

## STS Forum in Kyoto October 2008

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Session

“The role of science and technology in the 21st century”

### **The role of science and technology from a technical university perspective**

We have been reminded during this STS Forum about:

- How the future of humankind will require urgent technology-shift for most branches.
- How ICT is just in the beginning of its transformation of the global rules for S&T.
- How all countries and people need to be part of the same development.
- How sustainability is a philosophy and needs to involve a systems level approach.

The technical universities of today have an important role to play, to build trust among the public, young and old, among the politicians, with media and all stakeholders involved in shifting technology to long-term sustainable alternatives.

Chalmers is a university of science, technology, architecture and maritime education, research and innovation. We are situated right in the center of the challenge and possibilities that I just described. Chalmers is also a company, owned by a foundation and with long- and short-term agreements with the Swedish government. It is an autonomous university with a good amount of freedom and responsibility to move in the direction of its vision “to work for a sustainable future”.

To move in this direction, we have set up the operation of the university so that:

- Systematic strategy is driven by ideas and influences, and not by the short-term economical situation.
- The ideas and influences come from inside and outside, and will support each other through incentives, mobility, local and global activities and strategic collaborations.
- Public-private collaboration is common involving all three objectives of education, research and innovation.
- Career tracks to make students and faculty become +engineers is part of the strategy
- Disciplinarity and transdisciplinarity are both important in education and research
- Communication skills are prioritized (languages, outreach, recruiting)

### **The point I want to make in this talk is that:**

The developing countries could build own capacity and competitiveness now if they make technology leaps in collaboration with selected clusters, and Chalmers, in accordance with its vision and within its capacity, will work in this direction.

It is important to get funding stakeholders aligned to support this type of development. The time is short and there are many reasons why we need to act now without delay.

First, the gap is continuously widening between developed and developing regions, and it will be more and more difficult to reach a sustainable future for many regions.

Second, the role of the university is reviewed at this time in many countries and it is an opportunity to also make this role to include global responsibilities.

Third, at Chalmers, we have developed incentives for growth in clusters of strength. In these clusters, a number of CoEs are, together with basic research environments, selected masterprogrammes, research infrastructures and the innovation system, collaborating with local and global stakeholders. The role of the university is to be responsible for the cluster, its growth and to make it dynamically integrated with the rest of the university and leading stakeholders in the world.

As an example of this development, I like to tell you about a research strength at Chalmers in and connected to vehicles, roads and transportation. This is an example that addresses the challenge to manage increasing transportation needs, including safety, alternative energy, management systems and smart infrastructure under conditions that do not compromise with the needs of our general living conditions.

Mobility and transports are cornerstones of modern economy. All efforts to minimize the need for transports are certainly welcome, but it is difficult to see how an efficient economy would work without the need to move people and objects. The area of transportation has also grown tremendously in the recent past. The infrastructure has developed accordingly, in a symbiotic manner with existing older urban and rural landscape. Europe may have been more conservative than other developed regions in the world to keep the cities as they once were laid out. The cultural values are considered important although they cannot easily be transformed into economic assets. However, even in the most dynamic economies there are limits to how quickly and how extensively our settlements and systems can be changed. We need to consider the extent to which we build ourselves into an infrastructure that we will have to live with and which will limit our future options to modify or change our built environment. New infrastructures in the world need to support more efficient transport systems and build on concepts that help the technology shift to occur.

We are now facing a global environmental challenge, where a sustainable transport system is key, in order to continue the global evolution while protecting the world for future generations. The future sustainable transport system must therefore be:

**Greener, Safer and more Robust and Efficient!**

Based on the paradigm shift the coming 10 years within the automotive sector (electrification to make it simple), it will require new methods and processes in terms of how the business model /s will evolve. Test, trials and pilots should be developed in close interaction with customers with different local and cultural needs.

A sister Center of Excellence, fitting in with the transportation research cluster at Chalmers, at a selected location in a developing country can become a natural driver for a concept solution as well as supporting smart generation of energy and selective production. It should also

provide a technology jump for the supporting infrastructure that could be adapted for a sustainable future in the country and competitiveness in the world.

Examples like this would benefit everybody involved and it would make universities take a step closer to lead a planet saving strategy.

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