

Current difficulties with creation of standardized digital climate calculations for infrastructural projects

Larissa Strömberg, Nordic Contraction Company (NCC)

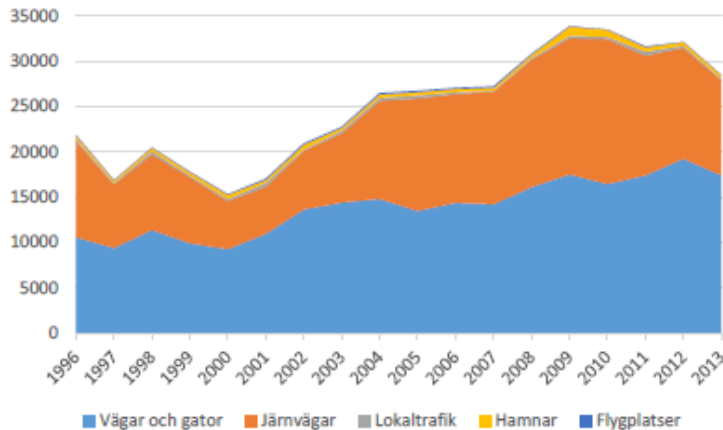
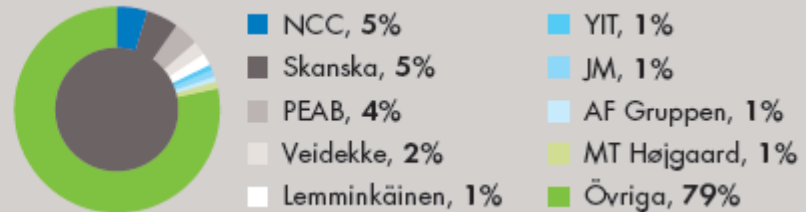
Contact: Tel: +46 706677321

E-mail: larissa.stromberg@ncc.se

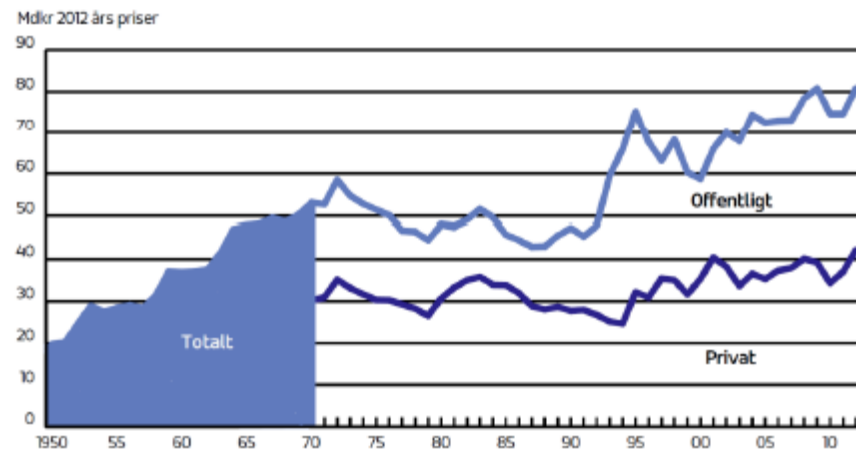
Swedish construction sector

MARKNADSANDELAR NORDEN

Den nordiska byggmarknaden är mycket fragmenterad. NCC är ett av de största byggbolagen i Norden med en marknadsandel på 5 procent. Byggmarknaden i Norden omsatte 2015 cirka 1 226 Mdr SEK. (Källa Euroconstruct)

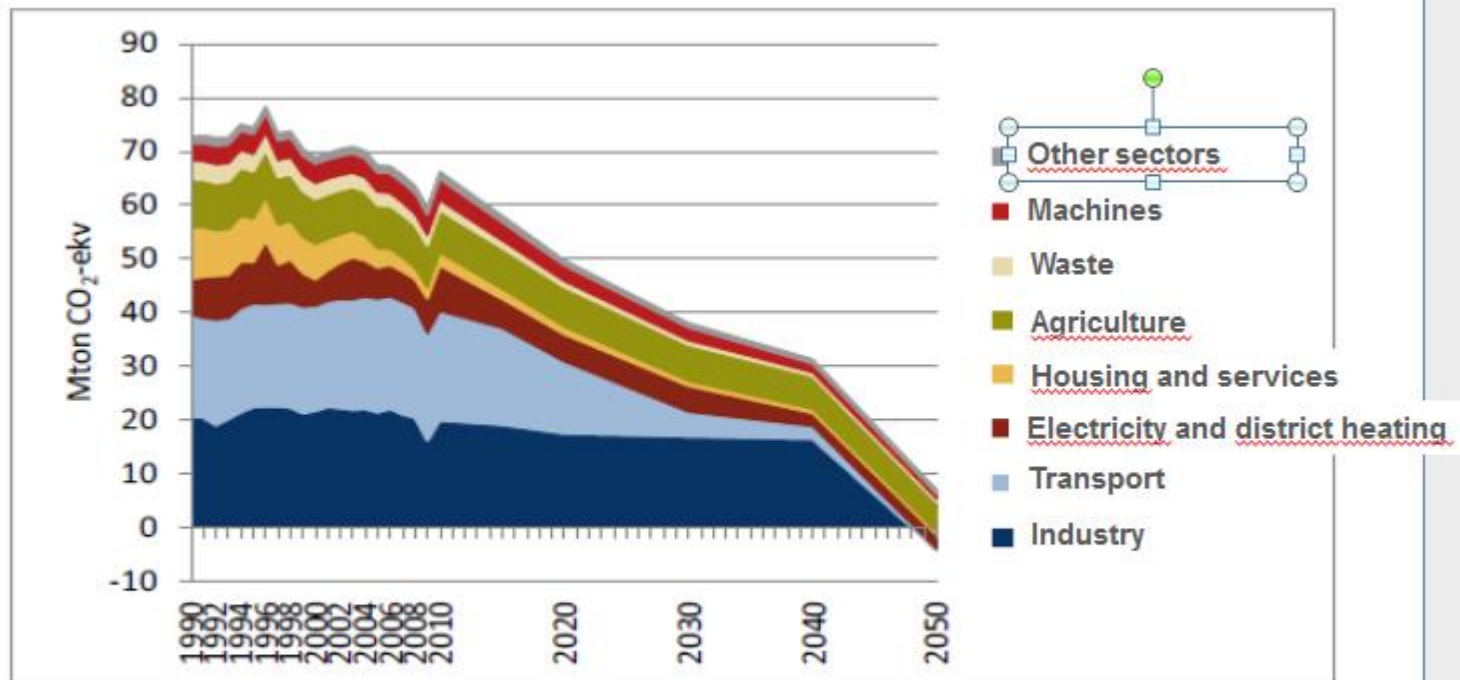


Figur 2.3: Offentliga investeringar i transportinfrastruktur (MNKR) 1996-2013, uppdelat efter investeringsobjekt. Fasta priser i 2013 års prisnivå, exkl. moms.
Anm: Uppgifterna för 2013 är preliminära.
Källa: Trafikanalys Rapport 2014:17, egen bearbetning.



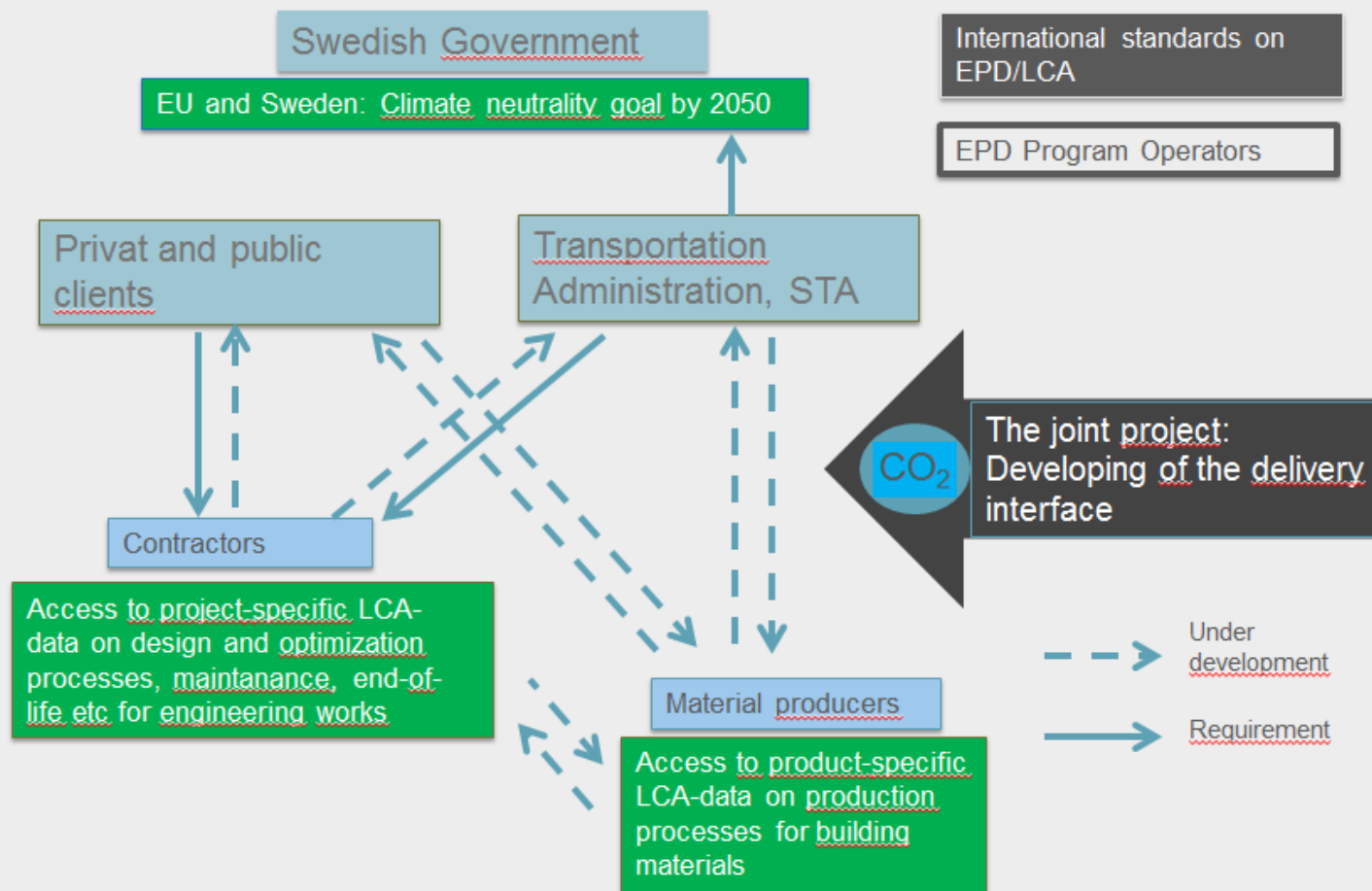
Figur 2.2: Anläggningsinvesteringar (MNKR), 1950-2012. Från 1970 uppdelat mellan privata och offentliga investeringar.
Källa: Sveriges Byggindustrier.

Target scenario for CO₂-neutrality by 2050 (EU- and Swedish national goal)



Figur 1. Målsenario Teknikåtgärder och CCS på fossila och biogena utsläpp från industrin. Teknik och transportsnålt samhälle för transportsektorn.

The ongoing process for establishment of accounting and reporting with CO₂-eq



Swedish joint project

◦ Participens:

- Major Swedish and Norwegian contractors, material producers, branch associations and clients.

◦ **Scope:** to develop the overall framework for the delivery interface with automated climate calculations in the EPD-format for infrastructural projects.

◦ **Goals:**

- **Benchmarking of existing LCA-calculation models** for bridges and roads in Sweden and Norway
- **Conformity analyze of these models** with EPD-calculation model according to EN 15804 and PCRs for bridges and roads
- **Development of the framework** for the delivery interface with automated climate calculations in the EPD-format.
- **Development of the technical specification list** with functions needed in the delivery interface.
- **Pre- configuration of** the first version of the delivery interface
- **Overall test** of the pre-configured delivery interface to produce automated climate calculations in the EPD-format on some projects
- **Recommendations** for the next step.

Several options for an EPD or a climate declaration verification

1. Verify each single EPD

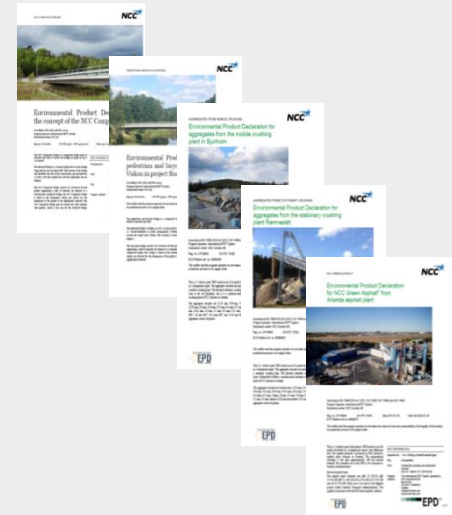
- Branch associations have developed EPDs for their products
- NCC as a first contractor in Sweden has developed 5 EPDs and 2 climate declarations for both products and engineering works as bridges.

2. EPD Process Certification for multiple EPDs

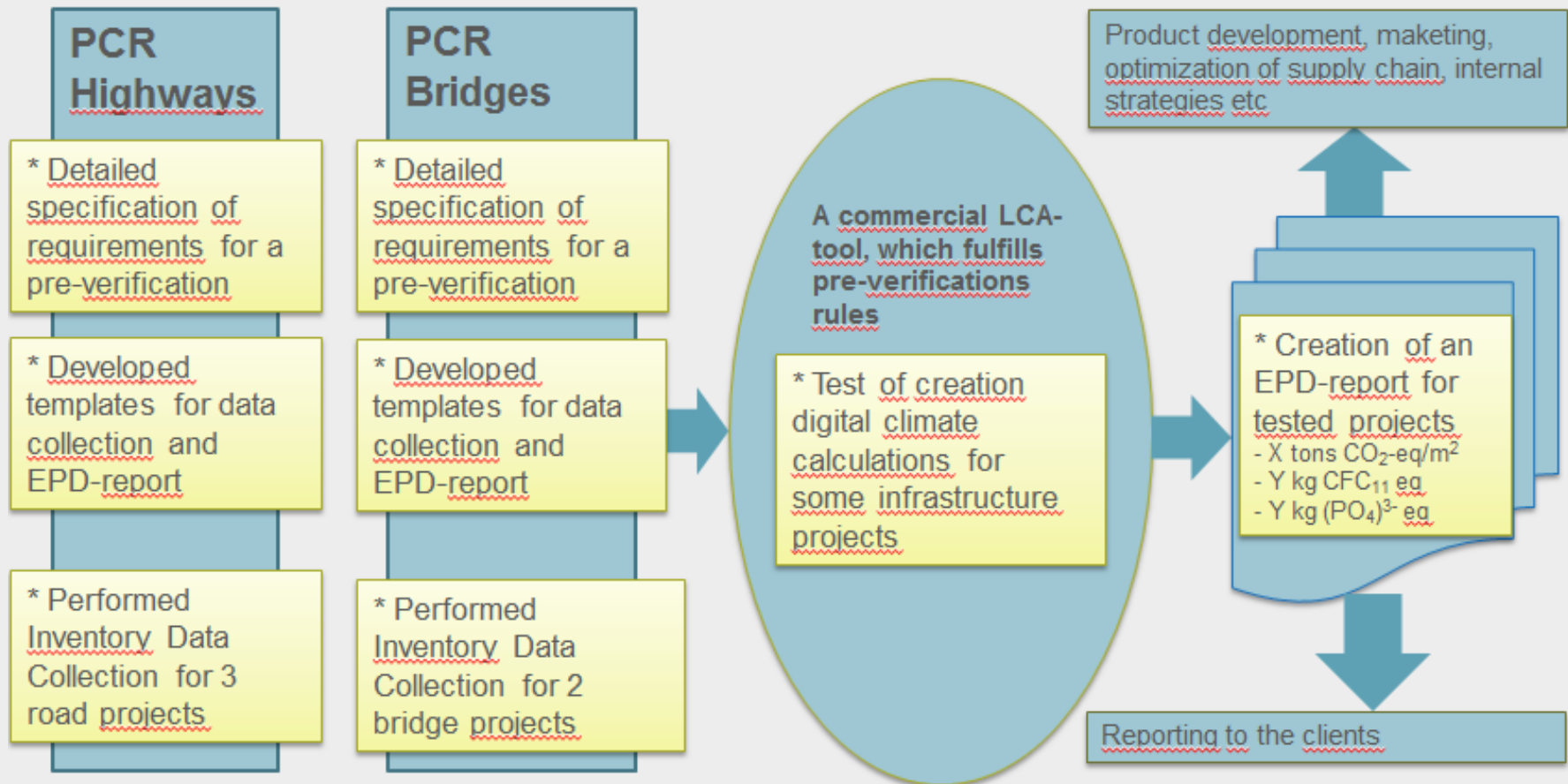
- The internal procedures and processes of a company to generate verified EPDs are checked yearly by an accredited certification body
- Swedish based Vattenfall has established the EPD Process Certification

3. Pre-configuration of LCA software as an EPD-tool for automated multiple EPDs

1. That allows automation of the process for data collection and creation of multiple EPDs according to a certain PCR
2. Pre-verified LCA-software can be connected to the company's existing design and cost calculation IT system.
3. This has been tested in the joint project.



Deliveries of the joint project



Current difficulties with creation of standardized digital climate calculations

- Lack of common **business-to-business model** with EPDs - No general acceptance of EPD as an industry-wide standard
- **Contractors' planning and design systems** don't have all needed data for impact assessment of the entire life cycle
- High cost of EPDs. Manual data collection.
- Who is responsible for **reliability of the results** from climate calculation for **new innovative products in early project stage?** - Project management **control and validation routines** should be developed
- It would be easy to have **one PCR for various types** of infrastructural works
- More **test projects** needed.

Next step

- Integrataion of step-wise EPDs to current design and optimization processes in BIM and CAD
- A new PCR for Bridges, Elevated Highways and Tunnels on the way, will be available September 2017 and will replace PCR 2013:23 for Bridges and Elevated Highways
- NCC's new project:
 - A standardized climate calculation with BIM
 - Design making with LCA for purchasing processes



Thank you!