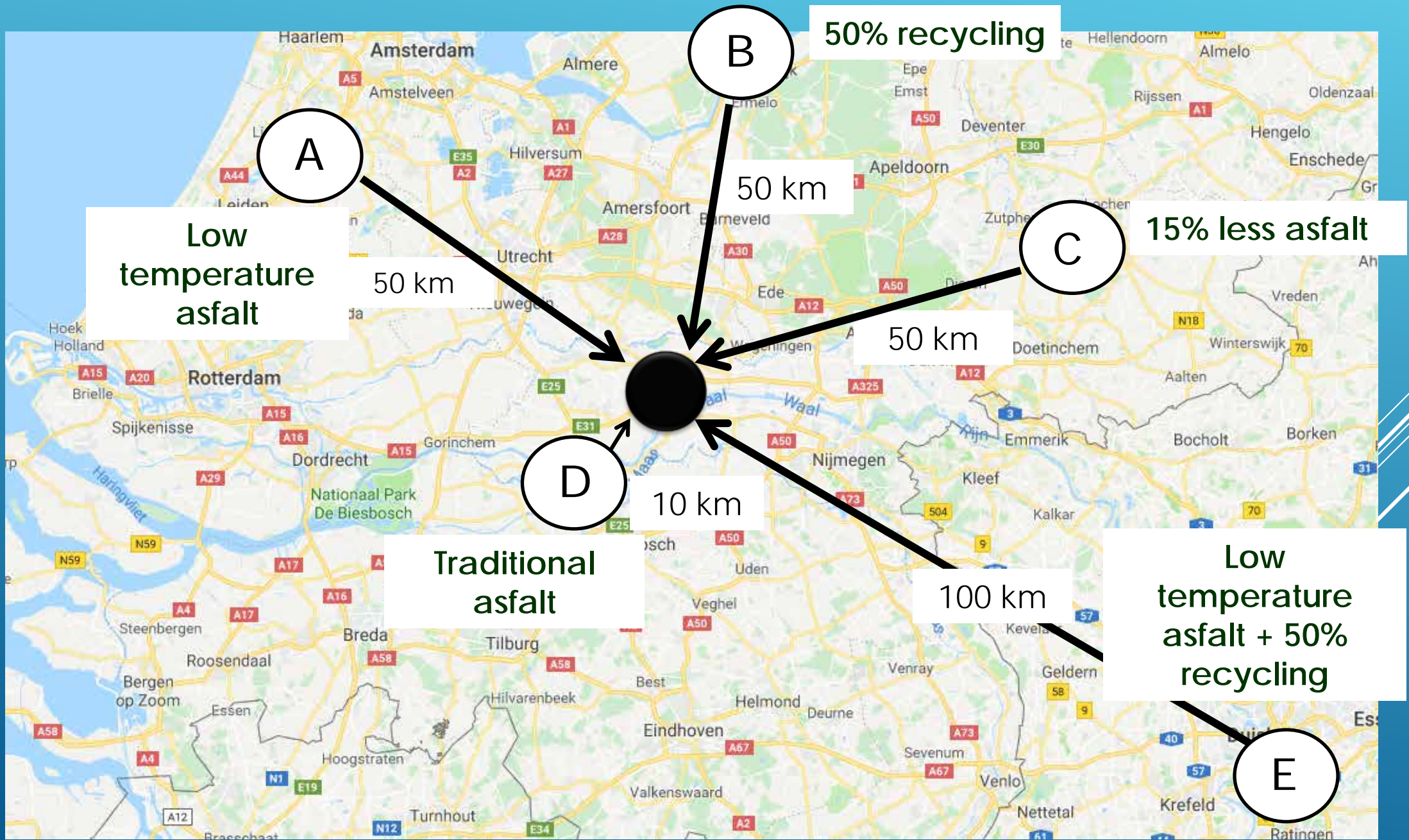
- „ Fixed specifications for many parts of the road construction
 - Road layout is political decision
 - Top layer is always very open asphalt
 - Uniformity over the width of the road is Rijkswaterstaat policy
 - Technology is accepted in tenders if quality can be proven

- „ 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)

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

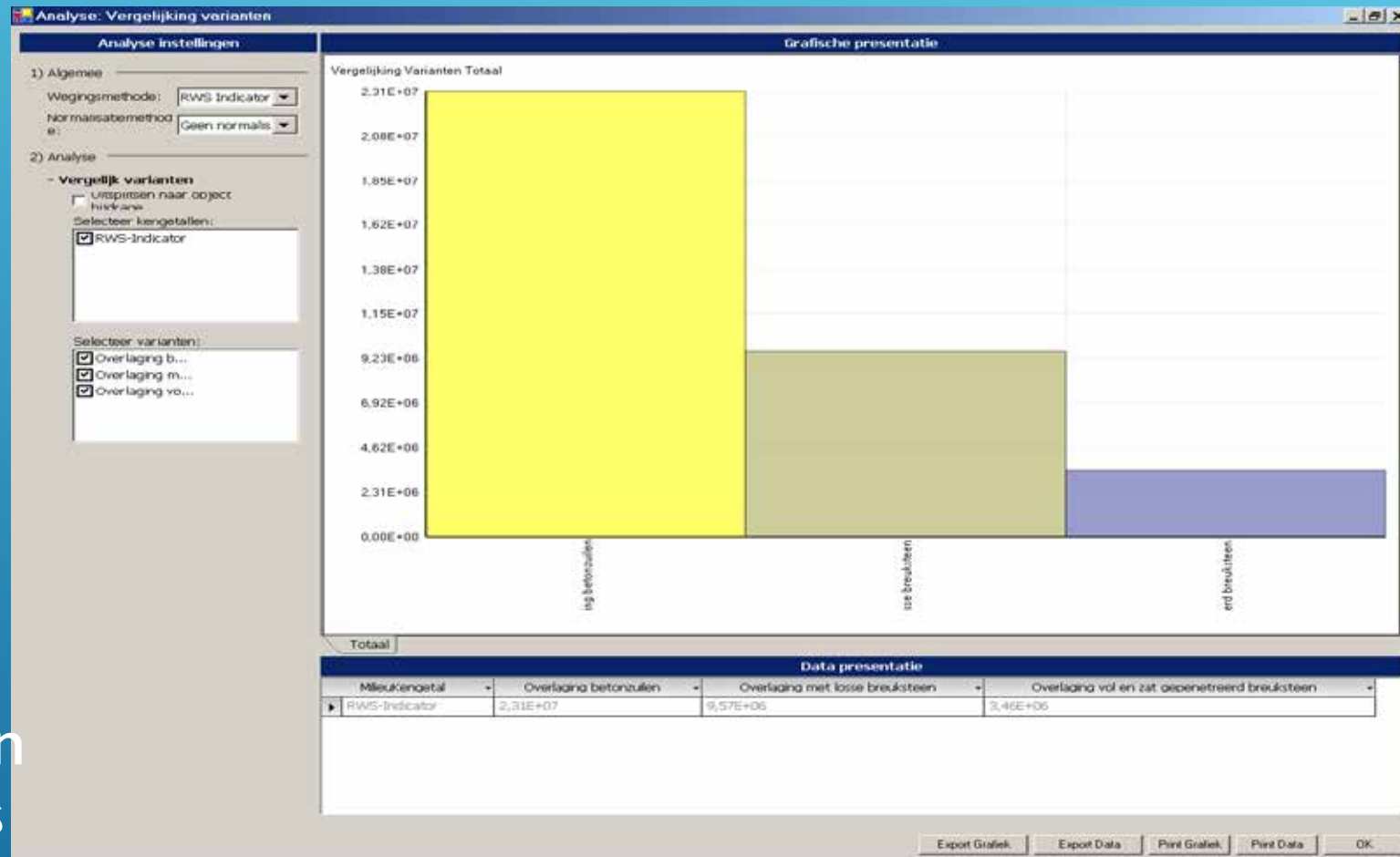
Ø Materials

Ø Energy use

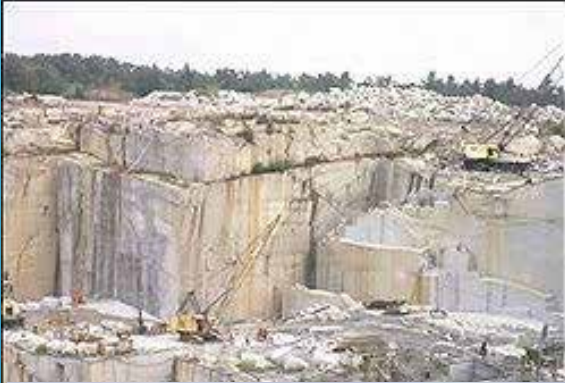
Ø Energy production

Ø (Building) Process

Ø Logistics



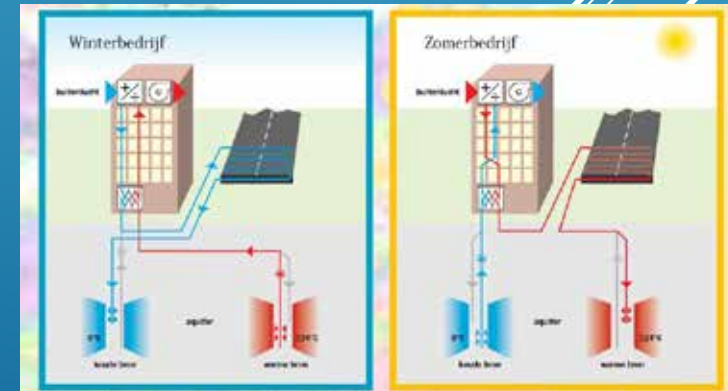
Upstream:
The supplychain



Scope 1 and 2
The road authority



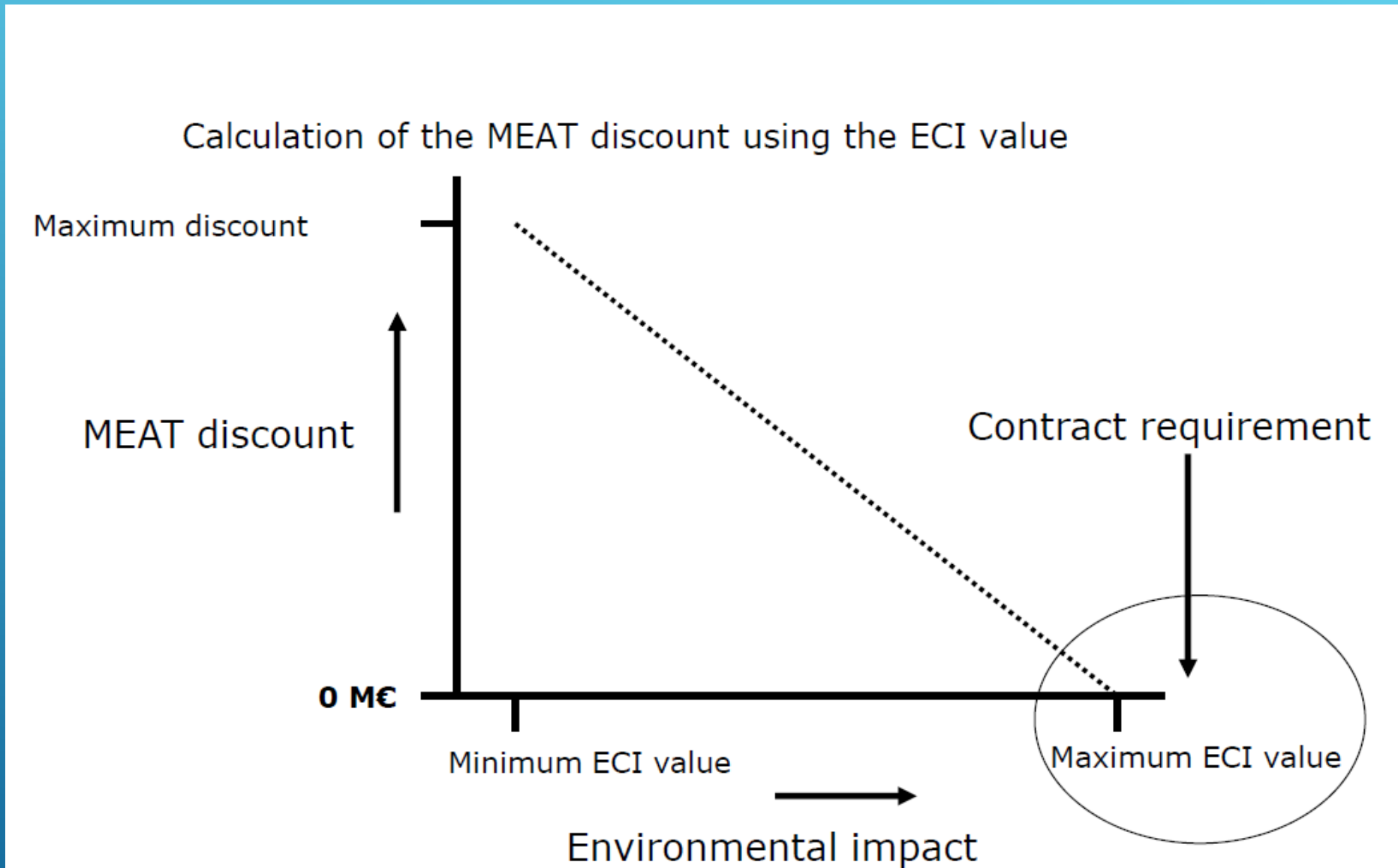
Downstream:
Traffic
Energy production



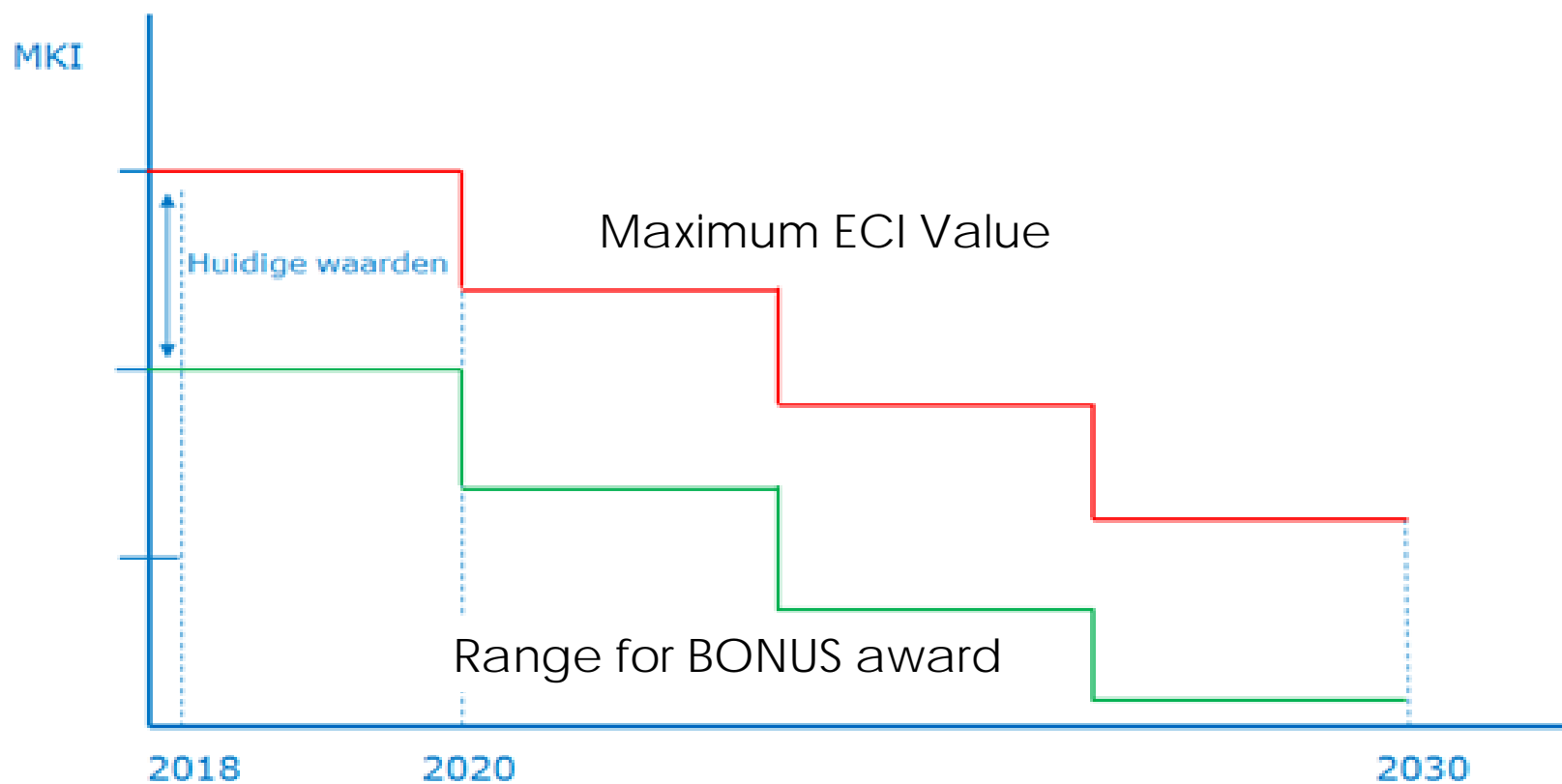
NEN 15804 - ENVIRONMENTAL COSTS INDICATOR

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

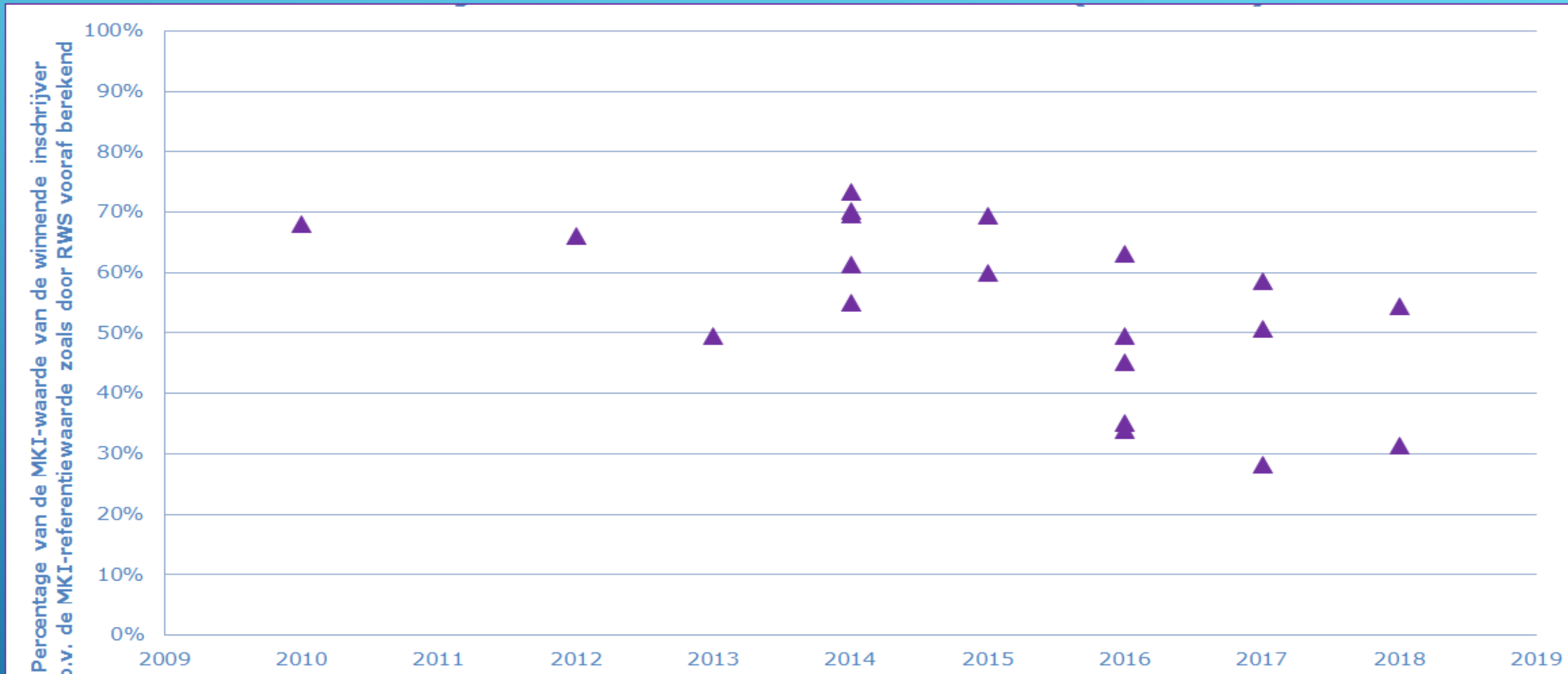
IN TENDER DOCUMENTS: awarding criterium defined



Long term strategy for procurement of Asphalt roads



QUALITY INCENTIVES ARE EFFECTIVE AND EFFECT IMPROVES IN TIME



Explanation:

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



„ Carbon ladder certificate - the movie

THE CO₂ PERFORMANCE LADDER IS...

- „ A carbon management system with 5 levels of certification

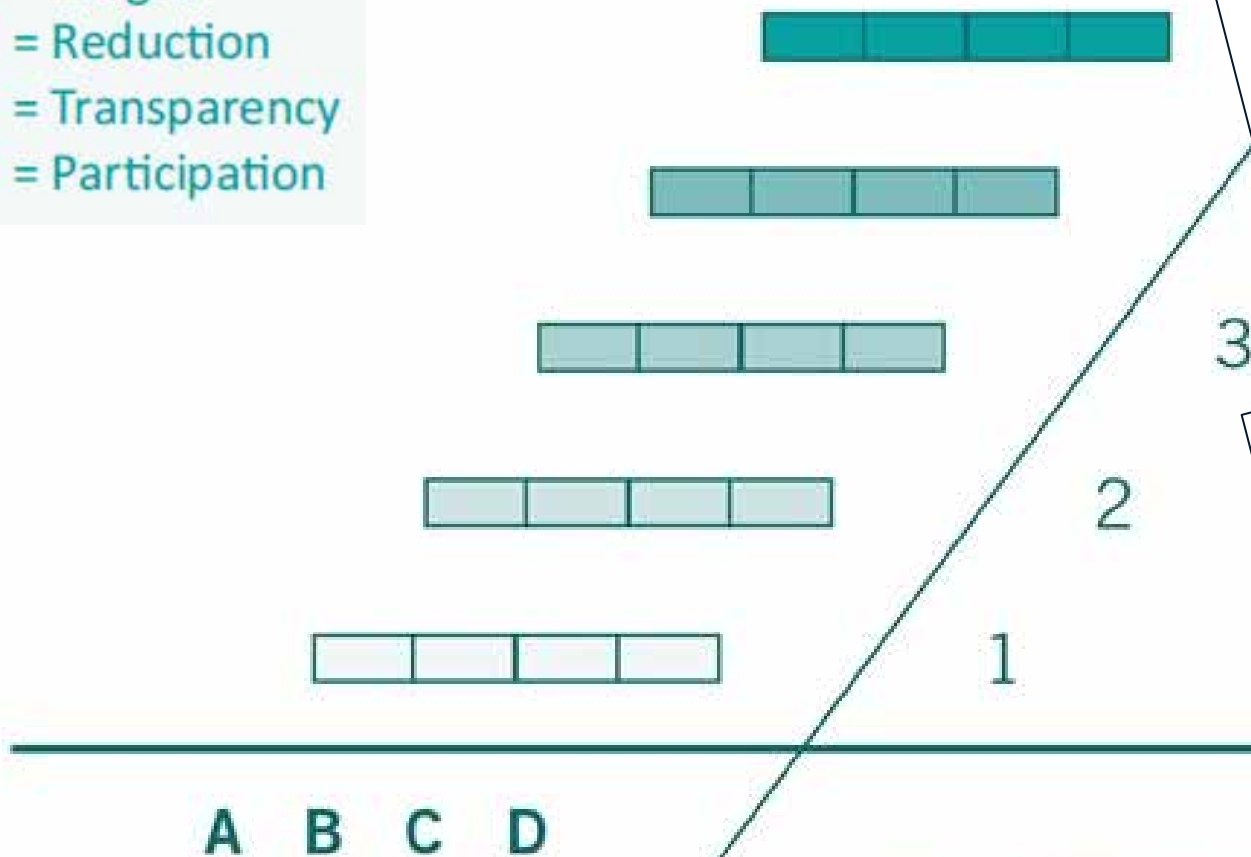
- „ A procurement system which allows the certificate to be used as proof of project delivery during execution of projects
 - „ Extra effort is rewarded: a higher score on the ladder means a higher advantage in the tendering process

 - „ 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



Reduction in value chain + sector (scope 3; upstream, downstream)

Reduction within company (scope 1 & 2)

CO₂-Performanceladder

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

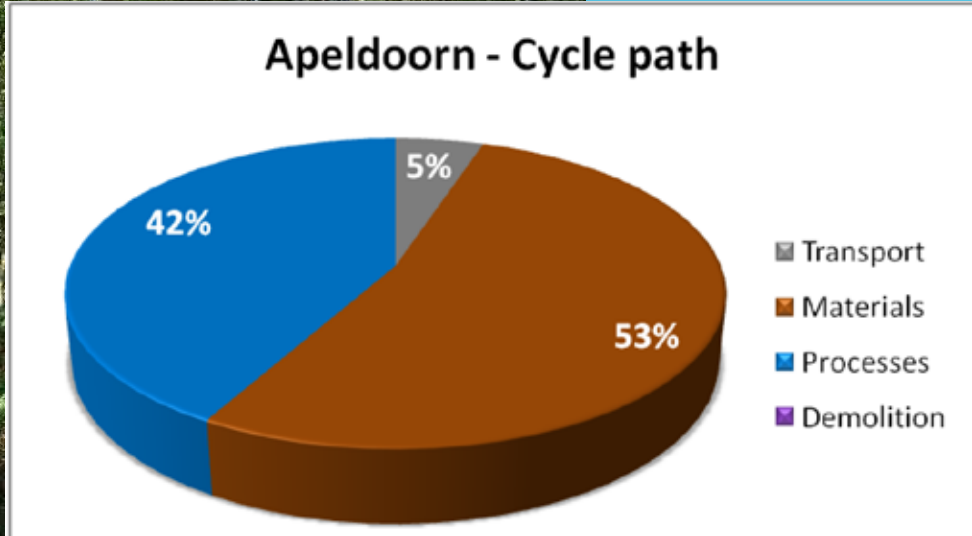
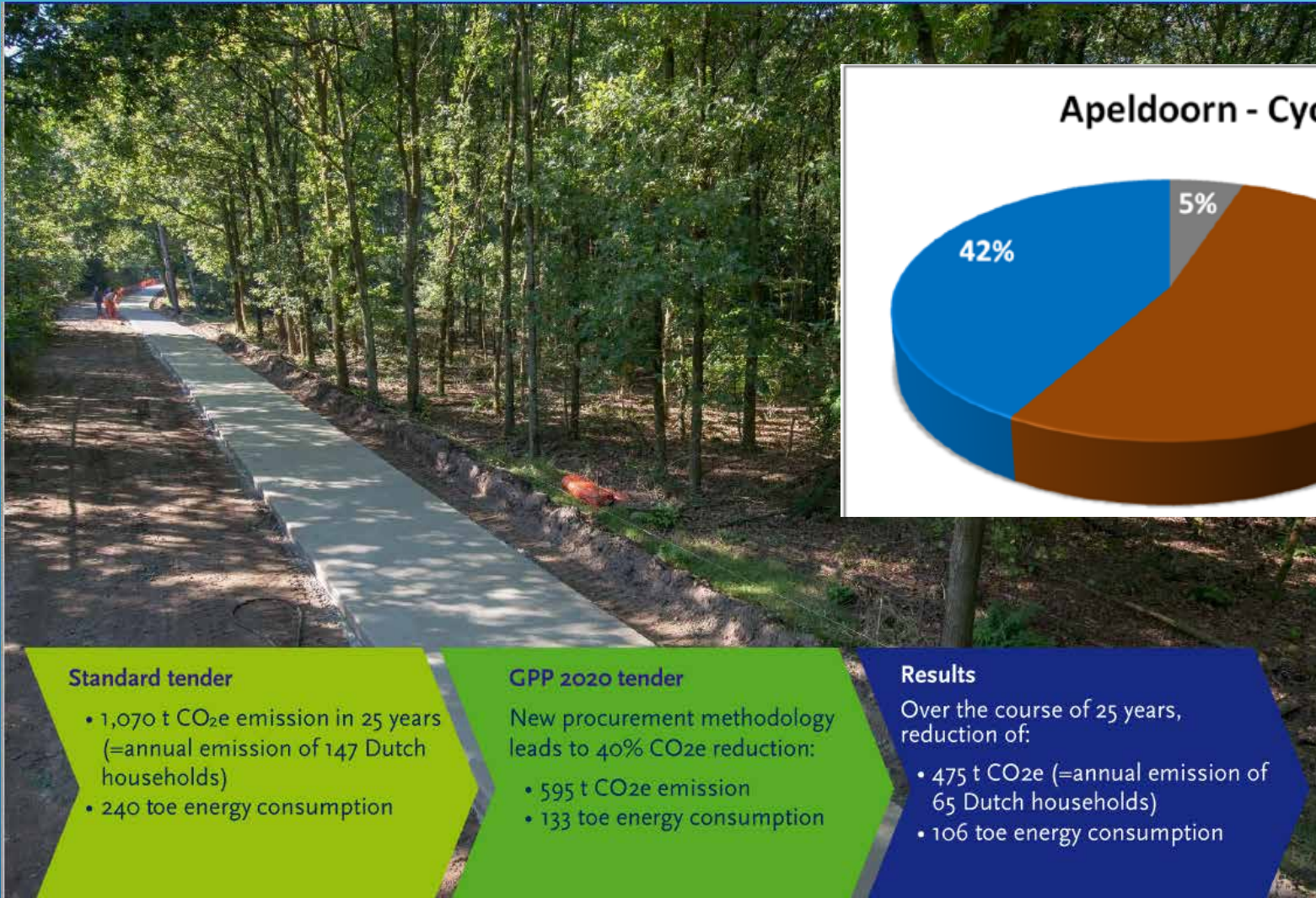
„ A carbon footprint

„ CO₂ reduction targets

„ First results in CO₂ reduction are very promising
(PhD research: 3,2%/year, $\mu=1,5\%$)



MUNICIPALITY OF APELDOORN FOR 9.3 KM BICYCLE PATH CONSTRUCTION



Standard tender

- 1,070 t CO₂e emission in 25 years (=annual emission of 147 Dutch households)
- 240 toe energy consumption

GPP 2020 tender

New procurement methodology leads to 40% CO₂e reduction:

- 595 t CO₂e emission
- 133 toe energy consumption

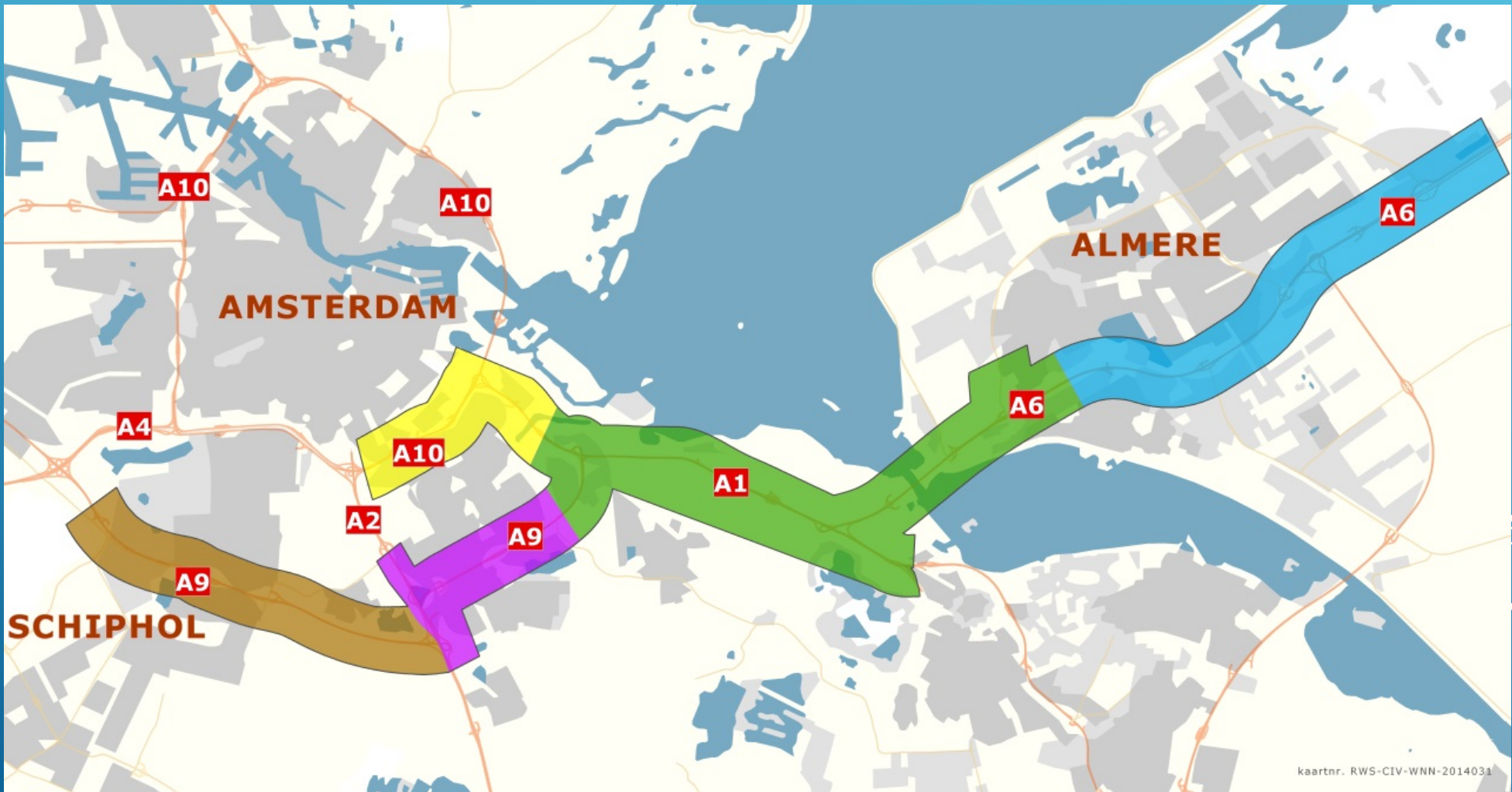
Results

Over the course of 25 years, reduction of:

- 475 t CO₂e (=annual emission of 65 Dutch households)
- 106 toe energy consumption

www.gpp2020.eu

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



WISHLIST IN GENERAL

- „ More sustainable materials and design
 - „ Circular economy: re-use
 - „ Electrification + using green power
 - „ Sustainable fuels when electrification is not possible
 - „ Energy production integrated in design
- 

WISH LIST FOR ASPHALT

- „ **Decreasing ECI value** for road construction including asphalt
 - q >90% re-use for all layers – **circular economy**
 - q Low temperature
 - q ..
- „ **Decreasing lifecycle costs** for roads & asphalt
- „ Practical way to include **effect on traffic emissions** in ECI calculations
- „ Continued cooperation with industry (in the Netherlands very well organised)
 - q On Quality assurance
 - q On developing and validating new technology
 - q On the ambition and speed of change that is possible
 - q On the use of award criteria and the size of the incentives necessary to stimulate change

CONCLUSIONS

Cooperation is essential to achieve our common goals.

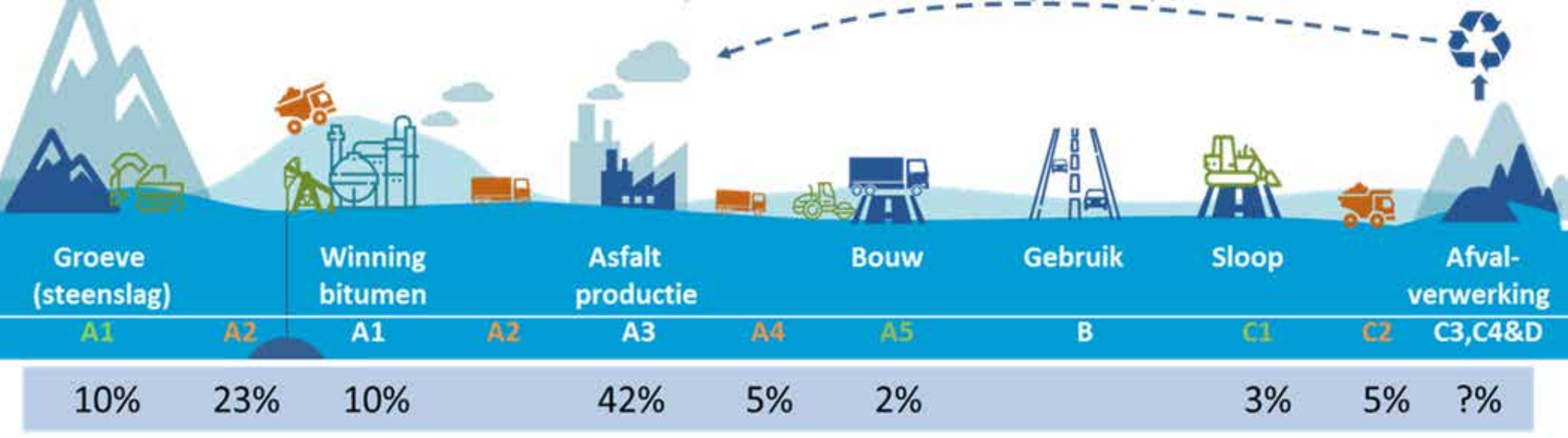
Procurement is very cost effective & low risk for Road authority and our suppliers.

TRANSITION TOWARDS CLIMATE NEUTRAL INFRASTRUCTURE

From the work of:
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Delft, 30 mei 2018 (versie 1.1)

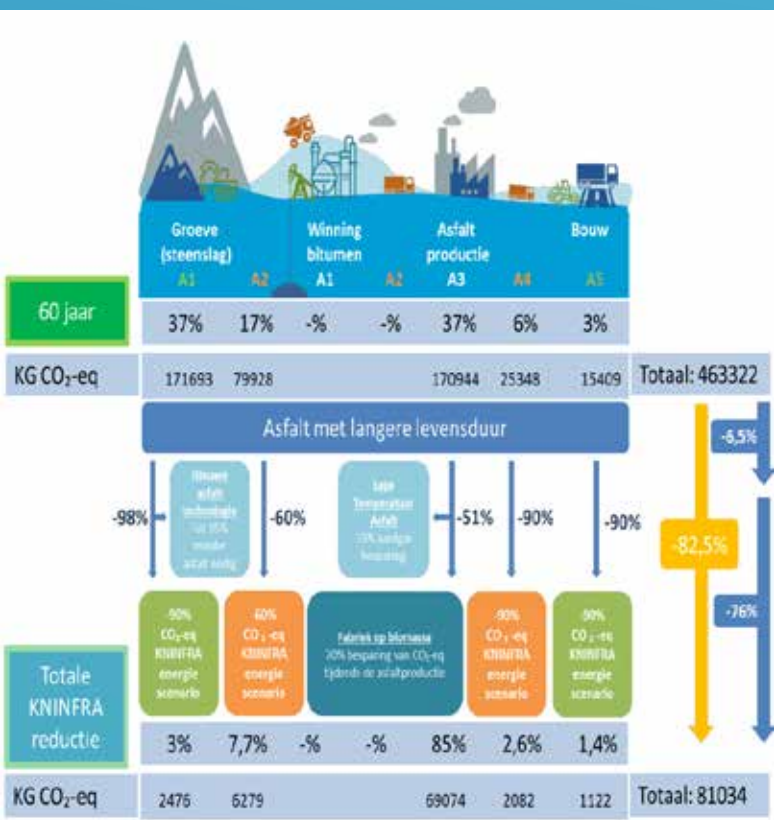


Asphalt: Carbon emission in supply chain



Practical application of scenario's

Analysis value-chain of a highway project
(A4 Leiden – Burgerveen)



KNINFRA scenario toegepast op LCA data A4 Leiden-Burgerveen

