CAETS Issues of Concern – October 2015

"Issues of Concern" are topics about which your academy recently has started or may soon initiate a study or a topic your academy would welcome discussing with other interested member academies for possible collaboration (LIMIT 3).

5Nov2015

Argentina, ANI

Our main concern is focused in obtaining financial resources to deal with ANI's operation as well as studies and research projects.

Australia – ATSE

As part of our National Technology Challenges (NTC) ATSE is currently focusing on three areas, which are of global concern/interest:

1. **ENERGY**- ATSE is engaged in the South Australian Royal Commission on Nuclear Energy which is exploring the Nuclear Fuel Cycle and opportunities for Australia. ATSE hosted a Conference and International Workshop on Unconventional Gas looking at technical, scientific, social and regulatory issues associated with development of shale and coal seam gas.
2. **AGRIBUSINESS and TECHNOLOGY**: ATSE will host a NTC Dialogue: Agribusiness 2030 exploring agriculture and food production in the digital age. The Dialogue will be held in Sydney in June 2016.
3. **HEALTH TECHNOLOGY –** ATSE is developing Medicine and Health in the Digital Age Dialogue – to be held in June 2017.

Belgium – BACAS

1. **Energy council**

   A permanent energy council has been created to:

- evaluate the possibilities for a more sustainable energy supply and use
- inform the academic and industrial world, the authorities, as well as society at large about the advantages and disadvantages of various forms of energy supply, transformation and use
- formulate specific points of view and recommendations.

   The council has published a position paper regarding energy efficiency in house building or renovation. It will be discussed in a seminar planned in October 2015.

   Another seminar is scheduled in December and will focus on energy storage.

2. **Corporate social responsibility**

   The financial crisis of 2008 lead to a slowdown of corporate social responsibility (CSR) initiatives: the expected recovery of the global economy should offer new opportunities to create a more sustainable society. CSR 2.0 is a lot more ambitious than old CSR that aimed most of all at improving the reputation of companies: new CSR ("version 2.0") not only wants to eliminate the negative effects of traditional businesses but to also make the world a better place (socially, ethically, taking care of the environment).

A working group analyzed the evolution of CSR since the publication of "The limits of growth" (Club of Rome, 1970) and interviewed captains of industry, CSR experts and academicians about their view on sustainability and CSR. This resulted in a position paper titled "CSR, join because you feel you have to or because you're really committed?"

3. **Teaching elementary computer sciences in primary and secondary school**
   Although youngsters are most of the time very familiar with the use of computers in daily life, it appears that they often lack a good knowledge of how hard- and software exactly works. A working group analyzed the current content of tutorials in primary and secondary school in Flanders and published a position paper which was discussed during a seminar attended by the Flemish minister of Education.
4. **Innovative entrepreneurship via spin-offs of knowledge centers**
   Several think tanks and policy makers uttered their concern about the shrinking number of start-up companies in Flanders. At the same time, however, the number of spin-offs from knowledge centers (universities, colleges, strategic research centers) appears to be rising. These spin-offs are created mainly in innovative fields such as biotechnology, ICT, energy and environmental technologies, as well as in the services sector.
   A position paper was published about initiatives recommended to different stakeholders, such as authorities, education, knowledge centers with the aim to further reinforce this positive trend.
5. **A "thinkers' program" on blended learning**
   The academy organized a "thinkers' program" on blended learning. Two well-known foreign experts were invited to analyze the status and the potential of blended learning in Flanders: Diana Laurillard (University College London – Institute of Education) and Pierre Dillenbourg (University of Lausanne – EPFL) spent a few weeks in Flanders to discuss different aspects of blended learning with the main stakeholders (authorities, universities,…).

Denmark, ATV

The Danish Academy of Technical Sciences (ATV) has identified the following Issues of Concern.

- **Denmark must aspire to become one the World's leading Science and Engineering-regions:** Technological development, innovation, and strengthening STEM in the educational system are the keys to create a competitive, high-tech society. This is a cornerstone in the Academy's new strategy.
- **Digital learning tools – barriers and possibilities:** A working group under the auspices of ATV's Digital Council (ATV's Digitale Vismænd) is about to complete its preliminary research into the topic. Launch of a larger project is expected in the beginning of 2016.
- **New Functional Materials:** Following a dialogue process and a report from 2014-15, ATV is planning to contact companies who can benefit from introducing up-to-date materials technology and research in the products and processes.

Japan – EAJ

1. In order to provide younger generation with a place for interdisciplinary "activities", President Komiyama sponsors an international symposium for five years out. This is not a symposium only to interact with but also to "act" at the initiative of young generation. The first symposium was held on "Ecology and Engineering" in the beginning of August 2015.

2. Membership for young researchers will be set up in the Academy expecting their active role in the Academy-related

Norway NTVA

1, Demand for water and efficient and safe production of water for different purposes.

2, Motivation of students for technological education

3, The engineers of the future; What skills and abilities will be needed?

Spain – RAI

Power, Engineering and Industry.

Energy, Engineering and Industry are closely related. It is not possible to conceive the design, construction, operation and maintenance of equipment without the Engineering. Power is a pillar and a basic input in the economy and results critical for the industry due to the necessary competitiveness of their prices and for being understood as a tractor activity for certain industries and technologies. Energy and industry have an important weight in the Spanish economic activity. The industry represents around 14% of Spanish GDP and energy related activities, 3%. Its importance in employment is also remarkable with around two million of industry workers. In the energy and engineering sectors, the direct, indirect and induced employment can be estimated in around 725,000 people.

The Engineering towards a new era.

The Royal Academy of Engineering of Spain issued on 2014 the " Declaration of Barcelone". On it, the RAI shows its best willingness, and the one from all the branches of engineering which represents, to help to articulate and promote the revival of the industry. In parallel, it proposed a redefinition of the concept of engineering as conception, design and production of products, services and technologies adapted to new needs and requirements of our 21st century society. The correct assumption of the technological change, the task of training future engineers and the importance of the innovative effort, as well as the fundamental role that corresponds to the function of engineering, are determining factors to confront this challenge

Innovation and entrepreneurship.

European educational, research and business capacity does not manifests itself, as much as it would be desirable, sufficient rates of innovation and entrepreneurship. This fact threatens the sustainability of our current well-being society. From that perspective, the Spanish situation is particularly worrying. Although there have been successful efforts to improve such imbalance, it is widespread that greater efforts for the promotion of innovation and entrepreneurship are required, as well as not to forget the influence of social and cultural aspects that have a noticeable weight in any mobilization.

Sweden – IVA

- CAETS 2019 Convocation Conference – IVA's 100th anniversary
- Business models for a sustainable and resource efficient society
- Integration (refugee crisis) – how to integrate immigrants with university/engineering training in society?

Switzerland SATW

1. The global data volume is increasing rapidly. At the same time, novel methods make it possible to systematically collect, combine and analyze these data. As a result, the risk of cyber espionage and abuse is becoming a problem, and **cyber security** is on top of every national agenda. Today's user community - not only companies and governments, but also individuals – have to know and apply the basics of how to move in the virtual data space. They also have to be aware of the consequences of their actions and have to learn how to protect their data and applications.
2. Switzerland is facing a pronounced **lack of qualified personnel in engineering and IT-based professions**. In contrast to other industrialized countries, the percentage of women in these jobs is low. In order to overcome this unfavorable situation, not only public schools and higher education institutions are challenged, but also families, extracurricular activities, companies and careers advisory services. In addition, it is crucial to systematically collect and record all Swiss activities and initiatives and make them available to players in the field.
3. Competitive, industrial production is of great economic importance for Switzerland. **Disruptive developments in production** such as **additive manufacturing and industry 4.0** are likely to revolutionize industrial production. Even though both topics are on the national agenda, Swiss companies rely on international collaborations for addressing the most urgent problems. Therefore, there is a considerable risk that the country's manufacturing sector will deteriorate unless specific actions are taken to sustain its central role and to implement the novel technologies.
4. A basic commitment of SATW is **communication of the opportunities and risks of advanced technologies** to leaders in politics and industry.
5. The average age of Swiss residents is increasing as more people reach the age of 65 than there are babies being born. The number of aged people relying on homes for senior citizens as well as on nursing homes is rising. Consequently, the costs for healthcare and health services are skyrocketing. These costs should, however, be minimalized while maximizing the quality of life and independence of the elder population. It is therefore of utmost importance to invest in IT-based technologies developed for seniors (**gerontechnology**) that allow them to live independently or at least not relying on external care.