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HORIZON 2020: SOCIAL SCIENCES AND HUMANITIES HAVE TO PLAY A MAJOR ROLE

Abstract: In Horizon 2020, the new Framework Programme for Research and Innovation Social Sciences and Humanities have to play a major role, which was limited in the Seventh Framework Programme to only about 1% of the budget, mainly spent for projects separated from Natural – and Engineering Sciences. The success of Horizon 2020, especially of the priorities for Industrial Leadership and Societal Challenges depends not only on a higher budget for Social Sciences and Humanities, but also on more integrated projects, simultaneously elaborated with Natural – and Engineering Sciences. The Broad Lines of Activities in all parts of Horizon 2020 are opportunities for integrated projects for which cooperation models should be developed to bridge the existing gaps between the two scientific "cultures". A considerably augmented budget for integrated projects will be in favour of European scientific and industrial competitiveness and enhance the transition into a smart, sustainable and inclusive growth.

Key words: *Horizon 2020, Europe 2020 Strategy, Social Sciences, Humanities*

1. HORIZON 2020 AND EUROPE 2020 STRATEGY

Towards the end of the deceiving Lisbon-Strategy the European Union adopted the Europe 2020 Strategy, which should assure both a recovery from the financial crises and a turn into a new economy, accomplishing a smart, sustainable and inclusive growth (Commission 2010, pp. 8). For this, seven closely interrelated flagship initiatives have been designed, most of them are intimately connected with science and technology, regarded as the basis for higher global competitiveness. According to supply-side policy, Horizon 2020 relates mainly to the flagship initiatives Innovation Union, Resource efficient Europe, Industrial policy for globalisation and Digital Europe (Commission 2011 b, p. 6). It brings together all research and innovation activities of the Union from 2014 to 2020 and will contain the Framework Programme for Research, the innovation-related activities of the

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Competitiveness and Innovation Framework Programme (CIP), the Joint Research Centre (JRC) and the European Institute for Innovation and Technology (EIT).

By this bundling, Horizon 2020 goes beyond the Seventh Framework Programme and is an important step towards the completion of the European Research Area (ERA). It has a strong orientation towards innovation by means of technologies, but refers also – more than the former research programmes – to societal problems. More cooperation between research institutions and business and a stronger orientation towards citizens are visible in the three distinct and mutually reinforcing priorities of Horizon 2020: (a) Excellent Research, (b) Industrial Leadership and (c) Societal Challenges. Excellent Science aims at global competitiveness of the European research system, Industrial Leadership at global industrial competitiveness and solving Societal Challenges should primarily augment the quality of live of European citizens.

The proposed Regulation for Horizon 2020 contains several sub-themes of the three priorities with further detailed Broad Lines of Activities (Commission 2011 b, pp. 28), which resulted from external advice and societal engagements, including forward-looking activities (Commission 2009). An important influence had the European Technology Platforms (ETP), Joint Programming Initiatives (JPI) and the European Innovation Partnerships (EIP), which growingly stresses the linkages and interfaces within and across the Broad Lines of Activities. By this, inter- and cross-disciplinary research gains in importance, but with few exceptions this concerns above all Natural- and Engineering Sciences and Social Sciences and Humanities (SSH) play still a minor role. Although Horizon 2020 stresses the growing need for Open and Social Innovation, the Broad Lines of Activities demonstrate very clearly, that innovation is mainly understood as an introduction of new technologies and technological systems solutions.

2. STRUCTURE AND FUNDING OF HORIZON 2020

Horizon 2020 embraces three priorities, the Joint Research Centre (JRC) and the European Institute for Innovation and Technology (EIT) with a funding volume, which exceeds the Seventh Framework Programme by about 70%. The priority Excellent Science accounts for about 32%, Industrial Leadership for about 23% and Societal Challenges for about 41%. The breakdown of the budget is specified by the following overview (Commission 2011 b, p. 85; in EUR million and EIT in brackets).

Priority 1: Excellent Research   **27.818**

    1. European Research Council   15.008

    2. Future and Emerging Technologies (FET)   3.505
        FET Open
        FET Proactive
        FET Flagships

3. Marie Curie Actions   6.503

4. Research Infrastructures   2.802

Priority 2: Industrial Leadership   **20.280**

1. Leadership in Enabling and Industrial Technologies 15.580 (500) (Key Enabling Technologies (KET))
   1.1. Information and Communication Technologies (ICT)
   1.2. Nanotechnologies
   1.3. Advanced Materials
   1.4. Biotechnology
   1.5. Advanced Manufacturing and Processing
   1.6. Space

2. Access to Risk Finance
   Equity Facility, demand –driven and targeted   4.000

3. Innovation in Small and Medium-sized Enterprises   700

Priority 3: Societal Challenges   **35.888**

1. Health, Demographic Change and Wellbeing   9.077 (292)

2. Food, Security, Sustainable Agriculture, Marine and Maritime Research and the Bioeconomy 4.694 (150)

3. Secure, Clean and Efficient Energy   6.537 (210)

4. Smart, Green and Integrated Transport   7.690 (247)

5. Climate Action, Resource Efficiency and Raw Materials   3.573 (115)

6. Inclusive, Innovative and Secure Societies   4.317 (138)

Non-nuclear Direct Actions of JRC   **2.212**

The European Institute for Innovation and Technology (EIT)   1.542 + 1.652 **3194**

Total of Horizon 2020   **87.740**

3. SSH-RELATED BROAD LINES OF ACTIVITIES

Singling out the Broad Lines of Activities, which can tentatively ascribed to research in Natural- and Engineering Sciences and in Social Sciences and Humanities the composition of Horizon 2020 shows extensive fields for SSH research. Evidently, they overlap in many cases and a strict separation is only possible for few subjects. But what can be detected is a potentially much stronger orientation towards Social Sciences and Humanities than in the preceding Framework Programmes. Whereas the Seventh Framework Programme contained in the area of Socio-Economic Research only little more than 1% of the total budget (Commission 2005, pp. 47), Horizon 2020 will need a much higher percentage for fulfilling the Broad Lines of Activities enumerated in the following tentative overview.

Priority 1: Excellent Research
Future and Emerging Technologies: FET Open, FET Proactive, FET Flagships

Priority 2: Industrial Leadership
Developing the societal dimension of nanotechnology; Materials for creative industries; Optimisation of the use of materials; Technologies for Factories of the Future; New sustainable business models; Debt facilities and debt finance for R&I; Equity facilities and equity finance for R&I; Mainstreaming SME support; Support for research intensive SMEs; Enhancing the innovation capacity of SMEs; Supporting market-driven innovation

Priority 3: Societal challenges
Effective health promotion; Sustainable agriculture and forestry; Low-cost, low carbon electricity supply; Robust decision making and public engagement; Market uptake of energy innovation; Resource efficient transport; Socio-economic research and forward looking activities; Sustainable managing natural resources and ecosystems; Transition towards a green economy through eco-innovation; Global environmental observation and information systems; Promote smart, sustainable and inclusive growth; Built resilient and inclusive societies in Europe; Strengthen Europe's role as a global actor; Close the research and innovation devide in Europe; New forms of innovation: Social innovation and creativity; Societal engagement in research and innovation; Effective cooperation with third countries; Fight crime and terrorism; Security trough border management; Cyber security, crises and disasters; Ensure privacy and freedom in the Internet

Joint Research Centre (JRC)
Anticipation and foresight: Society and public policy; Economics: Scientific and macro-economic aspects; Modelling: Scenario analysis by the Commission; Policy analysis: Cross-sectoral and policy options; Impact Assessment for support of policy options

European Institute of Innovation and Technology (EIT)

> Activities for new business creation; Research of key economic and societal interest; Education for entrepreneurial people; Dissemination of best practises; International dimension and new opportunities; European innovative funding model; Regional development and European opportunities

High technological research and innovation will certainly remain in all three priorities the main driver for a smart, sustainable and inclusive growth, but Social Sciences and Humanities will considerably gain in importance. Evidently, Excellent Research has little relations to Social Sciences and Humanities and gaining global competitiveness of the European scientific system should not be disturbed by premature interferences of Social Sciences and Humanities into progresses of basic "frontier" research. Only in developing Future and Emerging Technologies (FET) their participation will be helpful. In contrast, Industrial Leadership will highly depend on technologies, which consider also the human factor both for economic productivity and social welfare of the employed. For example, anthropocentric organisation of production may augment overall competitiveness. Coping with Societal Challenges depend even more on the participation of citizens. It will be fully at the advantage of the society, if technology applications take place in cooperation with the concerned citizens at the local, regional, national and European level.

Horizon 2020 enumerates a large spectrum of Broad Lines of Activities by which technological progress can potentially be shaped for social benefits. By introducing much more socially relevant research than in the preceding Framework Programmes, Social Sciences and Humanities will effectively contribute to the development of socially viable technologies, facilitating their implementation and augmenting their acceptance. For this, the definition and the factual funding during the whole product cycle should include Social Sciences and Humanities. Natural- and Engineering Sciences have to become more open for collaborative research activities. Prevailing behaviour and hierarchical thinking in both groups of scientists is still a main obstacle for cooperation.

4. INTEGRATING SSH VIA FUNDING AND ORGANISATION

The augmentation of Social Sciences and Humanities in Horizon 2020 concerns the allocation of its budget, which should be at least doubled. The strong emphasis on innovation, including Social Innovation and the emerging strategies for Open Science and Open Innovation cannot be successful without more funds for implementation processes of specific research results, both for individual technologies and systems solutions. Therefore, the augmentation of funding has to be accomplished in parallel with an intimate collaboration between Social Sciences and Humanities and Natural- and Engineering Sciences. Whereas until now the Social Sciences and Humanities were mainly funded by separate projects, in Horizon 2020 the development and application of new technologies has to take place simultaneously. In the rare examples of this type, some encouraging experiences have

been made in the previous Framework Programmes and led to some best practices. Other examples, like Technology Assessment (TA) and Integrated Product Policy (IPP) can enhance learning processes. Also ERAB has voted for an extension and stronger integration of SSH projects and only partly for more separate SSH projects (ERAB 2011, pp. 4). Social Sciences and Humanities has since long been considered as a "culture" (Snow) different from that of Natural- and Engineering Sciences. As Societal Challenges and Industrial Leadership need a cooperation of the two cultures adequate models should be developed. Here too, some positive experiences have been made by bridging the gaps between the different "cultures" of research institutions and business by developing adequate science-business cooperation models (Weber; Duderstaedt 2006). The discussion of a comparable bridging between the two scientific cultures by adequately structured and well defined models and best practices is still at the beginning.

Horizon 2020 is the main R&D programme to enhance the Europe 2020 Strategy, especially by the flagships initiatives Innovation Union and Resource efficient Europe. But also the other R&D related flagships will have a important impact on the success of the Europe 2020 Strategy (Hoedl 2010, pp. 13). The Innovation Competitiveness Report confirms that Europe has a globally leading position in sustainable technology development (Commission 2011 c, pp. 56). To remain competitive more and stronger alliances between scientists, engineers, social scientists and humanists will be decisive. Therefore, an augmented and integrated budget for Social Sciences and Humanities in Horizon 2020 will play a major role for both European industrial leadership and for tackling societal challenges.

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