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The importance of key enabling technologies for SMEs

Though EU has strong assets, with its internationally recognized researchers and companies, it is still significantly lagging behind its main competitors, i.e the United States, Japan and South Korea, for the transformation of research results into innovative products and services on the market. The 2014 Innovation Union scoreboard shows that these countries are ahead for private R&D expenditure and patents. Thus, the 3% objective for R&D intensity (R&D expenditure as a percentage of GDP), set in the EU 2020 strategy, which was not achieved within the framework of the Lisbon strategy, has not been reached yet (2,62% for the EU27 in 2011).

The fact that innovation expenditure is less oriented towards economic development has an impact on the European industry, whose share in the GDP has dropped sharply, notably under the combined effects of the economic crisis and increased global competition (this share was 15,1% of the EU GDP at the end of 2013 and 11% of the manufacturing jobs have been lost since the beginning of this crisis).

The key enabling technologies (KETs) can make a significant contribution to invigorating the European industry and, therefore, to reaching the EU 2020 strategy's goals in terms of growth and job creation. These technologies, which are based on RDI and highly qualified jobs, are in the form of building blocks which can be combined. They are essential for the manufacturing of a wide range of products and high value-added applications.

They have been identified in the European Commission's communication dated 30 September, 2009[1] and were included in the report published in June 2011 by the High Level Group on KETs. They are photonics, industrial biotechnology, nanotechnology, advanced materials, micro/nanoelectronics and advanced manufacturing systems.

Given the growth potential of the 6 KETs' global market, which should exceed 1 trillion euros by 2015, the European Commission defined a pro-KETs integrated strategy in 2012[2]. The European Council of 20 and 21 March, 2014, which underlined the importance of reshoring manufacturing jobs in the EU, reaffirmed the crucial role played by the KETs for industrial competitiveness and called for the swift identification of related Important Projects of Common European Interest (IPCEI).
SMEs, which are the backbone of the European economy, can fully take advantage of the opportunities offered by these technologies, along the different stages of the value chain (RDI, industrial application, commercialization), as driving forces of innovation and job creation.

[1] Communication COM(2009) 512 final «Preparing for our future: Developing a common strategy for key enabling technologies in the EU»

[2] Communication COM (2012) 341 final of 26 June, 2012 «A European strategy for Key Enabling Technologies - A bridge to growth and jobs»

MINISTÈRE DE L'ÉCONOMIE
DU REDRESSEMENT PRODUCTIF
ET DU NUMÉRIQUE

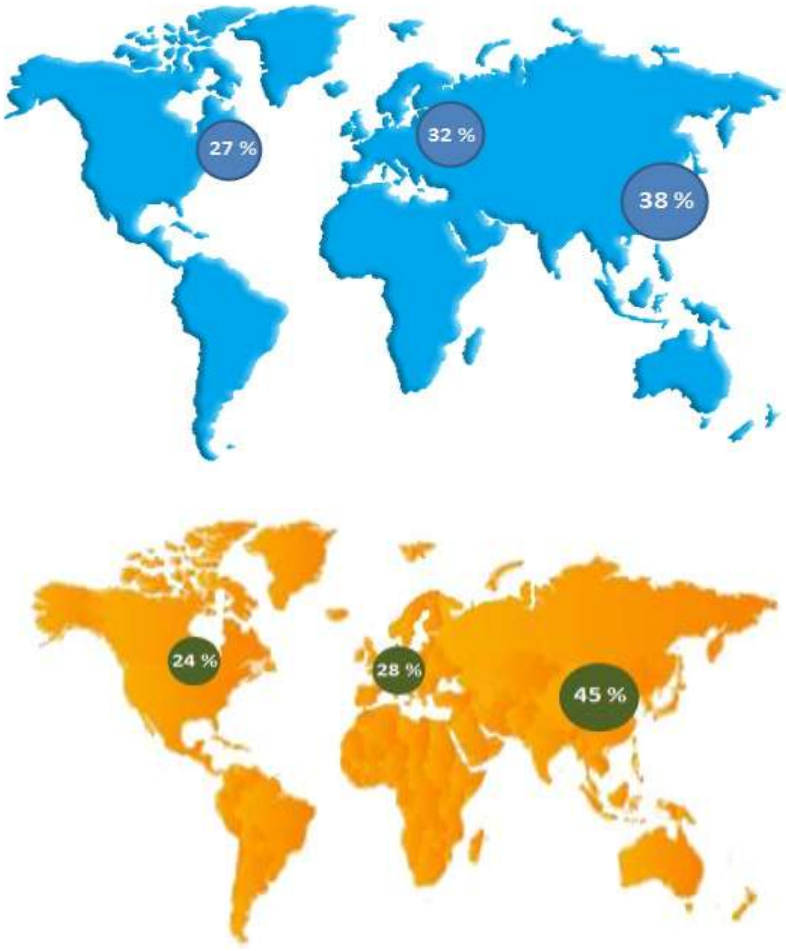
I. State of play and contribution of SMEs to the KETs value chains

The EU is a major worldwide player for KETs but is faced with an increasing pressure from its main competitors.

Through its R&D performance and its lead in several sectors of KETs application (aeronautics, automotive, health, energy, etc), the EU is a major worldwide player for the development of KETs. It is the only region in the world which masters the 6 technologies and is a leader in patents applications.

Nevertheless, increased competition from third countries, and especially emerging economies, has eroded this lead. In addition to the declining of patents applications between 2010 and 2012 (see fig.1), there is a clear trend of transferring the exploitation of patents and related advanced manufacturing outside the EU. This highlights the EU's difficulties to transform its knowledge base in innovative products and services on the market[3].

Fig.1 Market share in patent applications in all 6 KETs (%)

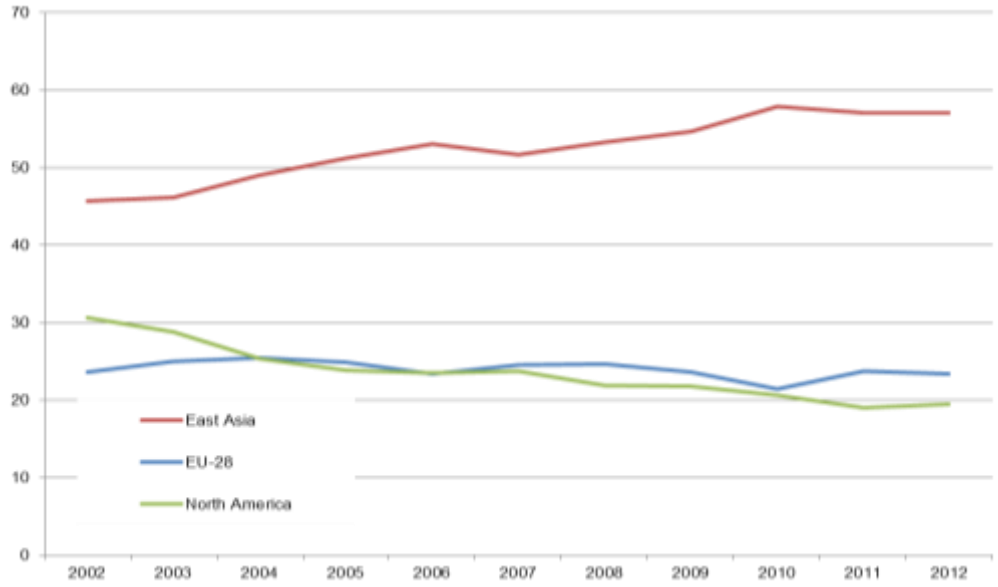


Source : KETs observatory-PATSTAT data and report 2010, European Commission in Key Enabling Technologies (TNO/ZEW), TKM analysis, February 2013

[3] The HLG on KETs refers to the « valley of death ». This term is used to describe the gap between the knowledge base and the placing on the market of innovative products and.

Therefore, Europe's share in the production of machine tools, which is one the main sectors of KETs application, has dropped from 44% in 2008 to 33% in 2010, for the benefit of its main Asian competitors, i.e China (including Taiwan) and South Korea. More broadly, the gap between the EU and East Asia in terms for KET-related exports, which increased from 2007 onwards, still remains significant (see fig. 2).

Fig.2 Export market share in all 6 KETs by region (%)



Source : UN Comtrade data base – calculation NIW

The state of play of KETs deployment varies within Europe. However, there is a common concern of Member States for KETs to be structuring components of today and tomorrow industry.

Some European countries already display a wide range of KETs, as a result, notably, of proactive pro-innovation programmes supported by the State, as in Germany which is capable of mastering technologies such as advanced manufacturing systems, photonics, electronics, biotechnology, advanced materials and nanotechnology. The Austrian federal government has committed itself in the same process by building a solid base of companies specialized in the 6 KETs, who are performing not only in R&D but also in manufacturing and marketing. Since 2009, Norway has launched a strategic reflection to develop all of these technologies, which recently led the government to decide to join ECSEL, the European Joint Technology Initiative (JTI) for electronic components and systems.

National manufacturing systems can already fully benefit from the KETs, as in Italy which positioned itself in the 6 technologies, notably in advanced materials and manufacturing systems.

France has consolidated its position for the 6 KETs, including areas of excellence such as nanoelectronics (there is a major R&D pole in the region of Grenoble-Crolles which is structured around CEA and STMicroelectronics), photonics or even advanced materials (France is historically well positioned for high performance materials with worldwide leading companies such as Sain-Gobain, Essilor and Arkema).

In other countries, some key sectors can be identified, as in Finland which has developed biotechnology, advanced materials and manufacturing systems. Hungary has capitalized these last years on a strong experience in developing electronics and photonics.

Smart specialization strategies which aim at supporting high potential technologies are being implemented in different countries. Portugal has oriented its research and innovation strategy towards 4 key sectors: energy, ITC, materials, and manufacturing systems. In Belgium, Flanders has also put these technologies at the heart of its innovation policy, through the definition of 5 KET roadmaps.

Some countries, where companies haven't been involved in KETs so far, are exploring the way of making their industry evolve towards more knowledge-intensive or higher value-added sectors, such as in Malta.

However advanced the KETs development may be in European States, it is mainly the result of an environment, an eco-system. Indeed, the impetus given by public authorities to support these technologies is often driven by the necessity of addressing major societal challenges (energy, transports, health, demography, *etc*) and has to be fueled by the demand coming from the industry. For instance, Romania has been able to develop micro/nano-electronics and nanotechnologies through the automotive sector.

Between those two stages of the process, the development of KETs relies mainly on collaborative R&D projects, between RTOs and companies. This collaborative approach can be facilitated by clusters which involve on a common territory and subject, big and smaller companies, research labs and training organizations. In Belgium, Wallonia has integrated the KETs development in its "pôles de compétitivité" policy.

SMEs contribution to the KETs value chains appears to be significant, even though the scarcity of available data does not allow for a comprehensive and conclusive overview on this subject.

The European Commission's communication of June 2012 underlines the active part played by SMEs in the KETs sector. It was mentioned that most of the 5 000 European companies specialized in photonics were SMEs.

At this stage, it seems difficult to assess precisely the contribution of SMEs in the KETs value chain, in the absence of precise data in most of the countries which responded to the questionnaire. But, in a number of those countries, SMEs seem to represent a prominent share of companies of the KETs sector (i.e Spain, Norway, Croatia and Lithuania), reflecting more broadly the weight of SMEs in the national economy.

However, this share can vary according to the technologies. In France, 88 % of companies which are specialized in photonics are SMEs. But the situation is different for nanoelectronics, and more particularly for semi-conductors, for which SMEs have a minor part, as this type of technology requires heavy investments for manufacturing. According to ZDH, in Germany, SMEs play a significant part in the nano and biotechnology sectors. Other technologies are mostly driven by the industry.

It is easier to draw the profile of SMEs specialized in KETs, since these companies are mostly start-ups or spin-offs of companies or research organizations (i.e France, Austria, Norway, Hungary, Romania, Estonia).

SMEs can play an important role not only in the initial development of KETs but also in their industrial implementation. They are often the source of new technologies and processes for big companies (i.e Austria).
Nevertheless, their contribution to the KETs value chains depends greatly on the configuration of the national industrial landscape. In Estonia, for instance, where the industry is mostly oriented towards subcontracting manufacturing, SMEs have very limited efficiency and skills for carrying out R&D activities and using their results.

II. Obstacles to the development and industrial applications of KETs, especially for SMEs

In its communication of June 2012, the European Commission highlighted different types of obstacles for the development of KETs, which have been largely confirmed by the responses given by the members of the SME Envoys network.

The lack of funding appears to be a major obstacle for the development of KETs, which are perceived as related to high risk projects.

KETs present high risks, since they are heavily capital-intensive, based on long R&D cycles and industrialization processes with complex systems. These risks have to be compensated with a large scale industrialization to allow return on investment. This issue is even more acute for SMEs whose needs don't reach a sufficiently important size to attract private investors.
Access of companies, and more precisely of SMEs, to private funding is therefore identified as inadequate, notably for the transition from research to commercialization (validation of products and innovative processes at an industrial scale, support to the first generation of products and processes and first commercial application).

This phenomenon can be more pronounced in certain States because of the credit crunch, thus making it even more necessary to look for diversified funding sources. However, the size of equity and venture-capital markets remains too small in many States to satisfy demand. The EU is significantly lagging behind the United States in the venture-capital area (in 2012, venture-capital investments in the US where 6 times greater than the ones in the EU). This can explain the relocation of innovative companies, which are vital to the European economy, to third countries.

France thinks necessary in this regard to consider establishing at EU level a shared diagnosis on the venture-capital market and reflect on the best ways to develop it at a European-wide scale, in addition to measures already taken by the Commission to remedy the internal market fragmentation.
Some countries, including Lithuania, Malta and Croatia, insisted on the importance of defining simplified guidelines and more flexible regulations to use financial tools in order ti facilitate the development and industrialization of KETs.

Tax environment appears also to be decisive for innovative companies, and more particularly for SMEs. For this reason, some fiscal incentives for RDI have been introduced in some countries. For instance, in France, , the tax credit for innovation (*crédit d'impôt innovation*) dedicated to SMEs was launched in 2013. SMEs can benefit from a 20% tax credit for eligible expenditure related to prototyping and pilot installations for new products. The ceiling of the expenditure base is € 400 000.

The lack of appropriate research and technological development infrastructures blocks the access of SMEs to KETs

The lack of collaboration between stakeholders involved in the KETs development (first and foremost companies and R&D organizations), which is described as significant in several States, is often compounded by the insufficiency of appropriate technological platforms, notably to address SMEs needs.
The difficulty of access to pilot lines and prototyping facilities for SMEs has been underlined in the status implementation report of the HLG on KETs, which was published in July 2013. In order to address this specific issue, the HLG recommended that the innovation capacity of SMEs should be reinforced by

enabling pan-European access to a set of European KETs technology platforms. These platforms could help develop collaborations between big companies and SMEs which is of paramount importance for the inclusion of SMEs on value chains.

The same concern has been conveyed by some members of the SME Envoys network, including Austria, Italy, Finland and Croatia, who think it is necessary to develop access to such infrastructures. However, it was pointed that, in addition, framework conditions for collaboration at European level should be improved.

Wallonia (Belgium) proposed that smart specialization platforms, which was proposed by the European Commission in its communication of 22 January, 2014 on "industrial renaissance" play this role by supporting cooperation between regional ecosystems (though competitiveness poles or clusters) and facilitating an adequate combination of existing funds and initiatives at different territorial levels.

France takes a great interest in the HLG's proposal on technological platforms and hopes that this will be explored further in close relation with SMEs' needs, since the barriers for the access to KETs are both geographical and cultural for these companies.

The weak orientation of RDI policies towards commercialization of innovation is not conducive to the deployment of KETs.

The lack of transformation of research results into innovative products and services seems to be a trend observed in many countries. Flanders (Belgium), Portugal and Poland, for instance, regret that funding is much concentrated on research and not enough on industrial exploitation and market launch. Similarly, end users industries are not associated enough to efforts which are deployed for collaborative R&D.

Human resources necessary for the deployment of KETs should be reinforced through skills development.

The shortage of skilled workers for projects which are inherently interdisciplinary remains a major challenge in the EU, according to the European Commission. Growing needs for professional workers in the short term in sectors such as ITC, in particular nanotechnologies and photonics, are at a risk of not being addressed, thus increasing mismatch between labour supply and demand.

Responses from the members of the network show that the issue of training should be dealt with in a holistic way. As Eurochambres underlines it, the EU is confronted, first, with a lack of STEM students who are essential to the KETs sector. Some countries are faced with outdated research infrastructures, a lack of PhD students and researchers, apart from the weak management in the institutions of knowledge base and slow institutional learning.

Therefore, it is essential that skills should be developed in this area with a better access to knowledge and suitable training programmes. Information on research offers and potential partnering at European level could stimulate the participation of companies and institutions in the development of KETs.

Other structural constraints can explain the low development of KETs.

The configuration of the industrial landscape at national level and even at regional level is decisive. Companies' profile can explain a more or less advanced development of KETs. For instance, the corporate fabric in Spain is oriented towards traditional sectors, with low technology intensity, and made of many micro and small enterprises and few big and medium companies. Finland has few mid-caps.
Acute disparities can remain at regional level. Germany notes the division between South-West, very much oriented towards innovation and excellence, and North-East which is less geared towards this kind of

activities. In Belgium, Brussels Capital region (Belgium) is characterized by a strong service economy and a weak industrial base.

The market size and the lack of demand from the public sector are also mentioned as constraints.

Flanders (Belgium) stresses the importance of defining lead markets at a sufficient scale-level.

Special attention should be paid to SMEs who are faced with barriers to market entry: building-up of a sufficient client base at an early stage, regulation, language, culture, but also uncertainty on the mere existence of markets.

France thinks it is useful to design a public procurement framework conducive not only to innovation but also to manufacturing on the European territory. In this regard, attention should be paid to Public Procurement for Innovation (PPI) and Pre-Commercial Procurement (PCP), which are promoted through the Horizon 2020 framework programme. These useful devices should not lead to mass purchases at European level, excluding SMEs from public procurement and opening it to non-European products.

The access to IPR at a reasonable cost is a true challenge for SMEs.

Sharing of intellectual property rights with laboratories and big companies is a real difficulty for SMEs from the photonics sector in France.

In the same vein, Germany noted that IPR of publicly financed project do not belong exclusively to one of the project partners. SMEs rather pay the development of potentially successful projects out of their own pockets in order to own IP rights exclusively. Austria added that EU measures to facilitate access to RTO infrastructure should consider SMEs limited resources and business interests.

Finally, competition from third countries, which have more generous State aid policies, appears to be a serious cause for concern.

Some sectors in Europe, such as micro/nanoelectronics and photovoltaics, have seen their competitiveness significantly eroded these last years for this reason. Thisissue, which has been identified by the HLG on KETs, undoubtedly requires a vigilant approach at European level.

France is very interested in the proposal contained in the conclusions on industrial policy adopted last December by the Competitiveness Council, which calls for the Commission to contemplate the possibility to examine subsidies which are given by third countries.

III. Initiatives launched by public authorities aiming to facilitate KETs development

1. National initiatives supporting KETs development

Support for KETs is ensured under the national RDI strategies

National programmes aiming at RDI funding, targeting each KET individually or KETs in general, are in place in several Member States. Managed by national and executive agencies and institutions, their vocation is to put in place cooperation between science and industry, and encourage synergies between them.

Thus, several countries have formulated **national research strategy frameworks**, e.g. the Romanian National strategy Research, the German High-Tech Strategy 2020, the National innovation strategy 2014 – 2020 of Croatia, the Estonian Research and Development and Innovation Strategy 2014-2020, the Latvian National Research and Development and Innovation Strategy (2013-2020), the Malta's National Research & Innovation Strategy 2020, the Research Strategy 2011-2015 in Belgium–Wallonia and Brussels Capital Region.

In Poland, KETs development and deployment arepromoted and facilitated by the Polish Agency for Enterprise Development, especially through measures 1.4 "Support for goal-oriented projects" and 4.1 "Support for the implementation of results of R&D works" of the **Innovative Economy Operational Programme** which cover multiple technological readiness levels (TRLs)[4]. No particular KETs are targeted as such, but 47 projects related to KETs areas (biotechnology, nanotechnologies and micro and nanoelectronics) are supported by this program.

The Austrian Research Promotion Agency (FFG) manages a variety of KETs related programmes as the "FTI Initiative" (**Intelligent Production**), "**ICT of the future"**, "**GEN-AU"** (Austrian Genome Research Programme), "**NANO EHS"** (Environment, Health and Safety), "**Austrian NANO Initiative"** (nanoscale sciences and nanotechnologies), and "**KLI.EN"** (micro/nano electronics, advanced manufacturing, industrial biotechnology).

In France, besides the national initiatives mentionedbelow, the " advanced materials" are supported through the **"Common Laboratories program"** of the French National Research Agency (ANR). Launched in 2013, its purpose is to encourage public research stakeholders to create new structured partnerships through the creation of "Common Laboratories" between an SME or a mid-cap and a research laboratory governed by public law. Several joint laboratories related to advanced materials were funded in 2013.
One way to get KETs to the market is to provide a route through **public procurement**. The Netherlands and the UK have an active public procurement policy with *Small Business Innovation Research* (SBIR) programmes. The Finnish Funding Agency for Innovation "**Tekes**" has a funding instrument for public procurement in innovation. Tekes can fund, in the first phase, the planning of public contracts aiming at purchasing innovative products and services. In the second phase, funding is available for research, development and innovation activities that are part of a public procurement.

In Germany, in order to be able to evaluate innovative products competently but also to guarantee success chances for all bidders, the German Ministry for Economic affairs has established a Competence center "Innovative Procurement" (**KOINNO**). The competence centre provides information and advice for procurement offices when it comes to acquiring new products, services or system solutions. The latest state of the art or new products are being provided to public institutions in order to stimulate fast dissemination. Therefore, the possibilities to participate in public procurement are being increased for everybody, especially for SMEs. One of the main available instruments is the **online portal**, which provides guidance, examples of good practice and standard texts that can be included in tendering documents – all of which are organized by the federated States (Länder).

[4] Measure 1.4 covers the co-financing of expenditures up to the development of prototypes. Measure 4.1 finances also further stages of R&D implementation (including consultancy with e.g. technology brokers).

Financial instruments are deployed in the Member States to support critical phases of RDI and to create a leverage effect

In the Flanders region (Belgium), the "**Vlaams Innovatiefonds**" (Vinnof, Flemish Innovation Fund) is specifically geared towards innovative start-up companies. It provides risk capital for the early stage of a company, with the expectation that entrepreneurs will find it easier to call upon private investors in later phases (business angels networks). Most of the instruments are applied in a bottom-up scheme (all areas, applications, products or services).

In Austria, the "**ERP – Technology"**, "**PreSeed**" and "**Seedfinancing**" programmes contain financial instruments supporting KETs. The "ERP – Technology programme" focuses on projects which develop new products and processes, environmental and power engineering, prototypes and pilot and demonstration plants, while "PreSeed" and "Seedfinancing" programmes are destined are forstart-ups and potential founders.

The Spanish **Centre for the Development of Industrial Technology (CDTI)** supports R&D projects in KETs with soft loans with a no repayable tranche. Innovation projects in KETs are funded with soft loans with a 2% interest rate.The minimum budget for a project is € 175 000.
The **Central Innovation Programme SME (ZIM)** in Germany promotes R&D projects in SMEs. It is the programme of the Federal Ministry of Economics and Technology (BMWi) for market-driven technology support of the innovative SME economy in Germany. It provides grants to SMEs to help them finance research and innovation projects.

Clusters promote the creation of innovation ecosystems

KETs development can be facilitated by **clusters** which promote cooperation between unrelated companies operating in a given sector, and research and educational institutions. Most Member States have policy measures that stimulate the cooperation between industry and university.

In France, clusters play a key role in connecting the players and sparking innovation. For instance, the French world-class competitiveness pole focusing on micro and nanoelectronics and software, "**Minalogic**", is one of the leading clusters in Europe in this field, federating 193 public and private organizations to foster collaborative innovation. The aim of Minalogic is to create a global business ecosystem in the field of smart, miniaturized solutions based on leadership in research and innovation and on the leading role of major groups supporting the growth of SMEs. To reach this objective and to increase open innovation, the cluster leverages synergies between micro/nanoelectronics and software companies, labs and additional supportive entities in the Rhone-Alpes region.

Moreover, it should be emphasized that the third phase of the French competitiveness poles policy, launched in January 2013, focuses on their industrialization projects.

In Austria, the **Christian Doppler Research Association** (CDG) supports the establishment of temporary laboratories at universities that work on "application-oriented fundamental research". They are set up as public-private partnerships between the federal government and companies. Universities cooperate with

industry companies which have to contribute to 50% of the laboratory's budget. The other half of the budget is funded by the Federal Ministry of Science, Research and Economy (BMWFW).

France RDI and industry strategy

Programme investissements d'avenir

In France, the **Invest for the Future Programme** (**Programme Investissements d'avenir (PIA))** contains a € 35 billion national investment which aims at strengthening productivity, innovation, increasing enterprises' competitiveness, but also fostering employment and equal opportunities by promoting investment and innovation in five priority sectors: higher education and training, research, industrial sectors and SMEs, sustainable development and digital economy.

Examples of initiatives facilitating KETS development financed by the "PIA":

- **Nanobiotechnology Programme**: it intends to bring important contributions in the field of health and environment, through nanomedicine and studies on nano-ecotoxicology, respectively. A commitment should be made through these projects toprovide evidence of functional concept capable of inducing further stages of industrialization and which will play a large part in the creation of knowledge and intellectual property. Projects supported by this programme are based on integration platforms.
- **Technology Research Institutes** (Instituts de Recherche Technologique): through strategic public-private partnerships in research, training and innovation, they wll strengthen the ecosystem formed by competitiveness poles. They will enable France to achieve excellence in key areas for the future and develop economic sectors among the most competitive in the world.
- **Innovation 2030 – Worlwide innovation challenge**: this is a contest set-up by the French government which aims at identifying the key technologies which will be indispensable for the French industry in 10-15 years. Seven key priorities have been selected: (1) energy storage, (2) recycling of metals, (3) development of marine resources, (4) plant proteins and plant chemistry, (5) personalized medicine, (6) silver economy, (7) big data. € 300 million are dedicated to this challenge.

The 34 industrial sector-based plan

After one year's work within the National Council for Industry, in 2013, the French government initiated a **strategic review to define France's industrial policy priorities**. These led to **"34 industrial renewal initiatives"** aiming to focus economic and industrial stakeholders around common goals, align government means more effectively to these goals, and harness local ecosystems to build a new, competitive French industrial offering able to win market share in France and internationally, thereby creating jobs. These initiatives are at the nexus of three broad transitions in: energy and the environment, digital technology, technology and society.

Some examples of the 34 sector-based initiatives are: Embedded software and systems, Electric-propulsion satellites, Technical and smart textiles, Smart grids, Green chemicals and biofuels, Medical biotechnologies, Digital healthcare, Medical devices and new healthcare equipment, Innovative products for safe, healthy, and sustainable food, Nano-electronics, Connected Services, Augmented Reality, Contactless Services, Supercomputers, Robotics, Cybersecurity, Industrial plant of the future.

Examples of French successful schemes aiming at developing SMEs access to KETs

- **CAP'TRONIC programme:** it is one of the most successful French strategies to develop SMEs access to nanoelectronics and embedded software technologies, which contributes to the diffusion of these KETs

into application sectors. Each year, hundreds of "traditional" SMEs are helped to introduce electronic automation and software monitoring into their products.

- **Nano 2017:** it is a strategic R&D programme supported by STMicroelectronics and LETI (CEA's dedicated laboratory to nanoelectronics) combining the efforts of multiple partners, whether public or private, in the Grenoble area. Launched in July 2013, Nano 2017 is supported by "ENIAC JTI" [5] and aims at promoting strong collaboration between STMicroelectronics and all industrial partners of the nanoelectronics ecosystem, among which many SMEs from the Electronic Design Automation (EDA) and Design sectors.

2. European initiatives supporting national pro-KETs efforts

The European strategy for KETs was adopted by the Commission in June 2012. It aims at closing the innovation gap in KETs. It aims at reversing the trend of Europe's industry decline, notably in manufacturing capacities, and to stimulate growth and jobs. The implementation of the European strategy to boost the deployment of KETs is ongoing.

Several types of EU funding can be mobilized for the KETs, which can be combined.

The **EU funding instruments** (EU Framework Programme Horizon 2020, European Structural and Investment Funds (ESIF)) give high importance and visibility to KETs to foster innovation, including through public private partnerships (PPPs) under **Horizon 2020**. Horizon 2020 includes a dedicated budget for KETs of almost € 6 billion, significant rebalancing of RD&I support towards closer-to-the-market projects (including pilot lines and demonstrators), priority for the cross-fertilisation between KETs (30% of the KETs budget for cross-cutting KETs projects). This programme provides notably faster funding as well as industry-oriented selection criteria in order to increase industry participation along the value chains.

KETs are also eligible to **European Structural and Investment Funds** (ESIF). Two out of three regions registered in the smart specialisation platform indicate a KETs-related priority and cluster-specific actions are being promoted. Further, combining Horizon 2020 funds and ESIF has been made possible to allow combined public support which could be specifically interesting for ambitious industrial projects.

Following the Memorandum of Understanding signed in February 2013 between the European Commission and the European Investment Bank (EIB), the EIB lending to KETs projects has increased by 60% (from € 2.7 bn in 2012 to € 4.4 billion in 2013), some of them being supported by the FP7 Risk-Sharing Finance Facility (RSFF), a joint EU/EIB debt financial instrument that will be continued under Horizon 2020.

State aid framework had been recently revised, especially for Important Projects of Common European Interest (IPCEI)

The European Council in its conclusions of 20/21 March 2014 called to strengthen KETs of high industrial interest such as batteries for electro-mobility, intelligent materials, high performance production and

[5] ENIAC is a JTI created in 2008 which runs until 2017. It supports collaborative research projects in the field of nanoelectronics. Projects worth funding are financed by the EU and those Members States that have joined the ENIAC JTI. A project is submitted by at least three partners from three different Member States.

industrial bioprocesses by swiftly identifying projects of European interest. The instrument of **Important Projects of Common European Interest (IPCEI)** could be used, in this respect, to progress in these areas.

State aid policy is being modernised, notably by reforming the R&D&I guidelines, the GBER and the Risk Finance Guidelines. A new Communication on Important Projects of Common European Interest (IPCEI) will be soon adopted by the Commission. IPCEIs may include research infrastructure or pan-European investments linked to the deployment of KETs.

Other EU initiatives can complement these useful instruments for TCG

A **KETs Observatory** is being established providing quantitative and qualitative information on the performance of EU Member States and other competing economies. Cooperation with and involvement of private and public stakeholders are ensured through a High Level Group on KETs and a Member States Group respectively.

In order to address the issue of the lack of a skilled workforce, a study has been launched to identify the necessary KETs multidisciplinary skills and take actions to better meet the industrial needs. The **Knowledge Innovation Community** (KIC) on value-added manufacturing should contribute, from 2016 onwards, to address the need for the KETs multidisciplinary skills in Europe.

Questions for the discussion:

1) *Do you find it useful to establish a diagnosis of the SMEs' position in the KETs value chains in order to identify more precisely their needs and direct public policies accordingly?*

2) *What are the main constraints to SMEs' access to KETs and how could they be lifted? In particular, does the development of SMEs' access to a European network of technological platforms seem appropriate to better integrate these companies in the KETs value chains?*

3) *What are the strategies in favour of KETs which seem to be the most promising at national level? How can the EU support them? In particular, does the exchange of good practice seem relevant in this area?*

4) *How can we achieve the competitiveness of European companies in the KETs sector vis-à-vis third countries?*