Sustainability at Rijkswaterstaat (RWS)

Road Pavements (and contracts)

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Strategic targets RWS

- *"Rijkswaterstaat aims to be in 2012 thé leading, public orientated and sustainable (execution) organisation of the government."*
- Focus sustainability:
  - Reduction energy use and production of green energy
  - Sustainable (green) procurement
  - Sustainable spatial planning

We do not start from scratch

RWS is already for decades working on sustainability:

- Large scale re-use of secondary materials: >95%
- Life-cycle cost management
- Design for recycling
- Porous asphalt: safer and quiet
- Destruction of tar containing asphalt
- Dynamic public lighting
- Ecological management of verges
- RWS manages 70% of the Dutch Ecological Main structure in the Netherlands
- Environmental impact studies

Market approach RWS

- Give functional specifications and design freedom for the market
- Do not prescribe solutions (unless…)
- So, do not prescribe recycling, low energy asphalt, sustainable materials.
- Challenge the market to come forward with innovations (techniques, materials, processes)

General preconditions

- Market in needed for achieving goals
- Market only invests in economical sound solutions
- Government is not always reliable (changing political views)
- Investment in:
  - Clear and unambiguous stable policy
  - Knowledge (performance of materials in time)
  - Hard technology
  - Standards
  - Image (champions needed)
  - Economical conditions (price performance, value based procurement)

Instruments for GPP and value procurement

- National minimum criteria
- RWS has a higher ambition:
  - CO2 performance ladder
  - Dubocalc
- Value procurement
  - What are we willing to pay for sustainability (We=RWS/society/Service level agreement)

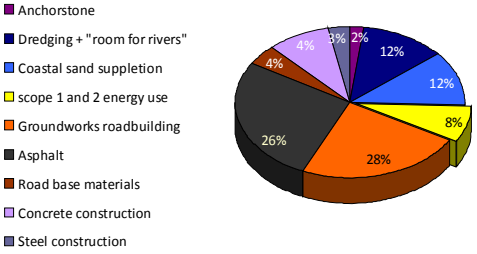
Focus RWS GPP Road Pavements

- Focus sustainability:
  - Reduction RWS carbonfootprint
    Aim: 50% reduction in 5 year

(note: besides aspects as noise, fine dust, recycling, ecological green maintenance et cetera)

  - Sustainable materials

Rijkswaterstaat Carbon Footprint 2010:
912 Kton



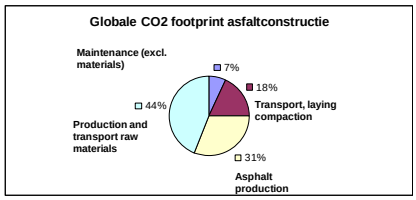
All in perspective

- CO2 reduction:
  - pavements =28 % (of Carbonfootprint)
  - earth works =30 % ,,
  - dredging =21 % ,,
  - public lighting =<0,5 % ,,
- CO2 emission traffic 30 Mton
- Carbonfootprint RWS total 0,9 Mton
- Carbonfootprint RWS pavements 0,3 Mton
- Carbon footprint electricity use RWS 0,009 Mton

Life is never simple

- Conflicting requirements.
  - Safety
  - Environment
  - Noise
  - Comfort (e.g. water drainage)
  - Hindrance to road users
  - Speed of execution
  - Costs
- Technique is not the problem, problems are always political and managerial
- What is possible with pavements

Carbonfootprint Asphalt



Conclusions CO2 reduction pavements

- Applied instrument Dubocalc, Life Cycle Approach; CO2 emission over 30 years so incl. maintenance.
- RWS applies eternal life strategy, so in principle only wearing course to replace and after 20-30 years strengthening
- Reduction of number of tons is dominant
  - Thinner construction/ thin inlays instead replacing PA
  - Longer life time (increase quality)
  - Elongation life time existing infrastructure (sealing)
  - High recycling percentages
- Low temperature asphalt
  - Circle of influence of asphalt producer
- Concrete for road: use blast furnace cement instead of Portland cement

Conclusions CO2 reduction pavements

- In figures
  - Maintenance : Thin inlay (- 8%)
    Remix (-9%)
    Seal techniques (LVO -15%)
  - New Roads: Thinner constructions (EME - 20%)
    Blast furnace cement (-22%)
  - General: Recycle PA in PA(-10%???)
    Low temperature asphalt (-5/-10 %
    only with same amount of recycling and
    same functional properties (life time)

Attention points

- Always needed same functional properties and durability
- Technical quality (durability) has an great effect but is easily neglected
- Take in consideration the inflexibility of the market (blast furnace cement, recycling)

Sustainable use of materials

- Is sustainability =CO2 reduction? Not per definition
- Road construction: materials and energy are dominating dominant
- Nature of materials determine possibilities to recycle but also management and control aspects.
- Dubocalc is LCA based. LCA does not give all answers.
  - Recycling is a fine goal
  - But not all forms of recycling is desirable

Recycling: Netherlands at the top of the world

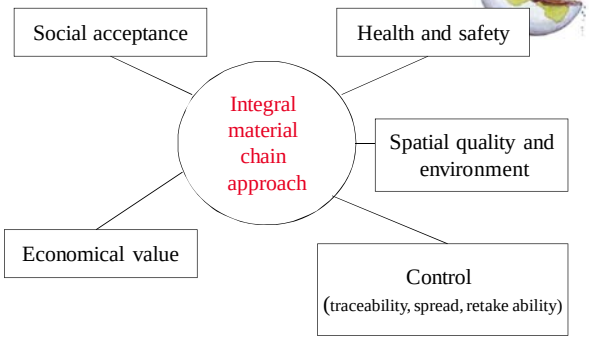
- Use of raw materials (mostly aggregates) app 150-180 million ton
- Use of secondary materials app. 30-40 million ton annually
- Main streams concrete and masonry (>95% recycled)
- Asphalt (4 million ton, 3 million hot mix recycling, 1 million tar containing incinerated) average 50% in base course mixes

- Netherlands on the top of the world in recycling
- Tar incineration unique in the world

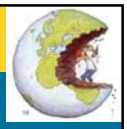
- Why
  - Netherlands densely populated
  - Scarcity of raw materials and space
  - Prosperous country
  - Recycling is made economic feasible

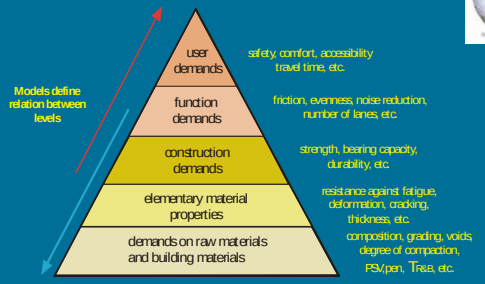
Sustainable use of materials

- Market is looking at financial possibilities
- Some waste materials have a negative market value
- Reusing/ recycling can therefore be very financially attractive
- Who takes the long term risks
- Example: Waste incineration bottom ash
  - Does not fulfil environmental criteria
  - Reuse under strict conditions
  - Or immobilisation?
- Advantages/disadvantages??



Discussion ???





Pyramid of demands