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Creativity and connectivity putting Sweden on track for climate neutral transport system

Stefan Engdahl

Hard engineering skills are as important as ever for building sustainable transportation systems but reaching climate goals is just as much to do with creativity and collaboration – as Sweden's transport administration has been discovering.

"We might not have replaced all the cars running on fossil fuel by 2030 but we will be climate neutral," says Stefan Engdahl, Executive director for Planning and Marketing at Trafikverket, Sweden's administration body for road and rail. "A lot is going to happen in the next 15 years. We have been over-estimating changes in technology in the short-term but under-estimating them in the long-term."

Sweden has one of the highest rates of urbanisation in Europe with the complication of having to deal with a watery environment, requiring lots of tunnels and bridges, but the vision for Trafikverket is clear: a climate neutral transportation system which fulfils the need for connectivity and improves the quality of life for everyone.

According to Mr Engdahl, technical development has been very fast, and changes cause different cultural behaviour. "We need to know how all this works in order to create the best transport system when planning an urban environment." The administration itself has gone through a shift in perception of what it does and how it does it.

Leaders in co-ordination

"We now see ourselves as leaders in co-ordination, planning and developing a sustainable society," he says. "We work with all sorts of people in municipalities and regions and a lot too with the mining and steel industries and with private companies like Volvo cars."

It has developed sophisticated planning tools to underpin its lofty goals in sustainability. "We are introducing a management tool, SUNRA, which lets us set goals and choose indicators from 26 different topics to improve sustainability at every step," says Mr Engdahl. "We also use a 'climate calculator' when investing in new infrastructure. It lets us set targets for CO_2 emissions and soon we will also be using it during the maintenance phase."

It's not just new technologies or co-ordination role that make Mr Engdahl confident of reaching the 2030 goals – it is the ability to access the best experts in their fields to turn plans into reality. "We have a broad range of very competent staff working for us, engineers, planners, but also social scientists, psychologists. Just this morning I was talking to experts in behavioural economics."

Holistic and multidisciplinary approach to sustainable transport and mobility

Ending the constant growth in motor vehicle use, one of the most important sustainability objectives, requires three interrelated strategies: providing a greater choice of travel modes, changing land use patterns, and revising pricing incentives. Some progress is being made on all three fronts. Many cities and towns are devoting greater attention to alternative modes of transportation by creating pedestrian and bicycle plans; revising design standards for streets; promoting car-share programmes; and exploring new public transit options, including bus rapid transit, light rail, and commuter rail. Land use regulation is beginning to change as well, in part because of the smart growth and new urbanist movements. And many municipalities have instituted higher parking charges and other incentives not to drive. Increasingly more cities consider introducing a congestion charge for every vehicle entering the downtown area. These programmes have been highly successful, cutting traffic in the central areas and generating significant resources for public transit.

"It is becoming increasingly obvious", says EFCA President Flemming Pedersen, "that although engineering consultancies are crucial in the design phase, sustainable transport and mobility are part of the development of society as a whole and therefore require a thorough multidisciplinary and holistic approach".

State of the consulting engineering sector; spring 2016

The fragile stabilisation continues, expectations are slightly positive for the coming six months.

The most important trend identified in this biannual survey of the European consulting engineering sector is a further stabilisation of markets in southern Europe following several years of decline, and an apparent slowdown, though still positive growth, in the markets of central and northern Europe.

The global size of the architecture and engineering market in Europe is around € 350 billion, according to Eurostat.

Generally the sector is reflecting the gradual growth of European economies and their investment activity in gross fixed capital formation. The sector is influenced by the budget constraints of the governments in the European countries. The public sector has drastically reduced its investments. The market for engineering services is generally stabilising at a low level, as previously anticipated, and order stocks of most companies are slowly but steadily growing.

The main challenges as perceived by the sector are lack of qualified staff, lack of investments and low fees.

The report can be downloaded at: http://www.efcanet.org/Portals/EFCA/EFCA%20files/PDF/Barometer%20reports/Report%20EFCA%20Barometer%20SPRING%202016.pdf.

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"Procurement is a useful tool for us too. We operate in the European market and have good experience with consulting engineers and construction companies from Germany, Spain and Ireland, for example, especially for roads, tunnels and complicated bridges. They know what works and what doesn't and can bring that to us. Companies with high environmental standards and goals are the ones we go for but we are also looking for a good understanding of social issues. It's important for them to be competitive."

Mr Engdahl also praises bilateral co-operation as an effective way to share experience and tools. "We work well with other Nordic countries," he says, "but also with the Netherlands. We are world class in our approach to safety on the roads and they have good results in other areas. Two weeks ago I was in Rotterdam discussing important issues relating to harbours."

Trafikverket is unusual in being responsible for both road and rail which is a good starting point for dealing with connectivity but the administration relates well to other sectors including water and air transport. "When it comes to planning," says Mr Engdahl, "you cannot lock your door and plan the system only within the transport administration." This year 'transport' is the focus of the Miljömålsrådets (Environmental Council) which sets long-term environmental goals for the country. The government has also made 'climate' a focus area in its long-term planning for infrastructure and is pushing for society to adopt 'smart' use of transport. Such high-level fora bring together the sectors for joined-up planning.

Creativity for multi-purpose transportation

In 2015, a four-year state programme of SEK 1,925 million (EUR 208 million) was introduced for local climate investments that can reduce emissions and influence the transition to fossil-free transport and travel. Support has already gone to areas such as charging infrastructure, production of biogas and biofuel filling stations.

Creativity is producing a multi-purpose transport infrastructure: more environmentally friendly materials are being used in construction; the roadsides, already managed for biodiversity could soon be producing biofuels; water security is giving rise to wildlife habitats; and the design of roads allows for the passage of animals. A lot can be done with the existing infrastructure but when the situation does demand new investment progress could be significant. "In Gothenburg next year we will have 100 self-drive vehicles on public roads," says Mr Engdahl. "You call one up with a mobile app, it drops you at your destination, and goes off to charge itself, or to pick up another customer. This could be the golden key to a climate neutral transport system."

"We must reflect society and accept that our young people won't put up with an unsustainable way of living. We are working decisively in Sweden to find new solutions for the future. Taking responsibility for climate impact at home also demonstrates our leadership on the world stage; we think it's a good opportunity to grow our industry, especially for export. We are working hard to make a great future for Sweden."

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