



Ministerie van Verkeer en Waterstaat



Green Public Procurement

The Rijkswaterstaat Approach

Riga, May 21th 2015
Leendert van Geldermalsen,
Rijkswaterstaat, The Netherlands



Rijkswaterstaat Centre for Infrastructure

Agency for the Ministry of I & E
(budget ~ 3.500 MEuro's)

- Management main waterways
 - 3,000 km river banks,
150 locks, 17 weirs
- Management of the main motorways
 - > 3,100 km highways, 15 tunnels, numerous bridges, passovers,
etcetera
- Management water systems
 - > 63,000 km² water (including North Sea)
 - > Coastal management





Policy of the Netherlands

- 20 % CO₂ emission reduction in 2020 compared to 1990
- 14% renewable energy production in 2020 compared to 2% in 2010
- In 2015 all public authorities must apply green procurement on all purchases

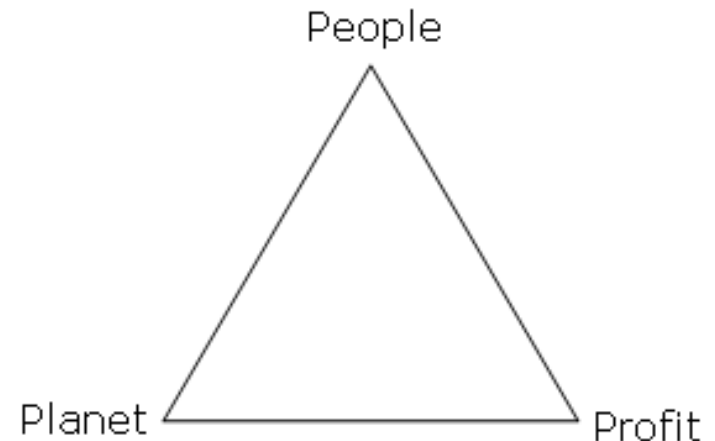




RWS take it's responsibility

- RWS is the biggest investor in Dutch infrastructure
- RWS has many assets
- RWS employs many people (appr 8.500)

It is therefore inescapable that RWS take its responsibility to create added value in the p-p-p triangle

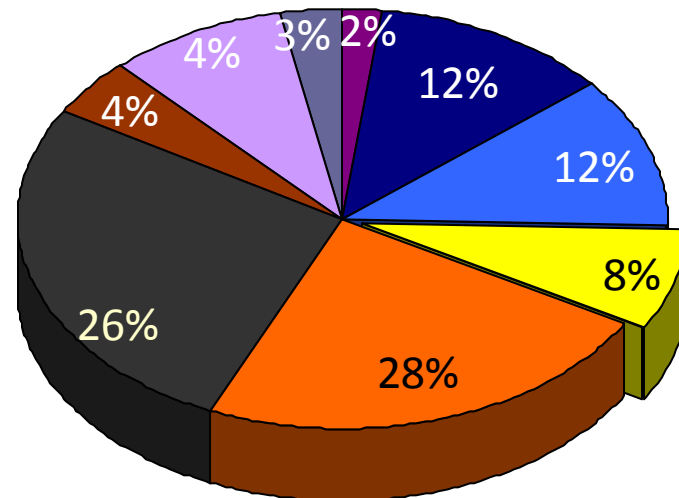




Carbon footprint of Rijkswaterstaat

Total yearly emission is 818 kTonnes CO₂

- Rocks for shore protection
- Inland dredging
- Marine Dredging
- scope 1 and 2 energy use
- Groundworks roadbuilding
- Asphalt
- Road base materials
- Concrete construction
- Steel construction





Goal of Green Public Procurement

....is....

to use the procurement process to force (or challenge) suppliers and contractors to deliver added value by delivering sustainable products through sustainable working processes and better materials

Focus on:

energy, materials, spatial quality

Boundary conditions:

value for money, life cycle approach





Mandatory: 100% green procurement & 20% less CO₂ emissions (1990 -> 2020)

- We do what we are required to do
 - we include the existing product criteria of PIANOo in all our contracts (as contract requirements)
- Rijkswaterstaat have a higher ambition (because of the CO₂ target):
 - Systematic approach over a long period of time
 - provider and clients join forces
 - much effect with low transaction fees for client and providers
 - in specific markets



Three principles for Green Public Procurement

Green public Procurement is based on 3 principles:

- Functional Specifications
- Most Economically Advantageous Tender
- Monetizing of environmental impacts





Functional specifications

Definition of a Functional Specification:

.... is a document containing the ordered collection of requirements and the description of the available solution space that applies to a system/product/service

It can also be the description of the solution with the margins that apply to that system/product/service

Functional specifications guarantee freedom for the provider to find effective, alternative and innovative solutions



Most Economically Advantageous Tender

Rijkswaterstaat selects the winner based on a combination of bidding price and quality

Procurement procedure:

- the tenderer provides the providers with a document containing:
 - a) the functional specifications
 - b) a description of the quality aspects he wants to assess
 - c) the assessment criteria for the quality aspects (SMART)
 - d) the calculation procedure to monetize the quality aspects

- the provider submits an offer with:
 - a) a description of the solution (e.g. a civil engineering design)
 - b) the bidding price
 - c) a description of the quality that he promises

- the tenderer
 - a) assesses the quality and monetizes the proposed quality
 - b) selects the winner by comparing bidding prices minus the monetized quality



Monetizing of environmental impacts

Two criteria for the environmental quality of offers will be assessed and monetized:

critierium	the environmental quality of	tool
CO ₂ emissions -----→	<u>working processes</u>	CO ₂ performance ladder
Environmental impact----→	the <u>product</u>	DuboCalc



CO₂ performance ladder: what is it?

The CO₂ performance ladder is a tool to assess the efforts of a company to reduce CO₂ emissions caused by the company's activities and processes and grants a rung in ascending order as the efforts are larger.

There are five rungs:

- 1: The company has identified its energy flows in qualitative terms and has a list of potential options for saving energy and using renewable energy. Internally, the company communicates its policy in relation to energy-saving and renewable energy on an ad hoc basis and is aware of sector and chain-based CO₂ reduction initiatives.
- 2: The company has quantified its energy flows and formulated a qualitative objective for saving energy and using renewable energy. Internally, the company communicates its energy policy on a structural basis and takes a passive role in at least one sector and chain-based CO₂ reduction initiative.
- 3: The company has an official CO₂ emissions inventory that has been drawn up in accordance with the ISO (GHG) standard, and which has been verified by an independent organisation. The company has quantitative objectives for its own (scope 1 and 2) CO₂ emissions. It communicates – internally and externally – in relation to its CO₂ footprint on a structural basis and actively participates in at least one sector and chain based CO₂ reduction initiative
- 4: The company has identified its chain emissions in outline terms, and chain analyses have been carried out for two relevant chains. The company has quantitative objectives for its chain emissions. The company is in dialogue with relevant parties (government bodies and social organizations) and can demonstrate its role as the instigator of sector and chain initiatives in the field of CO₂ reductions.
- 5: The company has a CO₂ emissions inventory of its most important suppliers. The company can demonstrate that the objectives for levels 3 and 4 have been attained. The company is publicly committed to a government or NGO CO₂ reduction program and is able to demonstrate that it is making a relevant contribution to an innovative CO₂ reduction project.

Only Certification Authorities are allowed to grant a CO₂ Awareness Certificate



CO₂ performance ladder: how is it used?

This is how the CO₂ performance ladder is used:

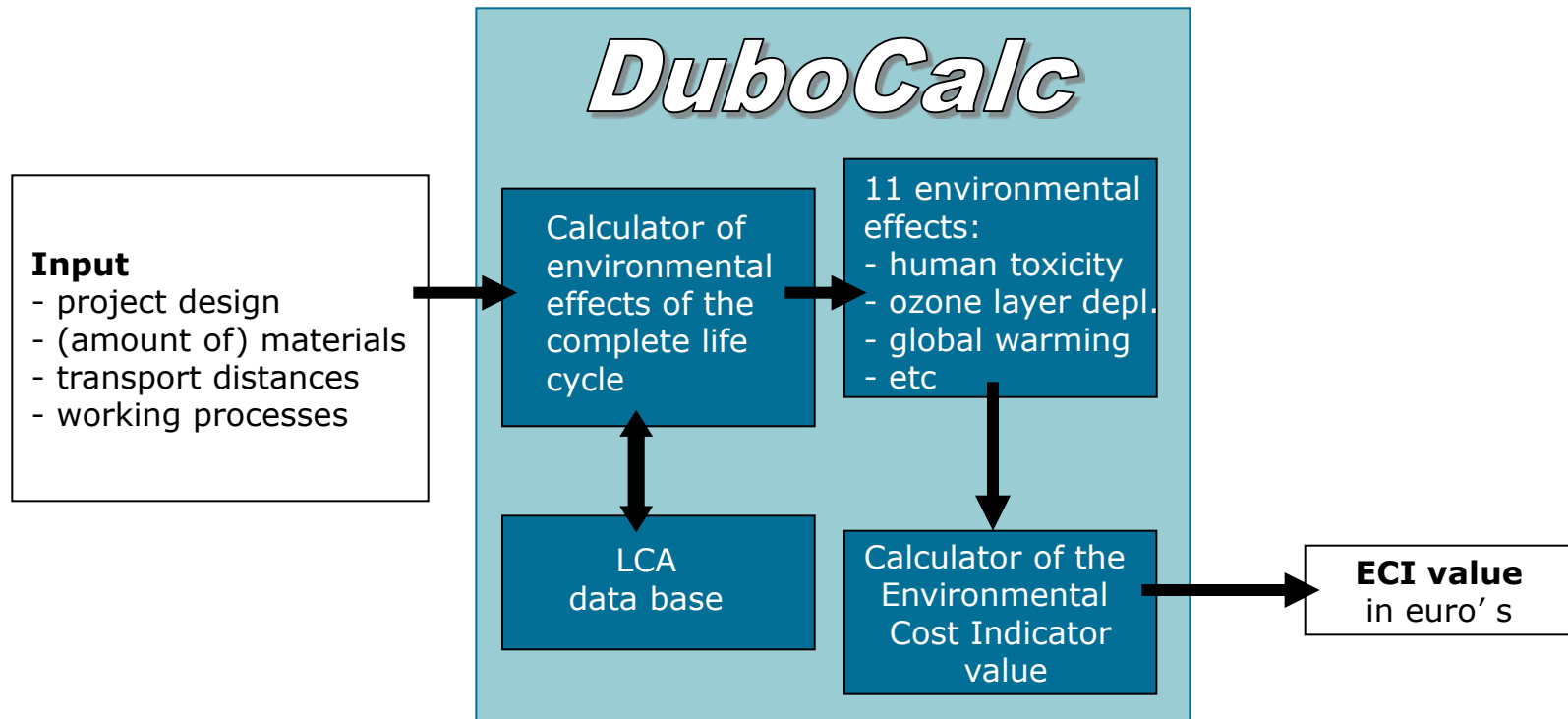
- The bidder chooses the level of ambition (rung 1, 2, 3, 4 or 5)
- each rung yields 1% reduction of the submission price
- RWS assesses MEAT quality criteria and calculates the corrected bidding price and selects the winner
- The measures corresponding to the ambition of the winner become performance requirements of the contract
- The contractor shows that the performance is delivered
 - This can be done by achieving the CO₂ Awareness certificate





DuboCalc: what is it?

DuboCalc is a tool to assess and monetize environmental impacts of a product/design based on life cycle analysis





The 11 Environmental effects parameters of DuboCalc

- Global warming
- Ozone layer depletion
- Human toxicity
- Fresh water ecotoxicity
- Marine ecotoxicity
- Terrestrial ecotoxicity
- Photochemical oxidation
- Abiotic depletion
- Depletion of fossil energy carriers
- Eutrophication
- Acidification





DuboCalc: how is it used

... in the procurement procedure:

- the tenderer provides the providers with a document containing:
 - a) the functional specifications including a maximum ECI value
 - b) the DuboCalc assessment tool
 - c) a description of how to use DuboCalc as a design tool
 - d) the calculation procedure to monetize the ECI value

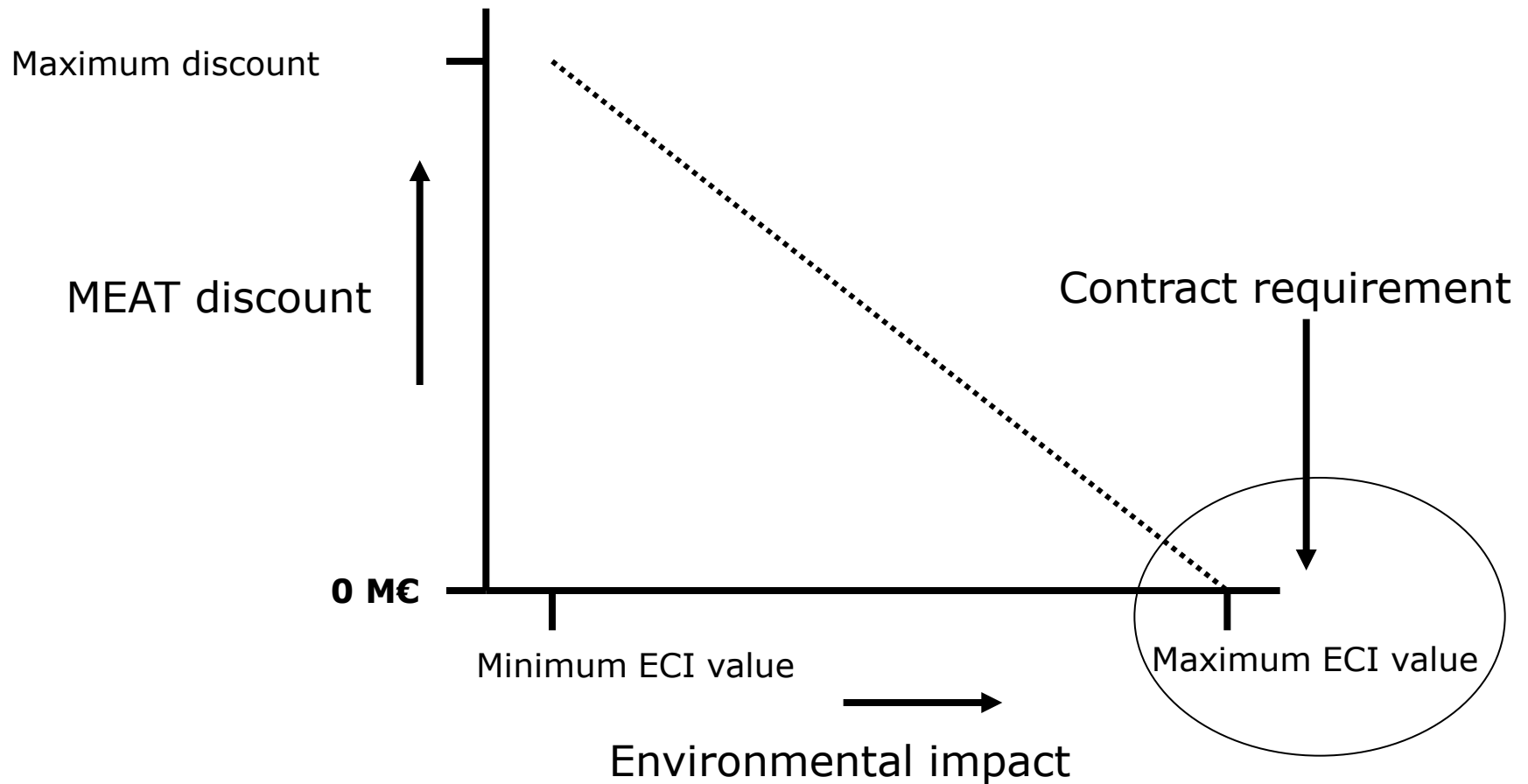
- the provider submits an offer with:
 - a) a description of the solution (e.g. a civil engineering design) which is optimized using DuboCalc as a design tool
 - b) the bidding price
 - c) the ECI value that is calculated with DuboCalc

- the tenderer
 - a) monetizes the ECI value as described in the tender document
 - b) selects the winner by comparing bidding prices minus the monetized ECI value



DuboCalc: how is it used

Calculation of the MEAT discount using the ECI value





Tendering with a combination of CO₂ PL and DuboCalc

- Sustainability is stimulated by a bidding advantage
 - Reduction of CO₂ emissions is stimulated by measures for the activities and processes
 - Environmental quality is improved by using DuboCalc
- Much sustainable value for minimal costs and efforts
 - CO₂ PL: efforts are asked after the contract is awarded
 - DuboCalc: the amounts are needed anyway to calculate a bidding price
- Commitments become contract requirements
 - Compliance with CO₂ PL via post certification
 - The ECI value of the product is checked at delivery



Calculation of the corrected bidding price

Bidder

- offers the CO₂ pl rung and ECI value,
- Reports this when registering
- Plans of action are not required
- a CO₂ pl certificate is not required when registering

Provider

- Compares the biddings as follows:

$$\text{(Bidding price)} - (\% \text{bidding advantage CO}_2 \text{ pl rung}) - \text{(MEAT ECI value)} - \text{(other MEAT-values)} = \text{Corrected Bidding Price}$$

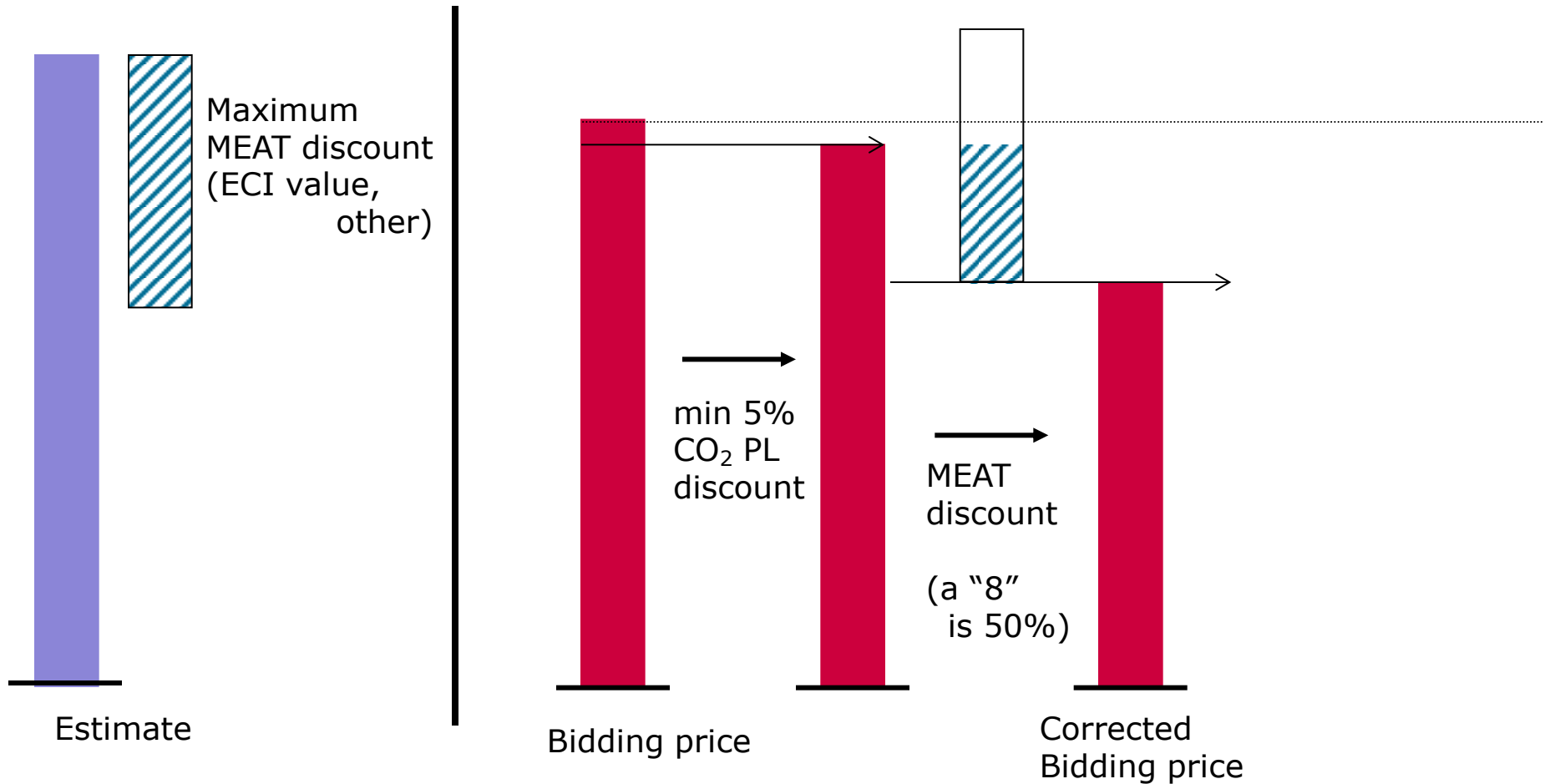
The project is awarded to the bidder with the lowest Corrected Bidding Price

CO₂ pl and ECI value become contract requirements

- CO₂ Awareness certificate to be shown after a year
- ECI value to be shown at delivery



Estimate, Bidding price, CO₂ PL-advantage, MEAT en Selection





Example: Renovation N61 Hoek - Schoondijke





Example Renovation N61 Hoek - Schoondijke





Example Renovation N61 Hoek - Schoondijke





Example Renovation N61 Hoek Schoondijke

Object	Scope	Project life time default for DuboCalc
Road pavement -foundation -interlayers -top layer	-All new pavement constructions (from foundation to top layer) within the limits of the N61 system - Removal of pavement material with destination outside the limits of the N61 system	50 year
Earth moving	To deliver volumes of sand/soil and remove volumes of raw material within the limits of the N61 system with origin and destination outside the limits of N61 system	50 year
Protection rail system	To build all new protection rail system within the limits of the N61 system	50 year
Lighting	Installations of all Public Lighting Of all 6 roundabouts as defined in the component specification for Public Lighting	50 year



Example Renovation N61 Hoek Schoondijke

Estimated building costs: **60 million euro's**

MEAT criteria in tender document

Criterion	Subcriterion	Maximum quality value (€)
1. External affairs management	1.1 Hindrance and traffic flow	4 million
	1.2 Vulnerable traffic participants	3 million
	1.3 Planning and phasing	3 million
2. Sustainability	Environmental quality (ECI value (Dubocalc))	2 million



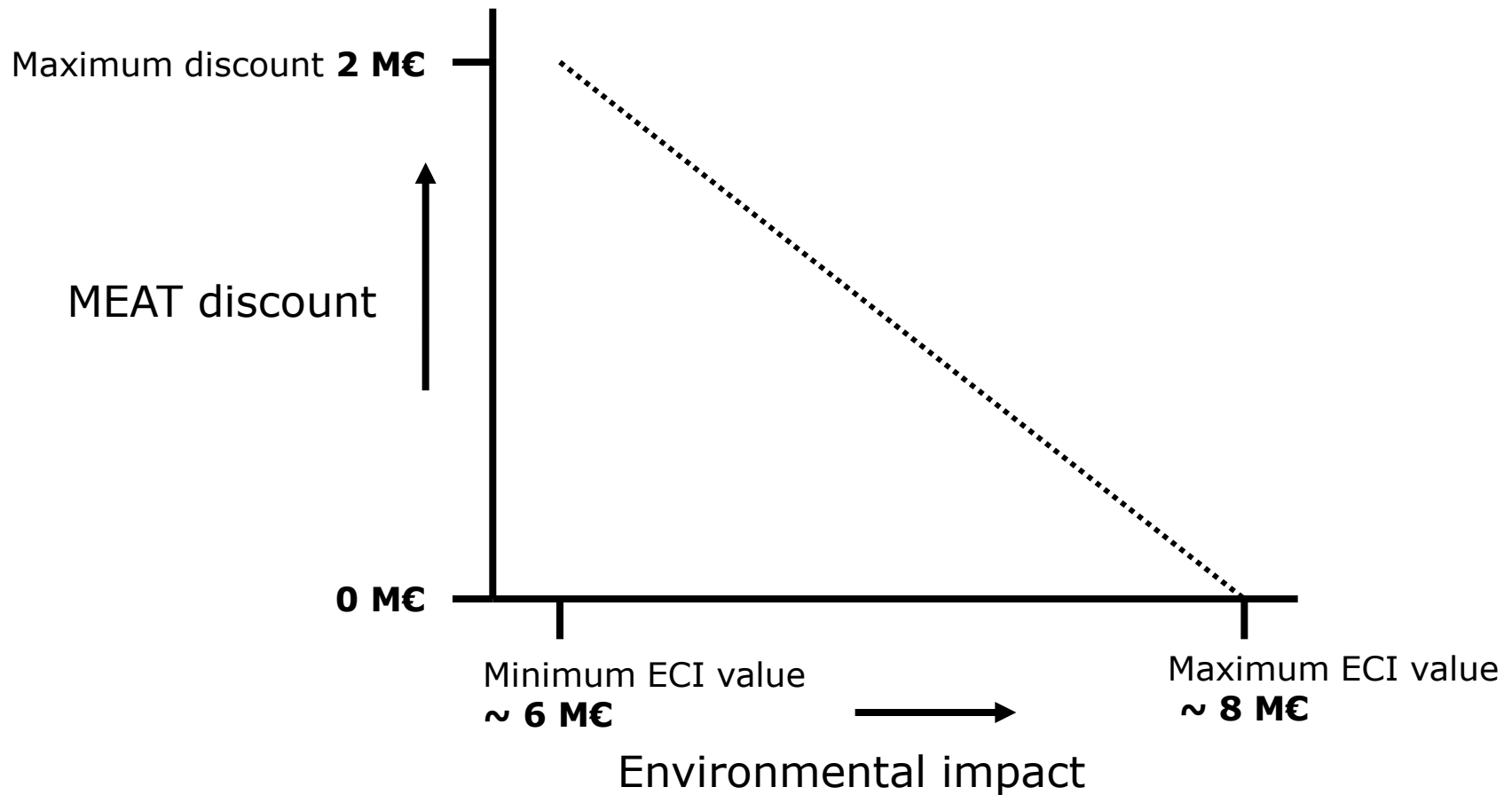
Example Renovation N61 Hoek Schoondijke





Example Renovation N61 Hoek Schoondijke

Calculation of the MEAT discount using the ECI value





Example Renovation N61 Hoek Schoondijke

Figures

Total amount intended for the project	M€ 110 (includes purchase of land, et cetera)
Estimate for civil constructions	M€ 60
Maximum MEAT amount for sustainability	M€ 2
Other MEAT amounts	M€ 8
Upper level ECI value	M€ 8 (MEAT-amount M€ 0)
Lower level ECI value	M€ 6 (MEAT amount M€ 2)
Maximum added sustainable value	M€ 2
[the part contributed by the CO ₂	M€ 0,8 (= 15,8 kiloton CO ₂)]
<u>The Winner</u>	
The Bidding Price of the Winner was:	M€ 55
CO ₂ PL discount of the Winner was 5%	M€ 2,75
ECI value is M€ 6,5 -> the discount is	M€ 1,5
Other MEAT discounts	M€ 5
Corrected bidding price	M€ 45,75



Example Renovation N61 Hoek Schoondijke





Example Renovation N61 Hoek Schoondijke





Some success and failure lessons of the use of DuboCalc en CO₂ PL in tenders(1)

- DuboCalc is broadly accepted as the yardstick for sustainable material and energy use
- The bidding parties were enthusiastic and were eager to apply DuboCalc;
- it was an “eye opener” to designers to realise that DuboCalc leads to better designs, not only environmentally, but also in costs
- DuboCalc is only useful provided there is something to design, if not: only use the CO₂ performance ladder
- Just apply the Dutch approach! Don't be afraid, practise it is the best way to learn how it works. And green procurement is just fun!
- The road to success of the application of DuboCalc (and of course of the success of public procurement) is the presentation to the project manager / CEO of the quantified emission reductions (eg CO₂) which can be accomplished in his / her project with the use of DuboCalc



Example Renovation N61 Hoek Schoondijke





Some success en failure lessons of the use of DuboCalc en CO₂ PL in tenders(2)

- Use DuboCalc for the bigger parts of the project only (apply the 80/20 rule), i.e. just focus on the big fish!
- DuboCalc is very useful for the contracting authority to improve the quality of the terms and conditions, but is also useful in the more traditional contracting formats
- DuboCalc as a MEAT criterion challenges the market to produce better, smarter and materials saving designs and leads to materials and product innovation
- By using DuboCalc RWS and other contracting authorities create conditions and chances for the market
- Improper use of DuboCalc leads inevitably to failure
- Application of DuboCalc requires expertise (environment, materials and civil engineering) and customization.



10-10 DAG VAN DE DUURZAAMHEID DIT DOET RIJKSWATERSTAAT IN PROJECTEN





DuboCalc in 2011 en 2012 in 5 projects

- Maasvlakte – Vaanplein 1.100 M€
- Lunetten - Veenendaal (A12) 210 M€
- Rearranging Channel Zuidwillemsvaart 200 M€
- 'Haak' around Leeuwarden South 65 M€
- Renovation N61 Hoek – Schoondijke 60 M€



Internet Explorer provided by Rijksuniversiteit

URL: www.bamwegen.nl/duurzaamheidslab

Laag Energie AsphaltBeton (LEAB), duurzaam maar niet duurder

PRODUCTIE Bij	CO ₂ -UITSTOOT	PERCENTAGE GERECYCLED ASFALT	
165°C	100%	50%	Traditioneel asfalt
100°C	70%	50%	LEAB

- LEAB is een duurzaam alternatief voor traditioneel asfalt;
- LEAB heeft dezelfde kwaliteit en levensduur als traditioneel asfalt;
- Productie bij 100°C in plaats van 165°C;
- CO₂-uitstoot tot 30% lager;
- LEAB bevat de gebruikelijke 50% gerecyclede asfalt

Op ons project Poort van Bunnik, verbreding A12 tussen Lunetten - Veenendaal, wordt totaal circa 125.000 ton LEAB aangebracht. Een gemiddeld Nederlands huishouden stoot per jaar 9 ton CO₂ uit. Door het aanbrengen van LEAB op de A12 ontstaat een CO₂-reductie die overeenkomt met de jaaruitstoot van 64 huishoudens. Ter vergelijking: deze hoeveelheid staat gelijk met de groei van 28.800 bomen in een jaar wat overeenkomt met ruim 70 hectare bos.

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Information

- CO₂ Performance Ladder
www.SKAO.nl
- DuboCalc
www.Rijkswaterstaat.nl/Duurzaam/duurzaaminkopen

An english introduction:

<http://www.youtube.com/watch?v=cAaL4FfBQNc>

Instructions for use of DuboCalc:

<http://www.youtube.com/watch?v=LJY9QzxlW2w&feature=related>



Questions?

