Key Enabling Technologies (KETs) for Europe.

On November 30th, 2011, the European Commission (EC) plans to present the first draft for the ambitious new Frame Programme "Horizon 2020". Following a similar time frame, the European Commission and Member States (MS) are exploring ways how to implement the – widely supported - recommendations of the High Level Group (HLG) of the KET initiative.[1] These two actions cannot be independent from each other as Horizon 2020 provides the opportunities for implementing the KET proposals. Therefore, now is the right time for EU decision-makers to increase their awareness of the main opportunities, challenges and threats, as they have been addressed within the concrete recommendations of the KET HLG. In order to provide a coherent strategy how to overcome the innovation gap and to create a more equal level playing field, it is necessary to seriously focus on the Key Enabling Technologies, to create the right framework conditions and to close competitive gaps. Key elements for this – as seen by ESIA – are summarized below.

- The identified KETs (Advanced Materials, Micro- and Nanoelectronics, Nanotechnologies, Photonics, Biotechnologies, Advanced Manufacturing Systems) are key for innovation and growth in Europe - and this is common understanding of industry, large research organizations, the European Commission and the Member States (MS), as expressed in the Commission's 2009 Communication, in the Council and in the recommendations of the KETs High Level Expert's Group.
- This firm conviction should not be diluted and Europe should maintain the momentum that has been generated through the KET initiative.
- Micro- and Nanoelectronics are of outstanding importance for nearly all applications where Europe has a leading position, enabling innovations in Automotive (including eMobility), Communication, Energy Efficiency, Health and Security. However, realizing this, competitors from other regions in the world are putting enormous efforts into R&D and manufacturing of semiconductors and are receiving substantial support from their governments. With the KETs, Europe now has the opportunity to create a more equal global level playing field. To miss or dilute this opportunity would be a decisive step in the wrong direction for Europe.
- The implementation of KETs is based on all three identified pillars: R&D, pilot lines and manufacturing.
- In order to provide a true link between R&D and manufacturing, the pilot lines must be strictly linked to an industrial strategy.
- The realisation of a successful KET policy is only possible, if additional focus and resources are provided – by industry and by Public Authorities.

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[1] High-Level Expert Group on KETS, Final Report June 28, 2011. Original proposal COM (2009) 512. This EU initiative was initially launched in September 2009, with the aim to deliver policy recommendations to promote the industrial deployment of KETs. "*KETs are of systemic relevance as they enable the development of new goods and services and the restructuring of industrial processes needed to modernise EU industry and secure the research, development and innovation base in Europe.*" The high-level expert group delivered concrete recommendations and a longer term strategy / action plan for the identified KETs: Micro/Nanoelectronics, Nanotechnology, Advanced Materials, Biotechnology, Photonics & Advanced Manufacturing systems.

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- The recommendations of the KET High Level Group must be implemented as soon as possible to avoid severe competitive disadvantages and imbalances.
- Areas where – in general - Member States and Regions can play an important implementation role are:

  ➢ *Make KETs a priority for Europe.*

  An integrated KETs policy should be implemented; KETs should be visibly prioritised in EU policies and financial instruments and the European Investment Bank group should pro-actively support KETs initiatives in Europe. Member States and Regions should direct the EU Commission and the EIB accordingly. A specific 'KETs-box' should be established in the next R&D&I framework programme (Horizon 2020) and could additionally be used to ensure to also ensure cross fertilization between the technologies, provided this does not lead to limitations.

  ➢ *The European Commission and Member States should apply the Technical Readiness Level (TRL) scale R&D definition.*

  The EC and MS should align their RDI activities on the TRL scale in line with the OECD definition. They should also systematically apply this definition in order to include technological research, product development and demonstration activities within their RDI portfolio.

  ➢ *Fully exploit the scope of relevant R&D definitions.*

  The EC and MS should apply R&D definitions in their programmes which support the full and simultaneous implementation of the three pillar bridge model along the innovation chain, from basic research, through technological research, product development and prototyping up to globally competitive manufacturing.
  Member States and Regions should trigger the Commission to formulate definitions accordingly. It should be noted, that WTO allows more flexibility in this regard since 2000. The EU exploits this flexibility less intensively than Asian or American states and regions.

  ➢ *Rebalancing of EU RDI funding programme.*

  The EC and MS should firmly rebalance their RDI funding in KETs-related programmes towards technological research, product development (including pilot lines, prototypes, first-in-kind equipment and facilities and demonstrator activities). In particular in the Horizon 2020, the EC and MS should set indicative targets for the percentage of funding dedicated to basic research, technological research and development activities.
  Member States should support this view in the budgeting process for Horizon 2020 and compare their balance of RDI funding with competition regions like the US or Korea.

  ➢ *Combined funding mechanism.*

  The EU should introduce a tripartite financing approach based on combined funding mechanisms involving Industry, Commission and national authorities (Member States and local governments), when required by the high costs of the KETs RDI projects, and put in place the appropriate programme management and mechanisms to allow the combination of EU funding… (Horizon 2020, structural funds, etc.).
  Instruments should be modified or created to allow European funding for efficient cross border co-operation.
  Member states and regions should consider complementary budgets and regional development plans which enable regions to spend structural funds for KETs and innovation. In particular, the concept of "Smart Specialisation" is useful in this respect.

All Member State support should be considered on equal bases, whether it is through grants or tax credits.

- *State aid provisions.*

The EU should adapt state aid provisions to facilitate RDI activities and large-scale investment in KETs, in particular through the introduction of a matching clause in the EU state aid framework across the board, review of the scaling-down mechanism for larger investments, increased thresholds for notifications, faster procedures and the publication of more specific rules for "projects of common European interest".
Member States should discuss a Council Decision for the introduction of a matching clause for large investments, if KETs investment is concerned.

- *Build, strengthen and retain KETs skills.*

The EU should promote *…individual excellence in technologically focused engineering, research and innovation and establish the appropriate framework conditions through the ESF regulation in order to support KETs skills capacity building at national and regional level.* Specific focus should be given to an increasing need of highly skilled engineers with the ability for inter-disciplinary work.

- Specific actions to support the semiconductor sector are:
  - Provide at national and / or regional level the administrative and budgetary environment to encourage implementation of R&D, of pilot lines and of industrial manufacturing activities, in line with the to-be-updated EU legal and strategic decisions.
  - Enable the launching of dedicated ENIAC calls for projects in line with the KET initiative, with national/regional budgets for them, to be complemented by the Joint Undertaking budget.
  - Urge the European Commission to start the necessary modifications of the State Aid Provisions as soon as possible.

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ABOUT ESIA:
The Mission of the European Semiconductor Industry Association (EECA-ESIA) is to represent, promote and defend the vital interests of the European-based semiconductor industry and ensure its competitiveness in the global market. The semiconductor industry provides the key enabling technologies at the forefront of the development of the Information Society. This sector supports over 110,000 direct jobs and up to 500,000 induced jobs in Europe, operating in a worldwide market valued at at $298bn (Europe $38bn) in 2010. With membership covering companies, national sector associations and research institutes, ESIA is the voice of the semiconductor industry in Europe.
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