



## **SEMI input about funding schemes for nanoelectronics and semiconductor R&D in Europe**

The EU needs a strong innovative performance in order to equip itself with all the means needed to address major societal challenges ahead, such as fighting climate change, overcoming poverty, fostering social cohesion and improving resource and energy efficiency. Following this path will enable the EU to grasp global opportunities, while at the same time offering sustainable employment opportunities with high quality jobs.

In recent years, Member States and the European Union have taken many initiatives to boost the relevance, impact and the efficiency of public research. However, the fragmentation of public research programming leads to sub-optimal returns and is costing Europe a lot, as well as preventing it from realizing its societal objectives.

The European Research Area and the Framework Programme for Research and Technological Development are of high importance for collaborative basic research contributing to the development of the innovation based economy evolving to a low carbon, knowledge-based economy and society, and training of researchers and efficient career development leading to a population of high qualified researchers.

Essential for a successful and competitive European research landscape is the availability of sufficient funding for R&D and higher education. National and regional authorities along with the European Commission should strengthen their efforts in obtaining the 3% GDP target for research expenditure and the 2% GDP target for higher education expenditure.

The European Commission has recently made a communication on Key Enabling Technologies. Among these, nanoelectronics is specifically identified as strategic for Europe, since it enables innovation and value creation in a large part of the European economy and pervades in sectors such as Telecoms, Industry, Aeronautics, Energy, Environment or Health. For these reasons, nanoelectronics is a domain of fierce competition at World-wide level, and Europe should capitalize on its strengths. Semiconductor manufacturing as enabler for nanoelectronics is a sector of high intensity, both in Capital Expenditure and in R&D, and concentrating critical masses is essential. In Asia and US, strongly focused policies and programs promote and support a few industrial clusters networked with a number of world competing centres of excellence. In Europe, the European Commission and the Members States must altogether support the competitiveness of a very restricted number of industrial clusters which should compete at world level on manufacturing of semiconductor technologies, as well as the strong coupling of these clusters with companies (SMEs and large companies) and research organizations all over Europe. An efficient European Funding scheme of Cross Border Cooperation should also be established in order to make this happen, as will be outlined further.

During the next 10 years the European Commission sees a shift in its role within the science and innovation policy to a role of coordinator and facilitator where the real implementation will belong to external organisations. The adoption of the Lisbon Treaty last year allows the set-up of new legal structures to do this job. Within the external organisations national/regional programmes will be lined up and budgets of publicly-funded research programmes will be pooled. In nanoelectronics, the importance of focused clusters with critical mass gives a specific importance to locally-supported policies, whose impact and benefit to Europe largely exceed the region where the cluster is implanted. **Several concerns related to this approach exist:**

1. The only relevant competition in semiconductor manufacturing opposes Europe to other regions in the world (Taiwan, Korea, Japan, China, US). There is no actual competition within Europe, between the few clusters with critical mass on semiconductor manufacturing. Thus, regional initiatives for strengthening the few clusters in Europe that compete at World-wide level must be considered as a strong way to strengthen European competitive position. States must be more openly authorized to fund large initiatives in nanoelectronics around Industry-centred clusters.
2. **Besides, in order to compete at a global level, Europe has to facilitate the cooperation between centres of excellence located in different European Member States. This can not be achieved without efficient European Funding for Cross Border Cooperation.** This European funding should aim at structural collaboration between centres of excellence (universities, research centres, and industry) located in different Member States or Associated Member States. Recently cross-border cooperation has been stimulated by setting up instruments based on co-funding schemes: schemes where the funding is partially provided by the national/regional governments and partially by the European Commission (as a proportion of the national participation), sometimes supplemented with participation of the industry (in cash or in kind). Examples of such schemes are the public-private partnerships (article 171 initiatives, alias JTI) and the public-public partnerships (169 initiatives). **The present funding rules within these instruments induce inefficiencies and should be reconsidered in order to facilitate cross border cooperation.**
3. The 'classical' Frame Programme was an effective way to bring centres of excellence together in advanced across border research programmes. The European R&D community feels that this type of programmes should be reinforced and be complementary to the new instruments along article 171 and 169 partnerships.
4. Recently **Joint Programming** is introduced in the European research policy, linked to the nominated Grand Challenges, following a **top-down approach.** Ideally national programmes will be lined up and budgets of publicly-funded research programmes will be pooled.

It is important to see Joint Programming as an evolutionary **process** where countries and regions **gradually** take coordinated initiatives regarding the allocation of their budgets for research and innovation, and which allows for countries, regions and cities variable participation. Joint efforts at national, regional and European level are required. In addition, Joint Programming can grow from the Member States, but will only be sustainable if Member States receive sufficient incentives to work together and create common funding systems that are open to other Member States. Sufficient budget from the European Commission in the form of co-financing is essential. Nevertheless, attention should be given to maintain a healthy balance between the top-down and the bottom-up approach. The experiences from the existing public-public and public-private partnerships should be taken into account when establishing new Joint Programming Initiatives.