SMEs Participation under Horizon 2020
Abstract

This study focuses on an assessment of the future share and role of SMEs in Horizon 2020 and on an understanding of the proposed mechanisms for SME participation. To this end, the study explores the features that characterise the research context for SMEs, notably their current participation under FP7, the modalities and the benefits of their participation in research activities. Moreover, it provides facts and figures on the objectives, governance and functioning of the dedicated SME instruments and modalities foreseen under Horizon 2020.
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LIST OF ABBREVIATIONS

BERD  Business R&D expenditures
CIP    Competitiveness and Innovation Framework Programme
COSME Programme for the Competitiveness of enterprises and SMEs
CP     Collaborative Projects
CSA    Community Support Action
EAFRD  European Agricultural Fund for Rural Development
EC     European Commission
EEN    Enterprise Europe Network
EIB    European Investment Bank
EIP    The Entrepreneurship and Innovation Programme
EIT    European Institute of Innovation and Technology
EP     European Parliament
ERA    European Research Area
ERC    European Research Council
ERDF   European Regional Development Fund (ERDF)
EU     European Union
EU-12  Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia.
EU-15  The number of member countries in the European Union prior to the accession of ten candidate countries on 1 May 2004. The EU15 comprised the following 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom.
FET    Future and Emerging Technologies
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP</td>
<td>European Framework Programme for Research and Innovation</td>
</tr>
<tr>
<td>FTE</td>
<td>full-time equivalent</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GVA</td>
<td>Gross Value Added</td>
</tr>
<tr>
<td>HMHTM</td>
<td>High and medium-high-tech manufacturing</td>
</tr>
<tr>
<td>IAPP</td>
<td>Industry Academia Partnerships and Pathways</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and communication technologies</td>
</tr>
<tr>
<td>ICT-PSP</td>
<td>The Information Communication Technologies Policy Support</td>
</tr>
<tr>
<td>IEE</td>
<td>Intelligent Energy Europe Programme</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>ITN</td>
<td>Initial Training Networks</td>
</tr>
<tr>
<td>KET</td>
<td>Key Enabling Technologies</td>
</tr>
<tr>
<td>KIS</td>
<td>Knowledge-intensive services</td>
</tr>
<tr>
<td>LEIT</td>
<td>Leadership in Enabling and Industrial Technologies</td>
</tr>
<tr>
<td>MEP</td>
<td>Member of the European Parliament</td>
</tr>
<tr>
<td>NCP</td>
<td>National Contact Point</td>
</tr>
<tr>
<td>RIS 3</td>
<td>Research and innovation strategies for smart specialization</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research &amp; Development</td>
</tr>
<tr>
<td>RTDI</td>
<td>Research, Technological Development and Innovation</td>
</tr>
<tr>
<td>RTO</td>
<td>Research and Technology Organisation</td>
</tr>
<tr>
<td>SBIR</td>
<td>Small Business Innovation Research</td>
</tr>
<tr>
<td>SME</td>
<td>Small and Medium Sized Enterprise</td>
</tr>
<tr>
<td>STREP</td>
<td>Specific Targeted Research Projects</td>
</tr>
<tr>
<td>TTG</td>
<td>Time To Grant</td>
</tr>
</tbody>
</table>
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SMEs in Europe and their research and innovation potential

SMEs constitute the backbone of the European economy accounting for more than 98% of all enterprises, 67% of employment, and 58% of gross value added. However, SMEs across Europe struggle to achieve a pre-crisis level of employment and value added. Only in a limited number of countries and industrial sectors across Europe, SMEs today have managed to achieve respective pre-crisis levels.

R&D activities of SMEs were much more affected by the crisis than those of large companies. Main constraints for SMEs in keeping up their R&D activities are liquidity pressures, difficulties in finding financing, credit constraints, and a decline in sales and in available cash-flows.

Although overall R&D investment dynamics are mainly driven by large companies, SMEs potentially play a decisive role for the future development of research and innovation activities in Europe, as the absolute number of SMEs in Knowledge Intensive Services (KIS) and in High and Medium-High-Tech-Manufacturing is high.

Horizon 2020: The new research and innovation support instrument

Horizon 2020\(^1\) is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020, the programme is part of the drive to create new growth and jobs in Europe. Horizon 2020 aims at creating a better and more comprehensive support environment for research and innovation activities of SMEs.

Horizon 2020 is intended to tackle societal challenges by helping to bridge the gap between research and the market. Major simplification should be achieved in Horizon 2020 through a single set of rules and SMEs will be encouraged to participate across Horizon 2020 programmes through a new 'specific SME instrument'. It aims to fill gaps in funding for early-stage, high-risk research and innovation by SMEs as well as stimulating breakthrough innovations.

SMEs in European Research and Innovation Programmes

At present, the FP7 ‘Cooperation’ programme and the FP7 ‘Capacities’ programme are most relevant for European SME participation and funding. To a lesser degree, the Community Innovation Programme (CIP) and the Eurostars Programme provide relevant SME-related funding.

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\(^1\) Whenever this study addresses details of ‘Horizon 2020’ we a) refer to the basic set of proposals for Horizon 2020 and the respective partial general approaches reached thereafter (see Section 5.1) and b) take into account the Reports by the Rapporteurs Maria Da Graca Carvalho, Teresa Riera Madurell and Christian Ehler presented at European Parliament plenary sittings end of December 2012; see European Parliament (2012, a, b, c).
Assessments of FP7 noted that the connections between the main performers of research in universities and research and technology organisations (RTOs) on the one side, and industry (especially SMEs) on the other, were not working as well as they could do\(^2\). Furthermore, it has widely been recognized that the current system of support for research and innovation in the EU has some severe disadvantages for SMEs including:

- Fragmentation of support instruments; no coherent thematic focus across the different programs leading to lack of transparency and high transaction costs;
- Complex administrative rules and procedures which are not adapted to SMEs needs;
- No appropriate coverage of the innovation value chain.

Also the quantitative targets set for SME participation in the ‘Cooperation’ programme of FP7 were only met due to an increased use of SME specific measures (e.g. specific calls for SMEs, ring-fencing of budgets etc.) in the two most recent work programmes.

Contrary to FP7, SME schemes and participation in the Eurostars programme and CIP have been assessed much more positive due to factors including ‘open, light and fast implementation schemes’, lean programme management structures, and clear, transparent, and timely evaluation procedures\(^3\).

**Assessment of key changes of Horizon 2020 in comparison to current European programmes**

Although Horizon 2020 builds upon the current FP7 concept, the innovation aspects of the CIP Program and the EU contribution to European Institute of Technology (EIT), there are significant changes and a shift of focus vis-à-vis these existing programs.

Horizon 2020 is structured along three priorities: (1) Excellent Science, (2) Industrial Leadership, and (3) Societal Challenges. Each of these priorities comprises a set of specific objectives. Whereas 'Excellent Science' was also a major feature of the FP7 programme structure, a priority focusing on 'Industrial Leadership' did not exist in FP7. Furthermore, in FP7 no SME instrument existed, which focussed on research and innovation activities driven by SMEs. Tackling societal challenges and a stronger integration of innovation aspects are therefore major changes in prioritisation of Horizon 2020.

For SMEs the priorities ‘Industrial Leadership’ - in particular the specific objective ‘Leadership in Enabling and Industrial Technologies’ (LEIT) - and the priority ‘Societal challenges’ are of utmost importance. Indeed, the new specific SME instrument is not thematically organised, rather, it will be implemented across these priorities - i.e. it will be used in all of the Societal Challenges\(^4\) and in the LEIT objective\(^5\) by means of a bottom-up approach.


\(^4\) For a list of Societal Challenges addressed by Horizon 2020 see Annex 2 of this report.
Overall, Horizon 2020 is characterized by three key dimensions of change: (1) a target shift concerning the participation of SMEs, (2) a shift of scope from R&D towards problem orientation and innovation, and (3) a system shift concerning the programme structure.

The new SME instrument in Horizon 2020 is a complete novelty in the Framework Programmes. It (1) covers all phases from idea to market (including all types of innovation,) with a continued support throughout a project, (2) is targeted at all types of innovative SMEs, (3) allows funding applications only by SMEs (including support of a single company if clear European Added Value is granted), (4) is competitive, (5) is based on a market oriented approach, and (6) has a grant-based staged funding approach.

The SME instrument is split into three types of project phases: concept and feasibility assessment (Phase 1), R&D, demonstration, and market replication (Phase 2), and commercialization (Phase 3). Phase 3 will not provide direct funding other than support activities. Transition from one phase to the next will be seamless provided that the SME project has proven to be worth for further funding during a previous phase. There is no obligation for applicants to sequentially cover all three phases. Each phase will be open to all SMEs.

The (revised) Horizon 2020 package approved by the ITRE Committee of the European Parliament in September 2013, specifies that the dedicated SME instrument will operate under a single centralised management system and it shall be implemented primarily in a bottom-up manner via a continuously open call. All of the specific objectives on ‘Societal challenges’ and on LEIT (see chapter 5) will apply this instrument. A minimum of 20% of the total combined budget for the specific objective on "Leadership in enabling and industrial technologies" and the priority "Societal challenges" shall go to SMEs.

In addition, a ‘Fast Track to Innovation’ scheme will support innovation actions under LEIT and under the "Societal Challenges", with a bottom-up-driven logic (i.e. calls for proposals not limited to specific fields or areas of work) on the basis of a continuously open call, and Time to Grant not exceeding six months. In order to speed up the time from idea to market significantly and to increase the participation of industry, SMEs and first time applicants in Horizon 2020, ‘Fast Track to Innovation’ aims at stimulating private sector investment in research and innovation, promoting research and innovation with a focus on value creation, and accelerating the development of technologies into innovative products, processes and services.

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5 Thematical, LEIT activities shall specifically focus on information and communication technologies, nanotechnologies, advanced materials, biotechnology, advanced manufacturing and processing, and space. A major component of LEIT, thus, are Key Enabling Technologies (KETs).

Potential benefits of Horizon 2020 for SMEs

Horizon 2020 has the potential to generate benefits from very different angles.

Many elements of Horizon 2020 (presented in Chapters 5 and 7) might provide for an increasing innovation capacity of SMEs, among them are: A broader scope of project themes; more adequate participation rules; the possibility of a lead role within a consortium; the broadening of activities eligible for funding; the single company support in case of European added-value, a specific action focusing on research intensive SMEs, and the specific support for transnational activities.

Giving a higher (political) priority to SMEs and targeting program and instruments more towards SME needs, Horizon 2020 has the potential to strengthen the role of SMEs within projects. Indeed, the new SME instrument of Horizon 2020 might lead to a prominent role of SMEs regarding decision making in a project inasmuch as the SME instrument is concentrating exclusively on SMEs. However, the ability to set up a consortium, and the capacities needed to take over lead functions in projects, poses specific challenges and requires appropriate competences and experiences.

Monitoring and evaluation of on-going EU research and innovation programmes suggest that participation entails positive effects regarding productivity and turnover. SMEs participating in Horizon 2020 projects should therefore be able to experience the same positive effects on their operational activities and business results.

A great many European countries, and in particular the countries of the EU15, have established more or less sophisticated national SME support schemes. Thus, in Member States with attractive national R&D programmes SMEs might prefer these programmes, as they are easier to understand and based on established ‘simple’ access rules for SMEs. In order to fully reap the benefits of Horizon 2020 complementarity with national programmes is therefore a key factor. Some interviewees stressed, that national programmes – properly designed – might constitute a preparatory (learning) phase before applying and participating in more R&D oriented programmes at the European level. It was, however, also underlined that there might be a multitude of circumstances for SMEs – e.g. broadening of the knowledge and experience basis, exploration of market opportunities, specific requirements for continuing a project, etc. – requiring a cross-border cooperation and therefore a migration to the European program level.

Conclusions on overall attractiveness of Horizon 2020 for SMEs

Horizon 2020 is well known among the group of ‘leading’, research active SMEs being active in national R&D programmes.

In view of the image of previous framework programmes, Horizon 2020 does, however, not have a clear bonus or starting advantage. In general, many innovative SMEs still seem to be reluctant to actually apply for EU programmes.

Yet, based on information from our interviews we have reasons to believe that awareness of and interest in Horizon 2020 and the three priorities, respectively, is increasing. It is, however, also fair to state that the awareness raising with and mobilisation of SMEs which up until now have not been eligible for support have raised expectations.
As to the type of SMEs incentivized by Horizon 2020 our interviews suggest that an impetus is likely for research active SMEs with a background in manufacturing and knowledge intensive services, rather than research organisations having the legal form of an SME.

From a thematic perspective, SME participation is likely to concentrate on the priorities Industrial Leadership and Societal Challenges. The priority Excellent Science will be of limited relevance for the majority of SMEs, only specific research intensive SMEs will participate in the bottom-up oriented initiatives of FET-Open and some specific exchange programmes under the Marie Curie.

An increased attractiveness for SMEs is mainly due to the introduction of the new SME instrument, which is not thematically organised but to be implemented in a bottom-up manner across the Horizon 2020 priorities. The effectiveness of this new instrument will depend upon its actual implementation.

The actual implementation of Horizon 2020 and its different elements for SMEs is still regarded as uncertain in several respects by our interviewees. This concerns in particular the implementation of the new SME instrument, the regulations concerning single company support, the extent of the reduction of administrative burdens, the actual budget devoted to SMEs, the relevant evaluation criteria regarding applications, the actual implementation of the financial instruments foreseen in the frame of COSME, and the issue whether the project management of the new SME instrument will be organized in a central or decentralized manner.

In order to increase awareness and attractiveness of Horizon 2020 among SMEs it might be particularly useful to set up a functioning ‘information and consulting infrastructure’ in the Member States, to distribute concrete information about the rules and implementation plans foreseen in Horizon 2020 in a timely and appropriate manner, and to set up suitable support and coaching structures at the national and European level.
1. INTRODUCTION

The main objective of this study on ‘SMEs participation under Horizon 2020’ is to assess the future share and role of Small and Medium Sized Enterprises (SMEs) in Horizon 2020 and to understand the proposed mechanisms for SME participation. The key thematic issues are on the one hand related to the research context for SMEs and the modalities and benefits of their participation in research activities. In this context the focus is in particular on features and characteristics of the current participation of SMEs under the seventh European Framework Programme for Research and Innovation (FP7). On the other hand study focuses on the objectives, governance and functioning of the dedicated SME instruments and modalities foreseen under Horizon 2020.

The study aims at providing background information and advice for the Members of the Committee on Industry, Research and Energy (ITRE) and the Members of the European Parliament (MEPs). A particular goal is to brief them on the envisaged possibilities of European Union (EU) research support activities for SMEs and on potential future challenges for SME research and innovation policy. To this end, the study

- illuminates the research context of SMEs in general,
- provides an overview of the positioning and experiences of SMEs within FP7,
- details the specific roles of and instruments for SMEs within Horizon 2020, and
- provides a comparative assessment of existing and planned measures for EU-SME support.

The study is structured as follows:

- Section 2 addresses structural features of SMEs in Europe. It illustrates how the crisis affected the economic and innovation performance of SMEs and which challenges SMEs face as regards their Research, Technological Development and Innovation (RTDI) activities.
- Section 3 provides an overview of the main current European policy approaches vis-à-vis SMEs. It characterises the present European Research and Development (R&D) policy making with a specific focus on SMEs, and it sketches main building blocks of planned actions.
- Section 4 provides information on the patterns of SME participation and positioning of SMEs in European research and innovation instruments. We present SME participation patterns in FP7 and its specific programmes, in the Competitiveness and Innovation Framework Programme (CIP) and in the Eurostars Programme. In particular, we address the issue of the specific role of SMEs within a project and vis-à-vis project leadership.
- Section 5 illustrates the main building blocks of Horizon 2020, in particular those parts that are relevant for SMEs.
- Section 6 focuses on the context of Horizon 2020 with the Programme for the Competitiveness of Enterprises and SMEs (COSME) and the Research and Innovation Strategies for Smart Specialization (RIS3).
- Section 7 aims at identifying and evaluating key changes brought about by Horizon 2020 in comparison to current European programs and to assess whether and to what extent they might incentivize and ease future activities of SMEs.
• Section 8 focuses on an assessment of potential benefits due to Horizon 2020.

• Section 9 is devoted to an assessment of the awareness and attractiveness of Horizon 2020 from the perspective of SMEs and of their incentives to get access to specific parts of Horizon 2020.

The methodological approach of the assessment rests on the one hand upon a comparative analysis of current European programmes and the current available information on Horizon 2020. By means of desk research activities, we reviewed the relevant literature and data sources containing suitable information to understand and assess SME related policies in FP7 and Horizon 2020.7

On the other hand, a limited number of interviews have been conducted first and foremost aimed at validating the findings of our expert assessment. The following groups of actors have been interviewed: European Commission representatives in charge of preparation of SME specific measures in Horizon 2020, public organisations and ministries that are responsible for the SME R&D and innovation support policy in Member States, and national SME representative organisations/associations.

7 Whenever this study addresses details of ‘Horizon 2020’ we refer on the one hand to the basic set of proposals for Horizon 2020 and the respective partial general approaches reached thereafter (see Section 5.1). On the other hand, this study has taken into account the Reports by the Rapporteurs Maria Da Graça Carvalho, Teresa Riera Madurell and Christian Ehler presented at European Parliament plenary sittings end of December 2012; see European Parliament (2012, a, b, c).
2. SMES: ECONOMIC RELEVANCE, AND THEIR RESEARCH AND INNOVATION POTENTIAL

KEY FINDINGS

- With 20.7 million firms accounting for more than 98% of all enterprises, 67% of employment, and 58% of gross value added, SMEs constitute the backbone of the European economy.

- SMEs across Europe struggle to achieve a pre-crisis level of employment and value added. Only in a limited number of countries and industrial sectors across Europe, SMEs today have managed to achieve respective pre-crisis levels.

- The manufacturing sector, and in particular the High and Medium-High-Tech-Manufacturing Sector (HMHTM), account for the largest share of business R&D investment. Overall, investment dynamics are mainly driven by large companies. The absolute number of SMEs in Knowledge-Intensive Services (KIS) sectors is about 20 times higher (4.3 million) than in HMHTM sectors (0.24 million). On the contrary, the distribution of the number of large enterprises on these two sector classes is much more even: about 7,500 in KIS sectors vs. 6,300 in manufacturing sectors. Due to the large number of SMEs in KIS and HMHTM sectors, SMEs potentially play a considerable role for future R&D and innovation in Europe.

- The economic recession has led to effects on R&D investments that are substantially different across economic sectors. Whereas in the automotive industry and machinery industry R&D investments decreased considerably, R&D investments in the pharmaceutical industry increased even throughout the crisis.

- R&D activities of SMEs were much more affected by the crisis than those of large companies. Main constraints for SMEs in performing R&D activities are liquidity pressures, difficulties in finding financing, credit constraints, reductions in sales and available cash-flows.

- Overall, SMEs have the potential to play an important role to support European recovery. Measures contributing to unleash this potential are e.g. spurring research and innovation of SMEs in HTMHT industries and KIS, as well as measures focusing on increasing skills and absorptive capacities and all forms of innovation activities that broaden the innovation base.
2.1. Economic relevance of SMEs and their performance during the crisis

SMEs constitute the backbone of the European economy, with some 20.7 million firms accounting for more than 98 per cent of all enterprises, of which the lion’s share (92.2 per cent) are firms with fewer than ten employees. Furthermore, SMEs account for about 2/3 of total employment and 58 per cent of gross value added. However, since the economic downturn in 2009, which had a severe impact on value added and employment, SMEs across Europe struggle to achieve pre-crisis levels of value added and employment, see Figure 1.

Figure 1: Number of SMEs, employment in SMEs and value added of SMEs (2005 =100)

![Graph showing number of SMEs, employment in SMEs and value added of SMEs](image)

Source: Ecorys (2012)

However, considerable differences across Member States exist, see Figure 2. The Annual Report on SMEs in the EU shows that SMEs in Austria, Germany and Malta have already exceeded their 2008 levels of gross value added (GVA) and employment in 2011, whereas SMEs in Belgium, Finland, France and Luxembourg have, on average, experienced an anaemic performance since 2008. In the remaining 20 Member States, SMEs have been so far unable to bounce back to their pre-crisis levels of either GVA or employment.

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9 Gross value added is a measure for the value of goods and services produced in an area, industry or sector of an economy or the economy at large. Gross Value Added (GVA) includes depreciation, rewards to labour, capital and entrepreneurial risk. GVA by definition is the difference between the gross production value (turnover) and the value of intermediate inputs.

10 Ecorys (2012).
The variations in value added growth and employment growth can be attributed to a number of factors:

- First, it appears to help if an economy, such as Germany’s, is strong in High-Tech and Medium High-Tech Manufacturing (HMHTM) and Knowledge-Intensive Services (KIS).
- Second, sectoral labour productivity levels are higher when the sector shows higher investment rates and higher export rates, and when the sector belongs to HMHTM and KIS. Again, Austria and Germany have generally met these conditions.
- Third, the real value added growth in these best performing Member States is a result of both employment growth – boosting aggregate demand – and real productivity growth, with the contribution of the former being clearly the dominant one.

In terms of industrial sectors, there was still negative employment growth in 2011 in manufacturing, mining, utilities and the construction sector, whereas the trade, transportation and services sector experienced already positive growth in employment and productivity. Hence, SMEs in the former sectors can still be considered to be in a restructuring phase, whereas SMEs in the latter sector have already caught up again.

### 2.2. R&D activities of European SMEs

In order to speed up the recovery of the European economy, R&D, innovation and knowledge creation capacity are often seen as crucial factors in shaping the competitiveness of firms, sectors and countries. A number of reasons are responsible for this, including:

- High-tech products based upon research and innovation activities and also knowledge intensive services are more internationally tradable, and therefore less dependent on national business cycles.

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11 Ecorys (2012).
Due to a higher backward and forward integration of production processes in high-tech and medium-tech sectors, SMEs in these sectors are more likely to generate spill-overs going beyond the individual firm, extending to other sectors, regions or the economy at large.

Research suggests that co-location processes between high-tech manufacturing and knowledge intensive services exist.

Therefore, it is more likely that productivity and employment growth will be higher in EU Member States with higher shares of SME employment in HMHTM branches and KIS.

For SMEs in HMHTM and KIS, it is particularly important to sustain or even level-up R&D and innovation activities, for keeping and gaining technological advantages against competitors and hence sustaining competitiveness.

As the absolute number of large enterprises in HMHTM and KIS are relatively low, SMEs in these sectors can play an important role for the dynamics of the European research and innovation potential and reaping the respective benefits, see Table 1.

**Table 1: Number and share of enterprises by technology and knowledge base by size-class in EU-27 (2011)**

<table>
<thead>
<tr>
<th>Sector</th>
<th>SMEs</th>
<th>Large</th>
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<tbody>
<tr>
<td></td>
<td>Enterprises</td>
<td>% Share of total SMEs</td>
</tr>
<tr>
<td><strong>Manufacturing</strong></td>
<td></td>
<td></td>
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<tr>
<td>High-tech (HTM)</td>
<td>45 871</td>
<td>0.2</td>
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<td>Medium-high-tech (MHTM)</td>
<td>192 980</td>
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<td>High-medium-high-tech (HMHTM)</td>
<td>238 851</td>
<td>1.2</td>
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<tr>
<td>Medium-low-tech (MLTM)</td>
<td>681 096</td>
<td>3.3</td>
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<tr>
<td>Low-tech (LTM)</td>
<td>1 060 868</td>
<td>5.1</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIS</td>
<td>4 316 746</td>
<td>20.9</td>
</tr>
<tr>
<td>- KIMS</td>
<td>3 416 703</td>
<td>16.5</td>
</tr>
<tr>
<td>- HKIS</td>
<td>749 904</td>
<td>3.6</td>
</tr>
<tr>
<td>- OKIS</td>
<td>150 139</td>
<td>0.7</td>
</tr>
<tr>
<td>LKIS</td>
<td>11 101 425</td>
<td>53.6</td>
</tr>
</tbody>
</table>

Source: Eurostat/National Statistics Offices of Member States/Cambridge Econometrics/Ecorys

N.B. KIMS = Knowledge-intensive market services; HKIS = High-tech knowledge-intensive services; OKIS = Other knowledge-intensive services

Note: The number of enterprises are now casts developed from Eurostat Structural Business Statistics. The shares are calculated by taking the number of SMEs (or large enterprises) in a certain technology or knowledge segment as a percentage of the total number of SMEs (or large enterprises) in the EU-27.

Source: Ecorys (2012)
However, R&D investment dynamics across Europe are driven to a great extent by large business enterprises. The Innovation Union Competitiveness report suggest that it was by and large due to investments of the large companies that R&D investment on a global level turned out to be relatively resilient to the recession\textsuperscript{12}. Contrary to this, R&D expenditures of SMEs were more harshly hit by the effects of the crisis than those of large companies in most European countries. In addition, the effects of the economic crisis were felt very differently across industrial sectors: R&D investment decreased substantially in the Automobiles and Information Technology (IT) hardware sectors (-11.6\% and -6.4\% respectively), while it rose further in the Pharmaceutical sector (+5.3\%).

Due to the economic conditions, main factors for SMEs resulting in reductions of R&D activities are liquidity pressures, difficulties in access to financing, credit constraints, and reductions in sales and available cash-flows. For all types of European SMEs, getting easy access to research and innovation financing therefore seems to be one core need.

SME financing needs vary according to the stages of the cycle of life of the SME\textsuperscript{13}. Otherwise stated, the seed and start-up phase, the early development phase, and the growth and maturity phase each require specific sources of finance, see Figure 3.

\textit{Figure 3: Innovation financing needs of SMEs}

![Diagram of Innovation financing needs of SMEs]

\textbf{Source:} European Commission (2007), "Financing Innovation and SMEs: sowing the seeds"

Overall, SMEs have the potential to play an important role to support European recovery. Measures contributing to unleash this potential are e.g. spurring research and innovation of SMEs in HTMHT industries and KIS as these are likely to exhibit positive spill-overs due to higher forward and backward linkages, provision of risk-capital for existing firms, and seed finance for new firms.


For all SMEs in Europe measures focusing on increasing skills and absorptive capacities and all forms of innovation activities that broaden the innovation base are crucial. In particular, cooperation programmes with research partners aimed at knowledge transfer and capacity building to enable small enterprises to select and adapt technologies are relevant.

Against this backdrop, forward and backward co-operation of smaller and larger firms along the value chain of course can contribute to fostering commercial application of knowledge and technology.
3. KEY EUROPEAN INSTRUMENTS FOR SMES

KEY FINDINGS

- The 7th European Framework Programme for Research and Technological Development (FP7), the Competitiveness and Innovation Framework Programme (CIP), and the Eurostars Programme are the major European instruments for supporting Research and Innovation of SMEs.

- FP7 contains two main initiatives in favour of SMEs: (1) The trans-national cooperation on policy-defined themes (Cooperation Programme), in which the aim is to enable at least 15% of the available funding to go to SMEs, and (2) the support for research capacities (Capacities Programme) in the frame of which two specific schemes focus on ‘Research for the benefit of SMEs’.

- Key building blocks of the CIP programme are: provision of SMEs with better access to finance; delivery of business support services in the regions; encouragement of a better take-up and integration of Information and Communication Technologies (ICT) into business and administration processes; addressing the sustainability agenda and promotion of activities that show how to increase the use of renewable energies and energy efficiency.

- The Eurostars Programme is a multiannual European joint programme (2007-2013) dedicated to R&D intensive SMEs. Eurostar is building on EUREKA, national R&D funding programmes and FP7.

- Against the backdrop of the European strategy for smart, sustainable and inclusive growth (Europe 2020), Horizon 2020 is the key tool to implement the Innovation Union flagship initiative. Horizon 2020 brings together all existing Union research and innovation funding, including the Framework Programme (FP), the innovation related activities of the CIP Programme and the European Institute of Innovation and Technology (EIT). The general objective of Horizon 2020 is to contribute to building an economy based on knowledge and innovation across the whole Union by leveraging sufficient additional research, development and innovation funding.

- The Programme for the Competitiveness of enterprises and SMEs (COSME) seeks to ensure continuity with initiatives and actions already undertaken under the Entrepreneurship and Innovation Programme (EIP) within CIP and to continue the many successful features of the EIP. Moreover, in conjunction with Horizon 2020 COSME will support two EU financial instruments for RTDI and growth for SMEs: one for equity, one for debt.

- The ‘research and innovation strategies for smart specialization’ (RIS³) has also been announced in the ‘Innovation Union’ flagship initiative. It is an approach focusing on economic development through targeted support for effective and efficient innovation policy strategies at the national and regional level.
This section aims at providing a cursory overview of the main existing European policy approaches vis-à-vis SMEs. To this end, we give a short introduction into existing European R&D policy making with a specific focus on SMEs, and we characterize main building blocks of planned actions. The section serves as the baseline for the assessment of planned activities within Horizon 2020 in the later sections.

3.1. The 7th European Framework Programme (FP7)

FP7 has the overriding aim to contribute to the Union becoming the world’s leading research area. This requires the FP to be strongly focused on promoting and investing in world-class state-of-the-art research, based primarily upon the principle of excellence in research. FP7 aims in particular at

- supporting trans-national cooperation at every scale across the EU,
- enhancing the dynamism, creativity and excellence of European research at the frontier of knowledge,
- strengthening the human potential in research and technology in Europe,
- fostering the dialogue between science and society in Europe,
- facilitating the scientific career of researchers in the most productive period of life,
- increasing the research and innovation capacities throughout Europe, and
- supporting the use and dissemination of the knowledge generated by publicly funded research activity.

In order to realise these objectives, FP7 promotes four types of activities:

- trans-national cooperation on policy-defined themes (the ‘Cooperation’ programme);
- investigator-driven research based on the initiative of the research community (the ‘Ideas’ programme);
- support for individual researchers (the ‘People’ programme); and
- support for research capacities (the ‘Capacities’ programme).

FP7 contains two main initiatives in favour of SMEs:

- The Cooperation Programme, in which the aim is to enable at least 15% of the available funding to go to SMEs;
- the Capabilities specific programmes including two schemes that are fully devoted to SMEs.

The Cooperation programme supports trans-national investigator-driven research within ten thematic areas:

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• Health;
• Food/Biotechnology;
• ICT;
• Nano-sciences/Nano-technologies/Materials/New Production Technologies;
• Energy;
• Environment (including Climate Change);
• Transport;
• Socio-economic Sciences/Humanities;
• Space; and
• Security.

Within the Cooperation Programme, particular attention is paid to ensuring the adequate participation of SMEs (15% of the funding), in particular knowledge-intensive SMEs in trans-national cooperation.

The Capacities Programme, on the other hand, aims at enhancing research and innovation capacities throughout Europe. The SME initiative consists of two schemes, which aim at improving research and innovation capacities of European SMEs with little or no research capacity themselves:

• ‘Research for SMEs’ supports small groups of innovative SMEs to solve common or complementary technological problems.
• ‘Research for SME associations’ supports SME associations and SME groupings so that they can develop technical solutions to problems common to large numbers of SMEs in specific industrial sectors.

The basic principle of intervention of for both schemes is the same: to give support (funding) to allow SMEs to buy-in R&D services from RTDI providers such as Research and Technology Organisations.

3.2. The Competitiveness and Innovation Framework Programme

The Competitiveness and Innovation Framework Programme (CIP) was adopted in October 2006.15 It represented an integrated approach both to understanding where additional efforts were needed and could provide value, namely around the merger of innovation, ICT and entrepreneurship, and it also represented a concerted effort to ensure that efforts in each of these domains could benefit efforts in the other domains.16

With SMEs as its main target, key building blocks of the CIP programme were: provision of SMEs with better access to finance; delivery of business support services in the regions; encouragement of a better take-up and integration of ICT into business and administration processes; addressing the sustainability agenda and promotion of activities that show how to increase the use of renewable energies and energy efficiency.

16 CIP aimed at bringing together specific Union measures in the field of entrepreneurship, industrial competitiveness, innovation (including eco-innovation), information and communication technology (ICT), environmental technologies and intelligent energy. Up until then these measures had been regulated by separate Council Decisions.
CIP was divided into three operational programmes, each having its specific objectives, aimed at contributing to the competitiveness of enterprises and their innovative capacity in their own areas:

- The Entrepreneurship and Innovation Programme (EIP);
- The Information Communication Technologies Policy Support Programme (ICT-PSP);
- The Intelligent Energy Europe Programme (IEE).

The CIP runs from 2007 to 2013 with an overall budget of € 3,621 million.

3.3. **Europe 2020, Innovation Union**

The European strategy for smart, sustainable and inclusive growth (Europe 2020) comprises altogether 7 flagship initiatives. Particularly important in the context of this study is the 'Innovation Union'. The aim of this flagship initiative is to re-focus R&D and innovation policy on the challenges currently facing society (such as climate change, energy and resource efficiency, health and demographic change). In particular, it is stipulated that every link in the innovation chain, from 'blue sky' research to commercialization, should be strengthened. Measures proposed at the EU level include:

- Completion of the European Research Area, i.e. development of a strategic research agenda focused on challenges such as energy security, transport, climate change and resource efficiency, health and ageing, environmentally-friendly production methods and land management, and enhancing joint programming with Member States and regions;
- Improvement of framework conditions for business to innovate;
- Launch of 'European Innovation Partnerships' between the EU and national levels to speed up the development and deployment of the technologies needed to meet the challenges identified;
- Strengthening and further development of the role of EU instruments to support innovation (e.g. structural funds, rural development funds, R&D framework programme, and CIP), including through closer work with the EIB and streamlining administrative procedures to facilitate access to funding, particularly for SMEs and to bring in innovative incentive mechanisms linked to the carbon market, namely for fast-movers;
- Promotion of knowledge partnerships and strengthening links between education, business, research and innovation, including through the EIT, and promoting entrepreneurship by supporting Young Innovative Companies.

3.4. **Eurostars**

The Eurostars Programme is a multiannual European joint programme (2007-2013) dedicated to R&D-performing SMEs (i.e. SMEs with at least 10% of their turnover or full-time equivalent

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SMEs (FTE) in research and development activities). Eurostar is building on EUREKA\textsuperscript{18}, national R&D funding programmes and the EU 7th Framework Programme.

Participating countries in Eurostars pool their national programmes and research funding. The particular aim of Eurostars is to stimulate R&D-performing SMEs to lead international collaborative research and innovation projects, thereby widening the exploitation of the results of their research. To this end, Eurostars aims at easing access to support and funding and ensuring a better and more efficient use of these funds to support R&D performing SMEs. The EU generates an added value by enhancing and leveraging national programmes targeted to these research intensive SMEs, taking into account the specific framework conditions in each Member State. Eurostars specifically targets the development of new products, processes and services as well as the access to international markets. Participants from any technological area and potential market are accepted.\textsuperscript{19}

SMEs addressed by Eurostars must fulfil the following criteria:

- The leading SME must be an SME that conducts R&D.
- All the SMEs must fulfil the EU definition of an SME.
- The leading SME must be based in a Eurostars participating country.
- There has to be at least one other participant from a second Eurostars country.
- The R&D performing SMEs must undertake at least 50\% of total project costs.
- No partner or country is performing more than 75\% of project total cost.
- The project duration is $\leq$ 3 years.
- Market introduction is foreseen within 2 years after project end.

Eurostars will be integrated into Horizon 2020 as a joint action of the Member States and the European Commission. So far, no other action in Horizon 2020 is specifically dedicated to R&D-intensive SMEs.

3.5. Horizon 2020

Horizon 2020 is the key tool to implement the Innovation Union flagship. Horizon 2020 brings together all existing Union research and innovation funding, including the Framework Programme (FP), the innovation related activities of the CIP Programme and the European Institute of Innovation and Technology (EIT).

The general objective of Horizon 2020 is to contribute to building a society and an economy based on knowledge and innovation across the whole Union by leveraging additional research, development and innovation funding and contributing to attaining R&D targets, including the target of 3\% of GDP for research and development across the Union by 2020. Thereby, it aims to support the implementation of the Europe 2020 strategy and other Union policies, as well as the achievement and functioning of the European Research Area (ERA). A more detailed specification of Horizon 2020 is provided in Section 5.

\textsuperscript{18} EUREKA is an inter-governmental initiative with a focus on national R&D programme coordination. It is based on a network launched in 1985 to support market-oriented R&D and innovation projects by industry, research centres and universities across all technological sectors. EUREKA currently consists of 40 Member Countries (with the EU as its 41st member).

3.6. COSME: Programme for the Competitiveness of enterprises and SMEs

The Programme for the Competitiveness of enterprises and SMEs 2014-2020 (COSME) can be viewed as a successor of the CIP program. COSME aims at:

- facilitating access to finance for SMEs;
- creating an environment favourable to business creation and growth;
- encouraging an entrepreneurial culture in Europe;
- increasing the sustainable competitiveness of EU companies; and
- helping small businesses operate outside their home countries while improving their access to markets.

COSME in conjunction with Horizon 2020 will support two EU financial instruments for RTDI and growth for SMEs:

- an Equity Facility for Growth; and
- a Loan Guarantee Facility.

These instruments target companies in different phases of their lifecycle: creation, expansion and business transfer. The Equity Facility for Growth will provide venture capital to enterprises, in particular in their growth phase. The Loan Guarantee Facility will cover loans up to EUR 150,000 and will be available for all types of SMEs. They will be managed by the European Investment Fund in cooperation with financial institutions in the different Member States.

Furthermore, COSME seeks to ensure continuity with initiatives and actions already undertaken under the Entrepreneurship and Innovation Programme (EIP) (e.g. the Enterprise Europe Network) and to continue the many successful features of the EIP. In parallel, it aims at simplifying management of the EIP to make it easier for entrepreneurs and small businesses to benefit. In addition, COSME seeks to support, complement and help coordinate actions by EU member countries, thus, tackling transnational issues that can be more effectively addressed at European level.

3.7. The Smart Specialization Strategy

Being a key part of the legislative proposals for a new cohesion policy for 2014-2020 (October 2011) the ‘research and innovation strategies for smart specialization’ (RIS3) aim at securing the EU’s Structural Funds to be used more efficiently and synergies between different EU, national and regional policies, as well as public and private investments to be increased. RIS3 is an approach focusing on economic development through targeted support for effective and efficient innovation policy strategies at national and regional level. The development of RIS3 was proposed as a pre-condition for countries and regions availing of the European Regional Development Fund (ERDF) and European Agricultural Fund for Rural Development (EAFRD). Thus EU Members States and regions must have RIS3 strategies in place before their Operational Programmes supporting these investments are approved, see also section 6.2.

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4. THE CURRENT POSITION OF SMES IN EUROPEAN RESEARCH AND INNOVATION PROGRAMMES

KEY FINDINGS

- Across the past FPs the participation from industry has decreased at the expense of that from universities (whether related to the share of funding or to the number of participants): it decreased from 39% in FP4 to 31% in FP6 and accounts for 25% in FP7. This development can be interpreted as a shift from applied towards basic research and a larger emphasis on long-term impacts of the FPs.

- Quantitative targets for SME participation have been established since FP4. At least 15% was foreseen for SMEs performing research in the Cooperation programme of FP7. Prior to 2012, the desired rate of SME participation in FP7 Cooperation was not reached. Due to an increase and strengthening of measures geared particularly towards SMEs in the two most recent work programmes, a significant increase in the budget share going to SMEs in the Cooperation programme was achieved. Across the five specific programmes of FP7, SMEs account for 17.9% of all participations and receive 14.1% of the FP7 budget (as of September 2012).

- The FP7 Cooperation programme and the Capacities programme are most relevant for European SME participation and funding. To a lesser degree, the Community Innovation Programme and the Eurostars Programme provide SME related funding.

- Across the different programs the average project size and average number of participants as well as the sectoral composition of the participants of each program vary to a considerable degree.

Based upon the existing documentation, this section details the patterns of SME participation and positioning within FP7, the status quo of research capabilities from the perspective of SMEs and challenges associated with the existing programmes, which potentially need to be tackled by provisions for SMEs in Horizon 2020.

4.1. SME participation in FP7

Growing numbers of SMEs are confronted with increased competition resulting from the EU internal market, forcing them to internationalise in search of new markets, to innovate constantly and to accommodate advances in technology. European support is necessary to mobilise the SME community to contribute to the achievement of the Lisbon and Barcelona objectives. Through supporting transnational cooperation, RTDI framework programmes enable SMEs to find partners beyond their local communities and support regional development, employment and social cohesion22.

The added value of collaborative research for SMEs is in principle the same as for other types of participants.

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Yet, many research performing SMEs, unlike large companies which are used to cooperate internationally, have specific difficulties in extending their technology collaboration beyond national borders and national support programmes are often not encouraging or helping them to do so. EU programmes therefore inherently have a specific added value for SMEs.

Overall, however, across FPs the participation from industry has decreased at the expense of that from universities (whether related to the share of funding or to the number of participants).

Indeed, according to the FP7 mid-term assessment, participation by industry decreased from 39% in FP4 to 31% in FP6 and it currently accounts for 25% in FP7. This development can be interpreted as a shift from applied towards basic research and a larger emphasis on the long-term impacts of the FPs.

However, participation by industry in the FPs and industry commitment to R&D is critical to Community R&D policy. Therefore, since FP4, quantitative targets to SME participation have been set (see Figure 4).

**Figure 4: Quantitative targets regarding SME participation in past and present European Framework Programmes (in %)**

Figure 4 shows that a target of 5-15% has been set in FP4 depending on thematic areas; 10% were stipulated in FP5, and in FP6 and FP7, at least 15% was foreseen for research performing SMEs. The actual participation of SMEs is closely monitored by the European Commission via annual Monitoring Reports.23

As of September 2012, SMEs account for 17.9% of all participations in the five specific programmes of FP7 and receive 14.1% of the FP7 budget.

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Due to the SME specific measures within the Capacity programme, SMEs have the highest percentage share of participation and funding within this programme (31.3%, i.e. no less than €870 million in monetary terms).

The highest EU contribution in funding provided for SMEs under FP7 (i.e. about €3 billion) is, however, in the Cooperation programme, which at present devotes 16.3% of its overall budget to SMEs and has 10,644 SME participations.

The EU contribution to SMEs under the People programme is at 5.9% (801 SME participants) of all participations within this programme. This share can mainly be attributed to the Industry Academia Partnerships and Pathways (IAPP) and Initial Training Networks (ITN).

As the FP7 Cooperation programme and the Capacities programme are most relevant for European SME participation and funding, subsequently we describe the participation of SMEs in these two programmes in more detail.

4.1.1. SME Participation in the Cooperation programme

The Cooperation Programme is open for any legal entity, especially SMEs, large companies, universities and other R&D institutions. Funding rates for R&D activities of SMEs, universities and other R&D institutions are 75% and for large companies 50% of research and development costs. For demonstration activities, 50% of eligible costs are funded. Overheads are funded on a real cost basis or on a fixed rate of 60% of direct costs.

Main types of projects within the Cooperation Programme are Collaborative Projects (CP). CPs focus on research, but also contain other activities such as management and training. The size, scope and internal organisation of projects can vary from field to field and from topic to topic. Projects can range from small or medium-scale focused research actions to large-scale integrating projects. The average project budget for Collaborative Projects is €3-5 million for small projects and €6-10 million for larger projects.

According to the Fifth FP7 Monitoring Report, the budgetary share of SMEs in the Cooperation Programme is forecasted to grow from 15.3% currently to around 16% by 2013. This represents €5.2 billion.

Until 2012, the desired rate of SME participation in the FP7 Cooperation programme was not reached. Due to an increase and strengthening of measures geared particularly towards SMEs in the two most recent work programmes, a significant increase in the budget share going to SMEs was achieved. Specific measures encouraging SME participation reached from the selection of topics of particular relevance to SMEs to calls ring-fencing specific SME budgets. Another measure specified an SME to be the overall coordinator as a requirement for project participation.

Figure 5 below shows that

- the participation of SMEs across the ten different thematic areas of the Cooperation programme varies considerably,
- the desired increase of SME participation was reached.
Figure 5: Comparison of the share of the EU contribution going to SMEs, for each theme within the Cooperation programme, before and after the implementation of the work programmes for 2011-2012

The monitoring activities of FP7 also provide useful data about the participating SMEs and the composition of project consortia:

- The recurrence rate, i.e. the average number of projects in which an organisation is involved, has increased to an average of 1.6 Grant Agreements per SME. This means that SMEs often participate in more than one research project.
- Across the Cooperation programme, 11.1% of projects are coordinated by SMEs.
- The average number of project participants within FP7 is 11.4 partners. Thereof, 2.1 partners on average are SMEs.
- 9.4% of SME costs within thematic research projects account for demonstration activities, designed to prove the viability of new technologies that offer a potential economic advantage, but cannot be commercialised directly. This rate is much higher for SMEs than for other FP participants (5.1%).
- SMEs stem from a number of industrial activity sectors. The largest share of SMEs (28%) in the Cooperation programme are from the R&D sector, i.e. they provide R&D as their main economic activity. 25% stem from the manufacturing sector, 18% from the ICT sector and 24% from the services sector. 4% of SMEs are consultancy firms.


4.1.2. SME participation in the Capacity programme

Inherent to the concept of both schemes ‘Research for the benefits of SMEs’ and ‘Research for the benefits of SME Associations’ is the concept of ‘outsourcing research’ or buying in research services. The SME specific schemes of FP7 rely much more on outsourcing the research activities to RTDI performers in order to satisfy their innovation needs since they have no or little in-house R&D capacity. Also, much more emphasis is put on networking: i.e. to support SMEs to get embedded in a (cross-border) network where they can find more easily answers to their innovation needs or to expand the knowledge base of large groups of SMEs via the involvement of e.g. industrial associations. By supporting the development of (more or less sustainable) cross-border networks in which SMEs (customers) and RTDI performers (suppliers) co-develop innovative solutions, the underlying idea is that SMEs can absorb new and external knowledge for faster innovation. In that context, the choice of partners is left open: the key point is that the SME gets the best value for money, in its particular business interest.

Basic information on the SME-specific programmes in the Capacity programme is provided in the Ninth Progress Report on SMEs participation in FP7.  

Until 2012, the SME-specific support schemes within the Capacity programme have devoted about €791 Million. In total, 5,923 participants, of which 61.5% are SMEs, are active in 646 projects. The average consortium size is 9.2 units, of which 5.6 are SMEs. The average SME EU contribution is about €189 thousand.

Compared to the Cooperation programme, the specific support schemes of the Capacity programme attract to a much higher extent firms stemming from the manufacturing industry (41%). Yet, 21% of firms within the specific programme stem from the R&D sector. This is of course considerably lower than in the Cooperation programme (but nevertheless a surprisingly high rate).

As regards the implementation of the specific programme for SMEs, the Interim evaluation of FP7 noted that until 2010 SMEs under the Capacities specific programme had a mean time to grant of 456 days. The expert evaluation panel noted in this respect that the nature of small business is inherently fast-moving, and that this is therefore a disturbing statistic and also one which reinforces the complaints of small business about delays. As of June 2012, the average time to grant has been reduced to 390 days, which is still pretty high.

4.2. SME participation in CIP

In terms of size, CIP is much smaller than FP7; however, an analysis of available sources such as evaluations of the CIP, the Impact Assessment of Horizon 2020 and the results from our interviews suggest that the CIP ECO-Innovation programme is an example for an innovative and fast instrument that is highly attractive for SMEs. The Impact Assessment accompanying the Communication from the Commission ‘Horizon 2020 – The Framework Programme for Research and Innovation’ provides the following factual information on SME participation under the CIP:

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137 highly innovative SMEs benefited from financial instruments/venture capital, 25 of them in the eco-innovation sector.

CIP pilot and market replication projects aim at testing in real conditions innovative solutions that have not yet significantly penetrated the market due to high residual risks. In the area of ICT-based services, 125 projects have been funded to date, reaching around 530 SMEs. Regarding eco-innovation projects, almost 70% of final beneficiaries are SMEs.

In the field of Intelligent Energy dissemination and information projects, SME participation is also high reaching almost 50%. In absolute numbers, 235 projects funded by the calls published so far, involve about 1,000 SMEs directly and spread the results through large multiplier associations far beyond this scope.

The Green Paper27 ‘From Challenges to Opportunities: Towards a Common Strategic Framework for EU Research and Innovation funding’, proposed the CIP Eco-innovation First Application and Market Replication Projects as an example of an ‘open, light and fast implementation scheme’ for other research and innovation funding programmes to ‘allow flexible exploration and commercialisation of novel ideas’, in particular by SMEs.

The CIP/Eco-innovation scheme provides funds in the form of grants to SMEs (which are faster than collaborative projects).

The ICT/FET scheme is ‘topic-agnostic’ and ‘deadline-free’. The scheme also uses Specific Targeted Research Projects (STREP) and Community Support Action (CSA) funds instead of the collaborative projects approach (which is also faster).

### 4.3. SME participation in the Eurostars Programme

Apart from FP7 and the schemes provided in CIP, the Eurostars programme aims to support European R&D performing SMEs. The programme is managed by the EUREKA Secretariat, and it is supported by the European Commission with an overall total of €100 Million, which represents 25% of the overall contributions of the participating countries.

The Interim Evaluation28 of the Eurostars programme, which was conducted by an independent international expert panel in 2010 and the 2011 EUROSTAR Annual Review29 provide main information on functioning and application patterns in this programme. The unique feature of the Eurostars Joint Programme is a joint central and national management: central evaluation of the content of projects combined with a formal screening of individual applicants at their national levels. This was considered as best practice in terms of clear and transparent organisation and timely accomplishment in the Interim Evaluation of the Eurostars programme.

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The Interim Evaluation concluded that the programme overall is a good programme, which meets its objectives and adds value to European R&D performing SMEs, and which should not only be sustained but preferably its budget should be increased in the future.

According to the 2011 Annual Review, in the first 7 calls of the Eurostars programme, 2,237 applications were submitted. In total, around €370 Million of public funding were estimated for the first 7 calls, earmarked to 545 project applications. This corresponds to a successful application rate of 24%. More than 70% of applications are submitted by SMEs. In total the €370 Million of public funding mobilized €414 Million of private investment.

In a typical Eurostars project, there are on average 3.3 participants stemming from 2.4 countries. Average project costs are €1.4 million. The average project duration is 29.1 months. On average, 79% of the shared costs are for R&D SMEs and SMEs; the remainder is devoted predominantly to research institutes and universities. Large enterprises only account for minimal shares of funding.

As regards the timing of funding decision, the interim evaluation highlighted for the first two cut-off dates that time from application to the communication of application outcome to participants normally takes six months. Then negotiations between individual partners and national funding agencies start. Only after all negotiations have concluded and a consortium agreement is signed, a final contract can be provided. For these reasons, average time-to-contract was 11.4 months. However, this time varied significantly, from a minimum of 5.3 months to a maximum of 26.8 months in the first cut-off, and from a minimum of 6.3 months to a maximum of 17.2 months in the second cut-off. Overall, the average time to contract has gone down from 11.8 months in the first cut-off to 11.0 months in the second.

SMEs participating in Eurostars are fast growing SMEs with high R&D intensity: 40% are micro SMEs (0-9 employees) with very high impact expectations and 43% are small SMEs (10-49 employees) with high expectations. When submitting an application, R&D performing SMEs expect on average to double their annual turnover and to increase their number of employees by 60%.

The bottom-up approach of Eurostars gives the freedom to participants to launch their projects in any technological and market area; nevertheless, Eurostars attracts to a large extent participants in high tech sectors with high-growth potential. Main technological areas addressed by Eurostars projects are ICT (32%) and Biotech (29%). Industrial manufacturing accounts for 24% of projects, Energy and Environment for 9%, and Agro-Food for 6%.
5. KEY PRIORITIES OF HORIZON 2020

KEY FINDINGS

- Horizon 2020 identifies three priorities (1) Excellent Science, (2) Industrial Leadership, and (3) Societal Challenges each comprising a set of specific objectives.

- ‘Excellent Science’ aims at raising the level of excellence in Europe’s science base and ensuring a steady stream of world-class research to secure Europe’s long-term competitiveness. Within this priority, the specific objectives ‘Future and Emerging Technologies (FET)’ and ‘Marie Curie Actions’ are particularly relevant as to SMEs.

- Of utmost importance for SME related policy are the priorities ‘Industrial Leadership’, in particular the specific objective ‘Leadership in Enabling and Industrial Technologies (LEIT)’, and the priority ‘Societal challenges’ as the newly introduced ‘specific SME instrument’ is closely connected to them.

- The specific focus of LEIT is to maintain and build global leadership in enabling technologies and space research and innovation, which underpin competitiveness across a range of existing and emerging industries and sectors.

- The priority ‘Societal Challenges’ aims at pursuing research, technological development, demonstration and innovation actions which contribute to altogether seven specific objectives (among them health, bio-economy challenges, energy, transport, climate action, inclusive, and secure societies).

- In addition to these priorities there are two specific objectives. One is relating to ‘Spreading excellence and widening participation’. The respective activities shall help close the research and innovation divide in Europe by promoting synergies with the European Structural and Investment (ESI) Funds and also by specific measures to unlock excellence in low performing RDI regions. The other specific objective is focusing on ‘Science with and for society’. Its aim is to build effective cooperation between science and society, to recruit new talent for science and to pair scientific excellence with social awareness and responsibility.

This section mainly sketches the three priorities of Horizon 2020 inasmuch as they are relevant for SMEs.

5.1. The set of proposals for Horizon 2020

Overall, Horizon 2020 comprises the following parts:

- A Framework Programme for Horizon 2020, laying down the general objectives, rationale and Union added value, the financial envelope and provisions on control, monitoring and evaluation. With regard to this, a partial general approach has been reached by the Competitiveness Council meeting on 31 May 2012.30

- A single specific programme to implement Horizon 2020, laying down the implementation modalities and the content in terms of the broad lines of activities.

With regard to this, a partial general approach has been reached by the Competitiveness Council meeting on 11 December 2012.\textsuperscript{31}

- A single set of Rules for Participation and Dissemination, laying down the modes of funding and reimbursement of costs, conditions for participation, selection and award criteria and the rules on ownership, exploitation and dissemination of results. With regard to this, a partial general approach has been reached by the Competitiveness Council meeting on 10 October 2012.\textsuperscript{32}

- A separate proposal for the part of Horizon 2020 corresponding to the Euratom Treaty\textsuperscript{33}.

On September 26, 2013 - after months of negotiations with the Council - the ITRE Committee of the European Parliament has approved the (revised) Horizon 2020 package (and also COSME, see Section 6.1).\textsuperscript{34}

Complementing the aforementioned package, there is also a separate proposal for a revision of the European Institute of Innovation and Technology (EIT) Regulation.\textsuperscript{35} During the period 2014-2020, the EIT shall contribute to the general objective of Horizon2020 by integrating the knowledge triangle of higher education, research and innovation.

Horizon 2020 identifies three mutually reinforcing priorities dedicated to:

- Excellent Science,
- Industrial Leadership,
- Societal Challenges,

which are briefly described in the subsequent sections of this Chapter.

Moreover, there are two specific objectives. One is relating to 'Spreading excellence and widening participation', the specific objective of which is to fully exploit the potential of Europe’s talent pool and to ensure that the benefits of an innovation-led economy are both maximised and widely distributed across the Union in accordance with the principle of excellence.


To this end, activities shall help close the research and innovation divide in Europe by promoting synergies with the European Structural and Investment (ESI) Funds and also by specific measures to unlock excellence in low performing RDI regions, thus, widening participation in Horizon 2020 and contributing to the realisation of the European Research Area. The other specific objective is focusing on 'Science with and for society'. Its aim is to build effective cooperation between science and society, to recruit new talent for science and to pair scientific excellence with social awareness and responsibility.

5.2. The priority 'Excellent Science'

World class science is deemed to be the foundation of tomorrow's technologies, jobs and well-being and it is therefore in the best interest of Europe to develop, attract and retain research talent and to provide access to the best infrastructures to researchers. Excellent Science aims at raising the level of excellence in Europe's science base and ensuring a steady stream of world-class research to secure Europe's long-term competitiveness. Excellent Science comprises four key elements:

- the European Research Council (ERC);
- Future and Emerging Technologies (FET);
- Marie Skłodowska-Curie Actions; and
- Research Infrastructures.

Yet, as the present paper focuses on the SME relevant parts of Horizon 2020, we address only FET and Marie Curie actions.

The specific objective of FET is to foster radically new technologies by exploring novel and high-risk ideas building on scientific foundations, with the potential to open new fields for scientific knowledge and technologies and contribute to the European next generation industries. By providing flexible support to goal-oriented and interdisciplinary collaborative research on various scales and by adopting innovative research practices, the aim is to identify and seize opportunities of long-term benefit for citizens, the economy and society. The FET programme may involve in particular research-intensive SMEs.

The specific objective of Marie Skłodowska-Curie Actions is to ensure optimum development and dynamic use of Europe's intellectual capital in order to generate, develop and transfer new skills, knowledge and innovation and, thus, to realise its full potential across all sectors and regions. Activities comprise e.g.

- fostering new skills by means of excellent initial training of researchers;
- nurturing excellence by means of cross-border and cross-sector mobility, i.e. experienced researchers are encouraged to broaden or deepen their skills e.g. in SMEs; and
- stimulating innovation by means of cross-fertilisation of knowledge.
5.3. The priority 'Industrial Leadership’

The priority Industrial Leadership rests on the observation that strategic investments in key technologies are decisive for innovation across existing and emerging sectors. Against this backdrop, Europe needs to attract more private investment in research and innovation. The priority Industrial Leadership is of utmost importance for SME related policy (see Section 7.3) and comprises the following key objectives:

- Leadership in Enabling and Industrial Technologies (LEIT): The specific focus is to maintain and build global leadership through research and innovation in enabling technologies and space research and innovation, which underpin competitiveness across a range of existing and emerging industries and sectors. Innovation activities shall include the integration of individual technologies; demonstrations of capacities to make and deliver innovative products, systems, processes and services; user and customer pilots to prove feasibility and added value; and large-scale demonstrators to facilitate market take-up of the research results. Implementation shall encourage the involvement of small and medium sized research teams, also contributing to a more active participation of SMEs. Thematically, LEIT activities shall specifically focus on information and communication technologies, nanotechnologies, advanced materials, biotechnology, advanced manufacturing and processing, and space. A major component of LEIT, thus, are Key Enabling Technologies (KETs).

- Access to risk finance: The specific objective is to help address market deficiencies in accessing risk finance for research and innovation. Horizon 2020 supports access to loans, guarantees and equity finance via a 'Debt facility' and an 'Equity facility' composed of various windows. The Equity facility and the SME window of the Debt facility shall be implemented in interdependence with COSME, as part of two EU Financial Instruments that provide equity and debt to support SMEs' RTDI and growth.

- Innovation in SMEs: The specific objective is to stimulate sustainable economic growth by means of increasing the levels of innovation in SMEs, covering their different innovation needs over the whole innovation cycle for all types of innovation, thereby creating more fast-growing, internationally active SMEs. For a more detailed discussion, see Section 7.3.

- As a support for Innovation in SMEs, a specific action is supposed to promote transnational market-oriented innovation of R&D performing SMEs. It targets research-intensive SMEs in any sectors that show the capability to commercially exploit the project results. The action shall cover the entire field of science and technology with a bottom-up approach to fit the need of R&D intensive SMEs. The action will be built on the Eurostars Joint Programme. Moreover, there will be an activity aiming at enhancing the innovation capacity of SMEs and it will be implemented in cooperation with the Member States.

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37 Council of the European Union (2012c), Part II, section 3.2.
5.4. **The priority 'Societal Challenges'**

The priority Societal Challenges has a specific focus on concerns of and challenges for European citizens and societies. It aims at pursuing research, technological development, demonstration and innovation actions which contribute to the following set of specific objectives:\[38\]:

- Health, demographic change and well-being;
- European Bio-economy challenges;
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Climate action, resource efficiency and raw materials;
- Europe in a changing world;
- Secure societies.

Within the specific focus of Horizon 2020 on SMEs, it is in particular stipulated that specific actions shall be undertaken within each of these objectives. For the implementation of these specific SME actions, see Section 7.3.

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38 A more detailed description of the ten specific objectives is presented in Annex 2.
6. HORIZON 2020 AND ITS POTENTIAL INTERRELATIONSHIP WITH OTHER EUROPEAN PROGRAMS

KEY FINDINGS

- Horizon 2020 and the ‘Programme for the Competitiveness of enterprises and SMEs’ (COSME) are programmes each with a specific focus: Whereas Horizon 2020 is focused on innovation driven growth, COSME concentrates on support to create a favourable business environment and competitiveness. COSME might broaden the set of potential participants among SMEs as there is no relationship to innovation.

- Apart from (small) overlaps, COSME and Horizon 2020 have a specific interface regarding access to finance instruments: Within the equity instrument there will be an equity facility for RTDI which is allocated to Horizon 2020 and an equity facility for growth within COSME. Likewise, within the debt instrument there will be a guarantee facility for RTDI within Horizon 2020 and a loan guarantee facility within COSME.

- In principle, both programmes might therefore render complementarities. It is, however, too early to judge whether and to what extent these complementarities really become reality as this will depend decisively on a coherent and efficient implementation of the two programs in practice.

- The ‘research and innovation strategies for smart specialization’ (RIS3) and Horizon 2020 are linked to each other inasmuch as they aspire to contribute to smart, sustainable and inclusive growth (Europe 2020).

- Yet, there are also significant differences: Horizon 2020 inherently is non-territorial whereas European Cohesion Policy is place based. Horizon 2020 focuses on individual projects and on the entire innovation chain, whereas Cohesion Policy is based on multiannual Programmes and on close to the market competitive R&D and innovation efforts. Financial support under Horizon 2020 in general is awarded directly to final beneficiaries whereas Cohesion Policy is awarded through shared management to national and regional public intermediaries. Horizon 2020 rests mainly on competitive calls addressed to multi-country groups of participants through peer-review based on excellence criteria whereas Cohesion Policy is based on non-competitive attribution addressed to regional players based on strategic planning negotiation.

- Overall, Horizon 2020 and Cohesion Policy by all means might unleash complementarities inasmuch as smart specialization via its support for learning mechanisms and critical skills in regions and Member States leads to an increasing capacity to participate in Horizon 2020.

This section aims at highlighting the context of Horizon 2020 with the ‘Programme for the Competitiveness of enterprises and SMEs’ (COSME) and the ‘research and innovation strategies for smart specialization’ (RIS3).
6.1. Horizon 2020 and COSME

COSME focuses on two general objectives: (1) to strengthen the competitiveness and sustainability of the Union’s enterprises, including in the tourism sector and (2) to encourage an entrepreneurial culture and promote the creation and growth of SMEs. To this end, the following specific objectives are stipulated:

- to improve framework conditions relevant for competitiveness and sustainability of Union enterprises; actions in this respect may include in particular the support for SME policy development and cooperation between policy makers, particularly with a view to improving the ease-of-access to programmes and measures for SMEs;
- to promote entrepreneurship by improving respective framework conditions; the goal is to develop entrepreneurial skills and attitudes, especially among new and potential entrepreneurs, young people and women, and other specific target groups; in this context, the Commission may support respective Member States’ measures;
- to improve access to markets inside the Union and globally; to this end the support for the Enterprise Europe Network shall be maintained and actions regarding information provision and awareness-raising for SMEs are supported; moreover, specific measures to facilitate SMEs access to markets outside the Union, and to strengthening existing support services in those markets are included;
- to improve access to finance for growth-oriented SMEs comprising an equity facility and a loan guarantee facility, see section 3.6.

The aforementioned access to finance instrument provides for a specific interface between COSME and Horizon 2020. In a nutshell, within the equity instrument there will be an equity facility for RTDI which is allocated to Horizon 2020 and the equity facility for growth within COSME. Likewise, within the debt instrument there will be a guarantee facility for RTDI within Horizon 2020 and the loan guarantee facility within COSME.

It is fair to state that Horizon 2020 and COSME are programmes each with a specific focus: Whereas Horizon 2020 is focused on innovation driven growth COSME concentrates on support to create a favourable business environment and competitiveness. COSME might broaden the set of potential participants among SMEs as there is no relationship to innovation. In principle, both programmes might therefore render complementarities. It is, however, too early to judge whether and to what extent these complementarities really become reality as this will depend decisively on a coherent and efficient implementation of the two programs in practice.

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39 For a brief overview of the background of COSME see section 3.6. In this sub-section we have in particular made use of information provided by European Commission (2011c) and the COSME factsheet, available at: http://ec.europa.eu/cip/files/cosme/cosme_factsheet_final_en.pdf.
6.2. **Horizon 2020 and Smart Specialisation Strategies**

For a brief background overview of the ‘research and innovation strategies for smart specialization’ (RIS³) see section 3.7. ‘Smart specialization’ as an issue of European policy is not new. Rather, RIS³ can be viewed as a refinement and upgrading of the existing methodology for Structural Funds programming inasmuch as it is supposed to become a pre-condition (‘ex-ante conditionality’) for supporting investments specifically related to two of the 11 thematic objectives of the ERDF, namely:

- Strengthening research, technological development and innovation (the RTDI target); and
- Enhancing access to and use of quality of ICT (the ICT target).

Likewise, the same conditionality applies to theme one (‘Fostering knowledge transfer and innovation in agriculture, forestry and rural areas’) of the European Agricultural Fund for Rural Development (EAFRD).

There are commonalities and differences between Horizon 2020 and RIS³.

Commonalities in particular relate to:

- A common policy background: Both RIS³ and Horizon 2020 are referring to Europe 2020, see section 3.3. Thus, both programs are linked to each other inasmuch as they aspire to contribute to smart, sustainable and inclusive growth.
- Problems and challenges of existing programs: Both RIS³ and Horizon 2020 address to some extent problems and challenges of existing programs. Indeed, as the Regional Innovation Monitor has shown, problems identified regarding European Cohesion policy 2007-2013 have some similarities with those identified with regard to the existing programmes FP7 and CIP, see Chapter 7.
- Key Enabling Technologies (KETs): Both Horizon 2020 and RIS³ refer to KETs because of their horizontal nature and transformative potential. KETs in the context of Horizon 2020 are particularly relevant as to the priority 'Industrial Leadership', in particular regarding the key objective Leadership in Enabling and Industrial Technologies (LEIT), see section 5.3. Likewise, the deployment of KETs has the potential to be also an important component of a smart specialisation strategy.

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41 Key problems identified regarding European Cohesion policy 2007-2013 are: (1) Lack of interaction between levels of governance and departments; (2) Strategies without external perspective – duplication; (3) Lack of or indifference to critical mass; (4) Measures only for R&D and capacity building and not for demand stimulation and market access; (5) Focus on fashionable themes /prestige projects; (6) Focus on industries and not on emerging sectors and services; see Landabaso (2012), slide 18.

42 See Guide to RIS3, op.cit. p. 17.
Yet, there are also significant differences:

- Unlike Horizon 2020 the focus of which is on companies, research institutions, etc. and, thus, being inherently non-territorial, European Cohesion Policy has a focus on regions (and Member States) and therefore is place based.
- The focus of Horizon 2020 is on individual projects and on the entire innovation chain, whereas Cohesion Policy is based on multiannual Programmes and on close to the market competitive R&D and innovation efforts.
- Financial support under Horizon 2020 in general is awarded directly to final beneficiaries whereas Cohesion Policy is awarded through shared management to national and regional public intermediaries.
- Horizon 2020 rests mainly on competitive calls addressed to multi-country groups of participants through peer-review based on excellence criteria whereas Cohesion Policy is based on non-competitive attribution addressed to regional players based on strategic planning negotiation.

Overall, Horizon 2020 and Cohesion Policy by all means might unleash complementarities inasmuch as smart specialization via its support for learning mechanisms and critical skills in regions and Member States leads to an increasing capacity to participate in Horizon 2020.
7. ASSESSMENT OF KEY CHANGES OF HORIZON 2020 IN COMPARISON TO CURRENT EUROPEAN PROGRAMMES

KEY FINDINGS

- Horizon 2020 builds on the current FP7 concept, the innovation aspects of the CIP Program and the EU contribution to EIT; however, there are significant changes and a shift of focus vis-à-vis these existing programs.

- Horizon 2020 is characterized by three key dimensions of change: (1) a target shift concerning the participation of SMEs, (2) a shift of scope from R&D towards problem orientation and innovation, and (3) a system shift concerning the programme structure.

- Compared to previous programmes Horizon 2020 provides for new participation rules: the general rule is that at least three legal entities need to partner to participate in Horizon 2020. Each of the three legal entities shall be established in a different Member State or associated country and all of the three legal entities shall be independent of each other. However, Horizon 2020 also specifies a rule for participation that allows funding of a single legal entity, provided there is a 'clear European added-value'.

- The new SME instrument (1) covers all phases from idea to market with a continued support throughout a project, (2) is targeted at all types of innovative SMEs, (3) allows funding applications only by SMEs, whereby a single company support is possible, (4) is competitive, (5) is based on a market oriented approach and it incorporates a clear EU dimension, and (6) has a grant-based staged funding approach.

- The three phases of the SME instrument cover concept and feasibility assessment (Phase I); R&D, demonstration, market replication (Phase II); and commercialisation (Phase III). The latter phase will not provide direct funding other than support activities. Transition from one phase to the next will be seamless provided the SME project has proven to be worth further funding during a previous phase. There is no obligation for applicants to sequentially cover all three phases. Each phase will be open to all SMEs.

- The dedicated SME instrument will operate under a single centralised management system and it shall be implemented primarily in a bottom-up manner via a continuously open call. All of the specific objectives on 'Societal challenges' and on LEIT (see chapter 5) will apply this instrument. A minimum of 20% of the total combined budget for the specific objective on "Leadership in enabling and industrial technologies" and the priority "Societal challenges" shall go to SMEs.

- In addition, a 'Fast Track to Innovation' scheme will support innovation actions under LEIT and under the "Societal Challenges", with a bottom-up-driven logic on the basis of a continuously open call, and Time to Grant not exceeding six months.

- Moreover, Horizon 2020 also is to be based on simplified funding rules including simpler reimbursement of direct costs: one single reimbursement rate for all participants and activities in the same project and overhead costs covered by a single flat-rate applied to the direct costs.

This section aims at illuminating the main new elements of Horizon 2020 and the main changes vis-à-vis the current European programmes.
Overall, Horizon 2020 can be characterized by three key dimensions of change: (1) a target shift concerning the participation of SMEs, (2) a shift of scope from R&D towards problem orientation and innovation, and (3) a system shift concerning the programme structure:

- Horizon 2020 offers a target shift from focus on science with participation of SMEs towards SMEs that are working together with science based on the intention of a much more prominent position of SMEs;
- Horizon 2020 does not follow a technology segmentation, but is oriented towards solving societal challenges by coupling research to innovation;
- Horizon 2020 moves from specialised programme structures (FP7, CIP...) to a more coherent approach with an integrated programme structure aiming at internalizing synergies of support measures.

All changes as compared to previous programmes aim at making the programme fit for purpose to promote growth and tackle societal challenges.

### 7.1. Changes regarding program and instruments

From a general perspective, Horizon 2020 carries on with existing programmes of FP7 while integrating at the same time instruments from the CIP and introducing new measures:

- The priority Excellent Science carries on with the provision of existing measures in FP7 (ERC, FET, Marie Curie and research infrastructures).
- The priority Industrial Leadership is a novelty as it puts stronger focus on a more balanced approach on research and innovation, by promoting activities where businesses set the agenda. The instruments under this priority integrate, however, measures of CIP (e.g. facilitation of access to risk finance via the debt and equity facility, continuation of the activities of CIP-EIP) and introduce completely new measures to provide EU wide support for innovation in SMEs, see below.
- Also the actions under the priority Societal Challenges constitute a major novelty as compared to FP7 and other pre Horizon 2020 programmes, reflecting the above mentioned shift towards an increase of strategic oriented research aiming at an increase of problem solving capacities.

From a SME specific perspective, Horizon 2020 builds to some extent upon existing programmes and rules of FP7 and CIP. Yet, there are also major novelties. In a nutshell, a comparison of the existing programmes and Horizon 2020 yields:

- The SME specific instruments of the FP7 Capacity – Research for the benefits of SMEs and Research for the benefits of SME associations - are going to fade out without a substitution in Horizon 2020.
- SME-oriented activities within Horizon 2020 are thematically not organized via a distinct program; rather, they are incorporated into a new ‘SME Instrument’ (see below) which essentially is integrated into Horizon 2020 priorities.
- The Eurostars follow-up programme focusing on research intensive SMEs will be supported by Horizon 2020 and implemented in partnership with the Member States.
Openness of SME participation in collaborative R&D and innovation projects, exchange and mobility of researchers involving SMEs via Marie Curie actions constitute elements which were also present in FP7.

The overall strategic positioning of Horizon 2020 and its SME instrument is visualized in Figure 6.

**Figure 6: The strategic positioning of Horizon 2020**

The major new elements of Horizon 2020 that are relevant from the perspective of SMEs relate to participation and funding rules, and the newly established ‘SME instrument’. Subsequently, we highlight these changes and assess them.

### 7.2. New rules regarding participation and funding

As regards new participation rules, the envisaged general rule is that at least three legal entities need to partner to participate in Horizon 2020. Each of the three legal entities shall be established in a different Member State or associated country and all of the three legal entities shall be independent of each other. However, Horizon 2020 specifies a rule for participation that allows funding of a single legal entity, provided there is a ‘clear European added-value’, see section 7.3.\(^{43}\) This new element in Horizon 2020 is known from CIP Eco-Innovation (although from an overall quantitative perspective the share of SMEs that have made use of this instrument was very low). The set of new funding rules defined by Horizon 2020 in effect provide for a considerably changed funding system. The main elements of this new system are:

- a simpler reimbursement of direct costs, with a broader acceptance of beneficiaries' usual accounting practices;
- one single reimbursement rate for all participants and activities in the same project (100% for R&D, 70% for the demonstration phase)\(^ {44}\);

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indirect costs (overheads) covered by a single flat-rate (25%) applied to the direct costs as a general rule \(^{45}\);

the possibility of using unit personnel costs (average personnel costs), including for SME owners without a salary\(^ {46}\);

simplification of time-recording by providing a clear and simple set of minimum conditions; in particular abolition of time-recording obligations for staff working exclusively on a Horizon 2020 project.\(^ {47}\)

Through the introduction of a single set of rules including a single point of access for participants, fewer controls and audits, Horizon 2020 aims at reducing considerably red tape and follows the overall aim to reduce the average time to grant by 100 days, which would mean a significant reduction compared to FP7, see section 4.1.

7.3. The dedicated SME instrument\(^ {48}\)

Article 18 of the proposal for Horizon 2020 focuses specifically on SMEs and calls for the establishment of a dedicated SME instrument. The SME instrument will be provided for all types of innovation, including non-technological, social and service innovations, given each activity has a clear European added-value. In a nutshell, the new SME instrument

- covers all phases from idea to market with a continued support throughout a project,
- is targeted at all types of innovative SMEs,
- allows funding applications only by SMEs, whereby a single company support is possible,
- is competitive,
- is based on a market oriented approach and it incorporates a clear EU dimension, and
- has a grant-based staged funding approach.

The objective is to help filling the gap in funding for early stage high risk research and innovation, stimulate break-through innovations and increase private-sector commercialisation of research results.


In the dedicated SME instrument, only SMEs will be allowed to apply for funding and support. They can form collaborations according to their needs, including for subcontracting research and development work. Projects must be of clear interest and potential benefit to SMEs and have a clear European dimension.

The SME instrument will cover all fields of science, technology and innovation in a bottom-up approach within a given societal challenge or enabling technology so as to leave sufficient room for all kinds of promising ideas, notably cross-sector and inter-disciplinary projects, to be funded.

The SME instrument will provide simplified and staged support. Access for SMEs to funding is intended to be facilitated by a significant simplification of rules and procedures.

Given an idea and/or a concept (i.e. a ‘business plan I’), the SME instrument consists of three phases that cover the whole innovation cycle, as visualized in Figure 7.

**Figure 7: Overview of the envisaged phases of the SME Instrument**

**SME instrument**

**PHASE 1**
Idea to concept, risk assessment, technological & commercial feasibility

**PHASE 2**
Demonstration, prototyping, testing, market replication, scaling up, miniaturisation, research

**PHASE 3**
Quality label for successful projects, access to risk finance, indirect support

IDEA continued support throughout the project MARKET

*Source: WIK-Consult based on Reichert (2012)*
Phase 1 is devoted to concept and feasibility assessment. SMEs will receive funding to explore the scientific or technical feasibility and the commercial potential of a new idea in order to develop an innovation project. A positive outcome of this assessment — in which the linkage between project-topic and potential user/buyer needs is an important issue — will allow for funding under the following phase(s). Phase 1, thus, comprises activities such as the feasibility of a concept, risk assessment, the Intellectual Property regime, partner search, a design study, a pilot application intention, and a business plan II.

Phase 2 is focusing on R&D, demonstration, market replication. Research and development will be supported with a particular focus on development, prototyping, testing; piloting innovative processes, products and services; miniaturization and design of products; planning and developing scaling-up (market segments, processes, etc.); market replication; and a business plan III.

Phase 3 concentrates on commercialisation. This phase will not provide direct funding other than support activities. Yet, it aims at facilitating access to private capital, i.e. links to the financial instruments ‘debt facility’ and ‘equity facility’ mentioned above are foreseen, for example by giving SMEs that have successfully completed phases 1 and/or 2 priority within a ring-fenced volume of financial resources. In addition this part may connect to measures promoting pre-commercial procurement and procurement of innovative solutions. Moreover, the commercialization phase comprises activities focusing on e.g. a quality label for successful projects; support via networking, training, coaching, information addressing IP management, knowledge sharing and dissemination. Furthermore, relying on existing SME support networks, a mentoring scheme for the beneficiary SMEs shall be established to accelerate impact from the support provided.

Transition from one phase to the next will be seamless provided the SME project has proven to be worth further funding during a previous phase. There is no obligation for applicants to sequentially cover all three phases. At the same time each phase will be open to all SMEs49.

In the triologues process regarding Horizon 2020, the European Parliament suggested a number of modifications for the SME instrument, among which the most important are50:

- For ensuring easy access, the SME instrument should make use of a single entry point for SMEs and shall be implemented by a single body such as a specialised executive agency.
- Support for SMEs should be provided by existing SME support networks and other innovation service providers and a mentoring scheme for the beneficiary SMEs shall be established to accelerate impact from the support provided.
- The SME instrument may also serve as an instrument for pre-commercial procurement or procurement of innovative solutions for specific top-down identified common need of EU public procurers in Europe.
- Intermediary organisations representing groups of innovative SMEs shall be invited to conduct cross-sectoral and cross-regional innovation activities with SMEs having mutually reinforcing competences, in order to develop new industrial value chains.

50 European Parliament (2012b).
• Enhanced participation of SMEs in the governance of the programme in particular the participation in the setting of research agendas and implementation of the public-private partnerships shall be promoted throughout Horizon 2020.

The (revised) Horizon 2020 package approved by the ITRE Committee of the European Parliament on September 26, 2013 (see Section 5.1) specifies that the dedicated SME instrument will operate under a single centralised management system, light administrative regime and a single entry point.\(^{51}\) It shall be implemented primarily in a bottom-up manner via a continuously open call.

All of the specific objectives on ‘Societal challenges’ and on ‘Leadership in enabling and industrial technologies’ (see chapter 5) will apply the dedicated SME instrument and will allocate an amount for this. Overall, it is stipulated that the integrated approach and the simplification of procedures should lead to a minimum of 20% of the total combined budget for the specific objective on "Leadership in enabling and industrial technologies" and the priority "Societal challenges" going to SMEs.\(^{52}\)

### 7.4. Fast Track to Innovation

In the course of the trilogue process regarding Horizon 2020, the European Parliament has suggested to introduce in addition to the aforementioned measures a 'Fast Track to Innovation' scheme. This scheme has now been adopted. Based on the text of the Regulation adopted on September 26, 2013 (see Section 5.1) 'Fast Track to Innovation' will support innovation actions under the specific objective ‘Leadership in enabling and industrial technologies’ and under the “Societal Challenges’, with a bottom-up-driven logic on the basis of a continuously open call, and Time to Grant not exceeding six months. In order to speed up the time from idea to market significantly and to increase the participation of industry, SMEs and first time applicants in Horizon 2020 'Fast Track to Innovation' aims at

- stimulating private sector investment in research and innovation,
- promoting research and innovation with a focus on value creation, and
- accelerating the development of technologies into innovative products, processes and services.

### 7.5. Assessment

It has widely been recognized that the current system of support for research and innovation in the EU has some severe disadvantages for SMEs including:\(^{53}\)

- Fragmentation of support instruments; no coherent thematic focus across the different programs leading to lack of transparency and high transaction costs;
- Complex administrative rules and procedures which are not adapted to SMEs;

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\(^{52}\) Based on the text of the Regulation adopted on September 26, 2013 (see Section 5.1) the breakdown of the budget in Annex II further stipulates: Within the target of allocating a minimum of 20 % of the total combined budgets for LEIT and the Societal Challenges for SMEs, a minimum of 5 % of those combined budgets will be initially allocated to the SME instrument. A minimum of 7 % of the total budgets of LEIT and Societal Challenges will be allocated to the SME instrument averaged over the duration of the Horizon 2020 programme.

- No appropriate coverage of the innovation value chain.

Against this backdrop, Horizon 2020 is in many ways a fundamental step in the right direction, and in general it has a significant potential to diminish barriers. In the following we highlight to what extent Horizon 2020 can potentially contribute to diminish barriers for SMEs and/or help to meet the challenges ahead.

7.5.1. Implementation of a more balanced support concept for research and innovation

With a specific focus on industry and participation of SMEs, the Expert Group report of the Interim Assessment of FP7\(^54\) noted that if commercialisation of research is to be encouraged, more scope is needed for SMEs to be engaged in collaborative projects as the bridge between the pre-competitive research and the innovations that can contribute to competitiveness goals. This reasoning pleads for channels that enable SMEs in Cooperation projects to exploit the research with which they are associated. In this respect, it was also noted that in order to give greater weight to innovation a paradigm shift in collaborative research which is predominantly orientated towards research production, is needed in the Framework Programmes.

As the Interim Evaluation of FP7 noted, the connections between the main performers of research in universities and research and technology organisations (RTOs), on the one side, and industry (especially SMEs), on the other, are not working as well as they could do in FP7. The FP7 Monitoring reports have shown that participation of SMEs in FP7 only spurred up to desired levels in the last two work programmes, once specific measures have been taken encouraging their stronger participation.

Horizon 2020 recognises these shortcomings, and the main strategic orientations of Horizon 2020 focusing on societal challenges and industrial leadership constitute a paradigm shift in European research and innovation policy design. Through the introduction of the new SME instrument, it covers for the first time the whole innovation cycle and includes all types of innovation. Horizon 2020 definitely has the potential to reflect specific needs of SMEs as regards innovation processes more appropriately.

The FP7 Interim Evaluation stated that the officially recognised EU definition of an SME, stemming from a Council Decision (2003), is one which embraces more than the conventional notion of a small business driven by an entrepreneur with a bright idea: It includes certain not-for-profit organisations which appear to have the character of non-governmental organisations, rather than businesses.

Participation patterns of SMEs by type of sectors (see Section 4) show that a considerable number of SMEs participating in FP7 are not stemming from knowledge-intensive services sectors or high-tech manufacturing, but rather are R&D enterprises. The programmatic shift towards the implementation of more innovation-oriented measures for SMEs might therefore contribute to an increased participation of production and service oriented SMEs.

\(^{54}\) European Commission (2010a).
7.5.2. Reduction of fragmentation of European Research and Innovation Programmes

The integration of previously separate programmes (FP7, CIP,...) into one coherent programme might turn out to be a major improvement in Horizon 2020 inasmuch as this approach is able to substantially reduce the complexity of funding and allows SMEs to better identify appropriate support instruments, in effect leading to lower transaction costs when searching for funds.

The conceptual foundations of Horizon 2020 suggest that Horizon 2020 seeks to take up and increase successful and innovative concepts such as CIP ECO-Innovation, which provided successful innovation support, but at a much smaller scale than for example FP7 cooperation. The extent to which these changes will actually lead to success will depend upon the outcome of further accords and the concrete modalities of measures which are not yet implemented.

One area of potential conflicts in practice might arise from the partial overlap of risk funding within Horizon 2020 and COSME, respectively (see Section 6).

7.5.3. Potential effects from the announced simplification efforts

The European Commission has already begun to introduce simplification measures in FP7\(^{55}\), including:

- Reduction of ex ante controls and revised protective measures for financially weak participants designed to ease the participation of SMEs and high-tech start-ups;
- Reduction of the number of certificates on financial statements to be provided with periodic cost claims;
- Introduction of a unique registration facility;
- Introduction of the possibility of ex-ante certification of the accounting methodology for recurring participants;
- Streamlining of project reporting requirements;
- Optimisation of IT tools.

An assessment of the Effectiveness of Simplification Measures under FP7\(^{56}\) noted that the complexity of the FPs contributes to the effect that participants with prior experiences of the FPs are at an advantage compared to newcomers, even beyond the normal learning curve effect. As a consequence, the assessment warns that if this complexity is not significantly reduced, high-potential research projects from less-experienced or inexperienced researchers or from smaller organisations (such as SMEs) may be missed by the Programme and its successors.

Considerable reductions in ex ante controls and revised protective measures for financially weak participants (SMEs and high-tech start-ups) have reduced administrative burdens on SMEs and the Assessment of the Simplification Measures under FP7 states that those concerned, which are mainly small partners, have regarded the measure very positively since it reduces the cost to participate in a FP7 project (no need to have a bank guarantee for small partners from the private sector that is usually very expensive).


According to the Assessment of the Simplification efforts\textsuperscript{57}, FP7 simplification measures have been partially successful, but measures do not appear to have increased participation of less represented target groups such as SMEs, newcomers and small players in general. As a consequence, FP7 is still perceived as a ‘closed shop’ for experienced participants. SMEs’ particular concerns were stressed by the Interim Evaluation of FP7, that long TTGs can even undermine the case for support.

Against this backdrop, we think it is fair to state that:

- The simplification efforts foreseen to take effect in Horizon 2020 have in general the potential to reduce the administrative burden during the project lifetime. Thus, SMEs might be able to reduce costs considerably.

- Such simpler rules in a mid and longer term perspective might contribute to improve the ‘image’ of EU support programs, as the perception very often still is that they are extremely burdensome.

- The aim to reduce TTG by 100 days in Horizon 2020 is a step in the right direction and potentially increases attractiveness of the programme for SMEs.

- The possibility of funding applications only by SMEs allows in principle partnerships on a ‘level playing field’. However, the benefits of such an advantage can only be reaped if the system as such is incentive compatible (in particular, if it allows low transaction costs for participation).

- A ‘single company support’ is an approach which a priori lowers entry barriers for SMEs substantially. Yet, the incentive compatibility of such a rule depends decisively on the procedures and requirements to substantiate a European Added Value. In this regard, our interviewees have expressed a great deal of uncertainty and scepticism. Moreover, they were concerned about the danger of cheating.

- There is a major simplification regarding the funding rules inasmuch as today’s system of several funding rates for different beneficiaries and activities is reduced to just two and the four methods to calculate overhead or ‘indirect costs’ are replaced by a single flat rate. The latter a priori generates winners and losers compared to the current much more disaggregated system. It is obvious that entities that operate with relatively high indirect costs and full cost accounting systems in all likelihood will be among the losers; nonetheless, it is likely that the overwhelming number of SMEs operating without full cost accounting models will experience an advantage because the new system is much more appropriate to their needs. Of course, also here the ultimate success of the simplifications rests heavily on the practical implementation. Relevant factors are e.g. national accounting practices and an SME-friendly design of calls.

- In order to measure the actual effectiveness of the envisaged simplification of procedures and increased participation in Horizon 2020, the European Parliament recently proposed to conduct an interim evaluation of the rules for participation and dissemination in 2017\textsuperscript{58}.


\textsuperscript{58} European Parliament (2012a).
8. ASSESSMENT OF POTENTIAL BENEFITS OF HORIZON 2020 FOR SMEs

KEY FINDINGS

- Many elements of Horizon 2020 (presented in sections 5 and 7) might provide for an increasing innovation capacity of SMEs, among them are: A broader scope of project themes; more adequate participation rules; the possibility of a lead role within a consortium; the broadening of activities eligible for funding; the single company support in case of European added-value, a specific action focusing on research intensive SMEs, and the specific support for transnational activities.

- The new SME instrument of Horizon 2020 might lead to a prominent role of SMEs regarding decision making in a project. Indeed, the SME instrument is concentrating exclusively on SMEs. Thus, in principle an SME could even become a no.1 coordinator within a project. The ability to set up a consortium the members of which are mainly or only SMEs as well as to take over the leader function in a project poses, however, specific challenges and requires appropriate competences and experiences.

- Monitoring and evaluation of on-going EU research and innovation programmes suggest that participation entails positive effects regarding productivity and turnover. SMEs participating in Horizon 2020 projects should therefore be able to experience the same positive effects on their operational activities and business results.

- Many European countries have established more or less sophisticated national SME support schemes. These programs often meet expectations and particularities of SMEs in a favourable manner. In Member States with attractive national R&D programmes SMEs might prefer these programmes, as they are easier to understand and based on established ‘simple’ access rules for SMEs. In order to fully reap the benefits of Horizon 2020 complementarity with national programmes is therefore a key factor.

Horizon 2020 has the potential to generate benefits from very different angles which are outlined in this Chapter.

8.1. Innovation capacity and market driven innovation

Many elements of Horizon 2020, presented in sections 5 and 7, might provide for an increasing innovation capacity from the perspective of an SME with a particular innovative idea/concept/project, among them are:

- Broader scope of project themes: As the entire innovation value chain and all types of innovation – including non-technological, social and service innovation – are covered seamlessly from idea to market plus as the LEIT and Societal Challenges cover a broad range of topics a more suitable thematic project positioning for SMEs might be possible.

- More adequate participation rules: The envisaged participation rules might open up new possibilities to find appropriate partners and get funding in a smaller but focused consortium where SMEs can act on a level playing field with partners.
• Possibility of lead role within a consortium: In particular within the SME specific instrument, only SMEs may apply as coordinators. In case of co-operation with universities and RTOs, this can put SMEs in the centre of co-operative activities as regards implementation of innovation activities.

• Broadening of activities eligible for funding: Funding will be provided for the whole innovation cycle from idea to commercialisation.

• Single company support in case of European added-value: If the SME in question has a concept or development in place with a clear European added-value and if it has good reasons not to cooperate with third parties then even a single company support is possible.

• Specific support for research intensive SMEs: Suppose the SME in question is a research intensive SME in any sector that shows the capability to commercially exploit its project results. In this case, the envisaged specific action, the goal of which is to promote transnational market-oriented innovation of R&D performing SMEs, and which is to be implemented by an Article 185 TFEU initiative building on the Eurostars Joint Programme\(^{59}\) (and reorienting it along the lines stated in its interim evaluation) might be appropriate.

• Specific support for transnational activities: Horizon 2020 especially aims at supporting transnational activities assisting the implementation and complementing the SME specific measures. These activities shall be coordinated with similar national measures when appropriate. Close cooperation with the National Contact Point (NCP) Network and the Enterprise Europe Network (EEN) is envisaged.

A further enhancement of the innovation capacity of SMEs might occur inasmuch as new SMEs are attracted that up until now have not gathered experiences, received financial support and/or possess a network on a European level, i.e. to the extent that the participation potential among SMEs is increased, see Chapter 9.

8.2. Role of SMEs in projects

Giving a higher (political) priority to SMEs and targeting program and instruments more towards SME needs, Horizon 2020 has the potential to strengthen their role within projects. Indeed, Section 8.1 underlined that the new SME instrument (see section 7.3) of Horizon 2020 might lead to a prominent role of SMEs regarding decision making in a project inasmuch as the SME instrument is concentrating exclusively on SMEs and, thus, in principle an SME could even become a no.1 coordinator within a project.

To set up a consortium the members of which are mainly or only SMEs might therefore deemed to be beneficial if an SME has an innovative idea/concept worth to be pursued via a Horizon 2020 project. Yet, such an approach also entails some serious challenges; among them are:

\(^{59}\) It targets research intensive SMEs in any sectors that also need to demonstrate their capability to commercially exploit the project results. The action is set to cover the entire field of science and technology with a bottom-up approach to fit the need of R&D performing SMEs.
• Find ‘appropriate’ SME partners: Experience from the existing FPs and in particular the research for the benefit of SMEs suggest that the present incentive mechanisms did not attract that much SMEs, rather RTOs and universities. It seems therefore realistic to expect that identifying and convincing other SMEs to participate in a Horizon 2020 project will be a non-trivial challenge.

• Find an ‘appropriate’ consortium size: It can be taken for granted that within the FP7 Cooperation programme, the number of participants in large collaborative projects did not suit the needs of SMEs. Our interviews suggest that even if international cooperation is desirable for a specific project, the consortium size should be in the range of 4-7 partners in collaborative projects due to the high transaction costs of cooperation. This also simplifies the burdensome negotiations among the partners as regards intellectual property rights, consortium agreements etc.

• Find an SME which has the ‘appropriate’ capabilities to be a consortium leader: The leader function requires specific competences and experiences with the management of a larger multi-entity and multi-national project as well as the respective experienced human resources. It seems plausible to assume that such requirements often are better fulfilled by a larger company/institution that has enough experience. Thus, it might very well be favourable for SMEs to take on a participant role within a consortium rather than to take on a leading position.

• Find ‘appropriate’ support for managing successfully the entire cycle of a project: Indeed, our interviews suggest coaching as to the whole range of procedures and processes concerning project application and implementation are decisive factors for making collaboration attractive to SMEs and incentivizing them to engage in research and innovation projects. This holds in particular true of small SMEs (but nonetheless SMEs with certain innovation capacities) that don’t have a track record of experience regarding participation in European programs.

Moreover, it is noteworthy if an SME has a concept or development in place with a clear European added-value and if it has good reasons not to cooperate with third parties then Horizon 2020 provides even the possibility of a single company support.

8.3. Productivity and turnover of SMEs

It can be taken for granted that in order to be(come) innovative, SMEs require public support due to diseconomies of scale e.g. regarding access to capital. Based on the monitoring and evaluation of on-going EU research and innovation programmes it is fair to state that such public support obviously entails positive effects regarding productivity and turnover. Indeed, SMEs funded by the programme reported substantial benefits: more than 70% of SMEs stated a positive impact on their operations, processes, methods, tools or techniques, 75% have introduced one new technology to the company and 50% reported an increase of their turnover due to their project involvement.\(^{60}\)

A priori SMEs participating in Horizon 2020 projects should therefore be able to experience the same positive effects on their operational activities and business results.

\(^{60}\) See European Commission (2011d), page 23.
8.4. Horizon 2020 and SME support in the Member States

A great many European countries, and in particular the countries of the EU15, have established more or less sophisticated national SME support schemes. These programs often meet expectations and particularities of SMEs in a favourable manner due to e.g.:

- low transactions costs (e.g. clear transparent funding conditions leading to low information costs; low degree of paperwork; etc.),
- a high likelihood to get financial support after having submitted a project proposal,
- low time to grant, etc.

Thus, in Member States with attractive national R&D programmes SMEs might prefer these programmes, as they are easier to understand and based on established ‘simple’ access rules for SMEs.

It is therefore not astonishing that EU Member States differ significantly with respect to the split between national R&D funds and EU R&D funds assigned to SMEs. Rather, it can be taken for granted that the existing national support structures in a country determine to a considerable degree to which extent European support programs are addressed.

In order to fully reap the benefits of Horizon 2020 complementarity with national programmes is therefore a key factor. Some interviewees stressed, that national programmes – properly designed – might constitute a preparatory (learning) phase before applying and participating in more R&D oriented programmes at the European level. It was, however, also underlined that there might be a multitude of circumstances for SMEs – e.g. broadening of the knowledge and experience basis, exploration of market opportunities, specific requirements for continuing a project, etc. – requiring a cross-border cooperation and therefore a migration to the European program level.
9. ASSESSMENT OF AWARENESS AND ATTRACTION OF HORIZON 2020 FOR SMEs

**KEY FINDINGS**

- Horizon 2020 is well known among the group of ‘leading’, research active SMEs being active in national R&D programmes.

- In view of the image of previous framework programmes, Horizon 2020 does, however, not have a clear bonus or starting advantage. In general, many innovative SMEs still seem to be reluctant to actually apply for EU programmes.

- Yet, based on information from our interviews we have reasons to believe that awareness of and interest in Horizon 2020 and the three priorities, respectively, is increasing. It is, however, also fair to state that the awareness rising with and mobilisation of SMEs which up until now have not been eligible for support have raised expectations.

- As to the type of SMEs incentivized by Horizon 2020 our interviews suggest that an impetus is likely for research active SMEs with a background in manufacturing and knowledge intensive services, rather than research organisations having the legal form of an SME.

- From a thematic perspective, SME participation is likely to concentrate on the priorities Industrial Leadership and Societal Challenges. The priority Excellent Science will be of limited relevance for the majority of SMEs, only specific research intensive SMEs will participate in the bottom-up oriented initiatives of FET-Open and some specific exchange programmes under the Marie Curie.

- An increased attractiveness for SMEs is mainly due to the introduction of the new SME instrument, which is not thematically organised but to be implemented in a bottom-up manner across the Horizon 2020 priorities. The effectiveness of this new instrument will depend upon its actual implementation.

- The actual implementation of Horizon 2020 and its different elements for SMEs is still regarded as uncertain in several respects by our interviewees. This concerns in particular the implementation of the new SME instrument, the regulations concerning single company support, the extent of the reduction of administrative burdens, the actual budget devoted to SMEs, the relevant evaluation criteria regarding applications, the actual implementation of the financial instruments foreseen in the frame of COSME, and the issue whether the project management of the new SME instrument will be organized in a central or decentralized manner.

- In order to increase awareness and attractiveness of Horizon 2020 among SMEs it might be particularly useful to set up a functioning ‘information and consulting infrastructure’ in the Member States, to distribute concrete information about the rules and implementation plans foreseen in Horizon 2020 in a timely and appropriate manner, and to set up suitable support and coaching structures at the national and European level.

It can be taken for granted that Horizon 2020 is well known among the leading, research-intensive SMEs that are active in national R&D programmes. This is all the more the case for those SMEs being already active in FP7 and/or CIP. But what about the remainder of SMEs? Based on our interviews, we can derive some preliminary findings:
In view of the image of previous framework programmes, Horizon 2020 does not have a clear bonus or starting advantage. In general, many innovative SMEs still seem to be reluctant to actually apply for EU programmes.

Yet, we have reasons to believe that awareness of and interest in Horizon 2020 and the three priorities, respectively, is increasing. Indeed, national intermediaries (like EEN, NCPs, technology centres, associations, etc.) that have already organized general information and network events for SMEs report that they have attracted a high number of participants, raised significant interest in Horizon 2020, and that they have in particular attracted SMEs which have not yet participated in FP7. Highest attention is currently being paid to the actual design and implementation of the SME instrument and the future of Eurostars.

It is, however, also fair to state that the awareness raising with and mobilisation of SMEs which up until now have not been eligible for support have raised expectations. Overall, it is acknowledged that Horizon 2020 aims at resolving barriers of past EU research and innovation programs and stakeholders agree that Horizon 2020 can be regarded as an important step forward. Elements that might constitute a particular incentive for innovative SMEs to participate in Horizon 2020 are the focus on innovation and market replication to be funded in the new SME instrument, more appropriate funding options and conditions and the envisaged less complexity of Horizon 2020.61

Although it cannot be anticipated at the current stage how the different types of SMEs will actually be represented in Horizon 2020 our interviews suggest the following: There will be an impetus for research active SMEs, and these SMEs are more likely to be ‘real’ SMEs (i.e. SMEs from manufacturing and knowledge intensive services, rather than research organisations having the legal form of an SME). Such SMEs are in particular more likely to be attracted because market replication activities and innovation activities are less funded at the national level.

From a thematic perspective, SME participation is likely to concentrate on the priorities Industrial Leadership and Societal Challenges. The priority Excellent Science will be of limited relevance for the majority of SMEs, only specific research-intensive SMEs are likely to participate in the bottom-up oriented initiatives of FET-Open and some specific exchange programmes under the Marie Curie programme. These measures have already been implemented in FP7.

Of course, it is too early to come to a reliable judgement of the ultimate attractiveness of Horizon 2020 at this stage. From the perspective of the interviewees in this study the actual implementation of Horizon 2020 and its different elements is still regarded as uncertain in several respects. The extent to which Horizon 2020 will live up to the aforementioned expectations will in particular depend upon how the following issues that are deemed significant from the perspective of SMEs actually are sorted out:

- SME instrument: An increased attractiveness of Horizon 2020 may to a great extent stem from the introduction of the new SME instrument, which is not thematically organised but to be implemented in a bottom-up manner across the Horizon 2020 priorities. How will the ‘SME instrument’ be implemented in detail? How will the conditions for independent access to different phases be defined? What criteria will be applied to evaluate whether an SME can enter a particular stage, if it was not

61 See section 7.
funded in the prior stage? Interviewees have underlined that attractiveness for SMEs is likely to be increased if the instrument is based upon a bottom-up application procedure using fixed cut-off dates rather than having specific prescribed topics.

- **Single Company Support:** What are the criteria to judge the ‘European added value’? How is the Single Company Support defined with regard to national funding programs?

- **Simplification:** To which extent will the envisaged reduction of administrative burdens actually become reality? Will the actual reductions of transaction costs (in the access phase as well as during the project phase) be sufficient enough to incentivise SMEs to participate in Horizon 2020?

- **Actual budget devoted to SMEs:** Both within the priority ‘Industrial Leadership’ and ‘Societal Challenges’ Horizon 2020 specifies a 20% share of the overall financial budget to be devoted to ‘SMEs’. However, the ‘20%’-budget share will be split between collaborative research on the one hand and the SME instrument on the other hand. Currently, the exact split is not fixed, i.e. there is no firm commitment to attach a direct budget for the SME instrument.

- **Evaluation criteria:** What are the relevant evaluation criteria regarding applications? Interviewees have underlined that placing stronger emphasis on market impact could increase attractiveness for SMEs.

- **Phase III of the SME instrument:** the application of the financial instruments foreseen in the frame of COSME (see section 6) is in practice still open.

- **Project management:** Will the project management of the new SME instrument be organized in a central or decentralized manner? According to the SME stakeholders being interviewed in the course of this study, implementation by a single programme management structure is clearly favoured and a decentralized implementation would confirm great scepticism about the efficient implementation of Horizon 2020.

Although it is likely that the attractiveness of Horizon 2020 will still vary across European countries depending also and in particular on the degree of complementarity of Horizon 2020 and national R&D programs (see Section 8), the aforementioned issues suggest that it is reasonable to lay particular stress in the future on the following measures in order to increase awareness and attractiveness of Horizon 2020 and its goals vis-à-vis SMEs:

- Setting up a functioning ‘information and consulting infrastructure’ in the Member States promulgating the advantages of and the new options for participation in Horizon 2020;

- Distributing concrete information about the rules and implementation plans foreseen in Horizon 2020 in a timely and appropriate manner;

- Setting up suitable support and coaching structures at the national (and European) level (or extend existing networks); so far, results from our interviews suggest that the coaching instruments supposed to be implemented for SMEs are far from being fully designed and ready for implementation.
REFERENCES


ANNEX 1: SME DEFINITION

‘SMEs’ are small and medium-sized enterprises as defined in EU law: EU recommendation 2003/361. The main factors determining whether a company is an SME are the number of employees and either turnover or balance sheet total.

The table below indicates the company categories for SMEs and the ceilings of figures applying for individual firms. A firm, which is part of larger group may need to include employee/turnover/balance sheet data from that grouping too.

**Main demarcation of SMEs**

<table>
<thead>
<tr>
<th>Company category</th>
<th>Employees</th>
<th>Turnover</th>
<th>Balance sheet total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium-Sized</td>
<td>&lt;250</td>
<td>≤ € 50 m</td>
<td>≤ € 43 m</td>
</tr>
<tr>
<td>Small</td>
<td>&lt;50</td>
<td>≤ € 10 m</td>
<td>≤ € 10 m</td>
</tr>
<tr>
<td>Micro</td>
<td>&lt;10</td>
<td>≤ € 2 m</td>
<td>≤ € 2 m</td>
</tr>
</tbody>
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ANNEX 2: SPECIFIC OBJECTIVES OF THE HORIZON 2020 PRIORITY AREA ‘SOCIETAL CHALLENGES’

The priority Societal Challenges has a specific focus on concerns of and challenges for European citizens and societies. It aims at pursuing research, technological development, demonstration and innovation actions which contribute to the following set of specific objectives:

- Health, demographic change and well-being, aiming at improving the lifelong health and wellbeing of all. Crucial issues are understanding health, wellbeing and disease; preventing disease, and treating and managing disease. Moreover, the focus is to be on active ageing and self-management of health as well as on health care provision and integrated care.

- European Bio-economy challenges: Food security, sustainable agriculture and forestry, marine and maritime and inland water research. The aim is to secure sufficient supplies of safe, healthy and high quality food and other bio-based products, by developing productive, sustainable and resource-efficient primary production systems, to foster related ecosystem services and the recovery of biological diversity, alongside competitive and low carbon supply, processing and marketing chains.

- Secure, clean and efficient energy, aiming at making the transition to a publicly accepted, sustainable and competitive energy system, which is able to reduce fossil fuel dependency in the face of increasingly scarce resources and to increase energy needs and climate change. Activities are to focus on reducing energy consumption and carbon footprint by smart and sustainable use; low-cost, low-carbon electricity supply; alternative fuels and mobile energy sources; a single, smart European electricity grid; new knowledge and technologies; robust decision making and public engagement; and the market uptake of energy innovation.

- Smart, green and integrated transport, aiming at achieving a European transport system that is resource efficient, environmentally-friendly, safe and seamless for the benefit of citizens, the economy and society.

- Climate action, resource efficiency and raw materials, aiming at achieving a resource- and water-efficient and climate change resilient economy and society, protection of the environment and a sustainable supply of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet's natural resources and eco-systems.

- Europe in a changing world: Inclusive, innovative and reflective societies, aiming at a greater understanding of Europe, providing solutions and supporting inclusive, innovative and reflective European societies in a context of unprecedented transformations and growing global interdependencies.

- Secure societies: Protecting freedom and security of Europe and its citizens. The aim is to foster secure European societies in a context of unprecedented transformations and growing global interdependencies and threats, while strengthening the European culture of freedom and justice.
POLICY DEPARTMENT
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Documents