

## **Opening speech – Thomas Skordas**

### **FET Workshop on Future Battery Technologies for Energy Storage**

#### ***Towards a large scale EU R&D initiative in future battery technologies***

**10 January 2018, Brussels, BU25 - 0/S1 room**

- First, I would like to warmly thank you for coming today and also for having undertaken an in-depth preparatory work over the last weeks to provide your views on what could be a European research initiative in future battery technologies.
- Automotive is one of the largest industrial sectors in Europe. Europe is a global leader in the automotive industry, with more than 20% of all cars in the world being made in the EU. The success of the European automotive industry is seriously challenged by the transition to eMobility.
- Battery technology is a key technology in this transition to electric vehicles in the transport sector and today, the European companies are not the market leaders. While there are strong European industrial companies in the upstream part of the electro-mobility value chain (e.g. battery material manufacturers, production equipment suppliers) as well as in the downstream part (e.g. tier-1 suppliers like Bosch or Continental, car manufacturers), there is today no strong European player

positioned in the large-scale manufacturing of battery cells for electric vehicle applications. This is a major threat for the entire European automotive industry, in particular if compared to the current situation in Asia and the United States.

- Battery technologies are set to play also an important role in Europe's energy strategy for reducing CO2 emissions and mitigating human impact on climate change. They are a key technology for the integration of a greater share of intermittent and distributed renewable energy sources in the energy sector.
- The rapidly expanding global battery market has been estimated at 250B€<sup>1</sup> annually from 2025 onwards driven by the needs from the transport and energy sectors. However, it is difficult to make predictions as the speed of uptake of electric vehicles depends on many factors.
- This is a strategic market for Europe and is currently dominated by Lithium-ion technology from Asia with also some emerging strong players in the USA, like Tesla. Europe cannot afford to lag behind.

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<sup>1</sup> Estimate mentioned at a recent event organised by InnoEnergy in the context of the Battery Alliance. For 2019, the market is estimated to reach 120B€, with an annual growth of 7%.

- Last October, Commission Vice-President Šefčovič in charge of the Energy Union conveyed European industry stakeholders to propose the ***European Battery Alliance initiative*** aiming at establishing a full battery value chain in Europe and at defining areas of possible public intervention.
- Mastering the entire battery value chain, from materials to cell and pack manufacturing and to recycling, is a strategic priority for Europe. The Battery Alliance is preparing Europe's answer to this challenge, consisting notably of a comprehensive action plan considering short term aspects related to the supply chain, investment financing, regulatory and trade issues. They will also address some medium to long term research and innovation priorities.
- Last November, the Temporary Working Group of the Strategic Energy Technologies Plan (SET-Plan) Action 7 published their "Implementation Plan" for Europe to become competitive in the battery sector. The report identified R&I activities for tailored future investments in battery technologies for e-mobility and stationary energy storage applications covering the period 2018 to 2030.
- This Battery Implementation Plan will be presented today by [REDACTED]  
[REDACTED] from the JRC. It is an input to the research and innovation

priorities of the European Battery Alliance initiative and is also a very relevant reference for today's workshop.

- The focus of today's workshop is on the longer term horizon (i.e., beyond 2025) and in particular on identifying research challenges beyond what is already planned in the Horizon 2020 Work Programme 2018-2020.
- Tomorrow, a complementary workshop organised by our colleagues of DG RTD, will focus on identifying the short to medium term research priorities to be addressed still in the Horizon 2020 Work Programme 2019-2020.
- Today, the workshop targets in particular post Lithium-ion battery technologies based on future cell chemistries such as, for example, Li-metal, Li-Sulphur, Li-air or others, and their positioning vis-à-vis shorter term next generation lithium and solid state technologies.
- It is about discussing next generation **ultrahigh performance** battery technologies that show a **high battery energy density** providing a driving autonomy of at least 500 km (similar to today's vehicles) while exhibiting a radical improvement in **battery safety**.
- It is about discussing **sustainable battery technologies**, with **low environmental impact** and **high recyclability**.

- And it is about focusing on future **smart battery technologies** with embedded sensing possibilities and that exhibit for example advanced self-functionalities, from the cell to the pack and to the energy system level.
- While the focus of the workshop is on battery technologies, we would like to also open the discussions to alternative energy storage and conversion technologies like super capacitors, fuel cells, flow batteries and others.
- In terms of applications, the focus is primarily on electric mobility but we will also consider synergies with other application domains like stationary energy applications.
- A specific objective of this workshop is to explore the long term challenges and emerging next generations of battery technologies that could eventually be addressed by a large scale, long term research initiative under the Future and Emerging Technologies (FET) Flagships programme.
- The experience so far with the two running FET Flagships - Graphene and the Human Brain Project - shows that they are powerful federating European initiatives that can significantly shorten the path from science to technology development and to production.

### **What is the way forward?**

- Setting up such a large scale research initiative requires an important preparatory work. Today's workshop is an opportunity to start exploring what could be the scope, objectives and rationale of such an initiative.

The questions we would like you to collectively answer today are:

**1      *What should we do?***

What is the grand Science and Technology challenge to address in battery technologies? What are the key Science and Technology roadblocks to focus on? What could be the key objectives for a large scale and long term research initiative in this area?

**2      *Why should we do it?***

Why addressing this grand S&T challenge would be good for Europe? What could it bring to European industry, economy and society?

**3      *Can we do it?***

What are Europe's S&T strengths and weaknesses in terms of skills, expertise and capabilities, including industrial capabilities? How big is the research community? Is there a critical mass to sustain a research-industry ecosystem? What are the national champions? And, what are the research activities that other regions in the world have in this area?

#### **4     *How should we do it?***

How could Europe best address this grand S&T challenge? What is the scale and effort required to reach the objectives and how long will it take to do it? What would be the added value of action at EU level? What could be the synergies to build with other existing European and national initiatives?

- **To move forward, I expect in the coming months the community to coordinate its activities, to identify and engage further with all the necessary academic and industrial players and to work out a strategic research agenda for a possible large scale and long term research initiative.**
- I wish you productive day and look forward to hearing your opinion and reading the workshop conclusions.