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**Beijing, China**

**Innovation-driven development and economic vitality**

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# **Summary and conclusions**

## The EESC believes that closer cooperation between the EU and China on Research and Innovation (R&I) is fundamental to improving their respective socio-economic conditions, in the context of sustainable development. "Scientific diplomacy" can contribute significantly to political dialogue and to the pursuit of joint growth and development objectives.

## The results of the 3rd EU-China Innovation Cooperation Dialogue, held on 2 June, were encouraging, with the EU and China setting common research and innovation objectives for the first time, to be achieved through joint initiatives. The co-financing initiative was renewed until 2020 and the number of Horizon 2020 (H2020) calls specifically flagged for cooperation between Europe and China was increased, allowing access to new Chinese partners (mainly universities and research bodies) that have not been involved up to now.

## As on previous occasions, the EESC stressed the importance of involving organised civil society in identifying and monitoring progress made on "Social Challenges" in the area of research and innovation. The Organisation for Economic Co-operation and Development (OECD) Report 2016 also calls for this in relation to challenges in the near future, which will require a double revolution in terms of approach through "Open Science" and "Responsible Innovation", integrating social and ethical objectives with R&I processes.

## The framework conditions, as part of a reciprocal arrangement, are another key aspect in the development of a joint R&I strategy between the EU and China. As highlighted in the position paper *European Business in China 2016/2017* by the EU Chamber of Commerce in China, despite the major steps forward taken by China in recent years, European businesses and research centres still encounter difficulties relating to competing on a level playing field and transparency in China, in terms of accessing the market, calls launched by the Chinese Government and protecting intellectual property.

## Co-operation on exchanges of students and researchers – who are two sides of the same coin – is also important. While there have been significant improvements, there are still problems for students and researchers wishing to go to China. The Chinese Government should act to address and resolve any disparities and the lack of reciprocity in the framework conditions and general standards that may be encountered when moving to China for work or study purposes.

## Start-ups are another important area where the EU and China can find opportunities for discussion, the exchange of best practices and enhanced cooperation. Start-ups are now one of the principle development factors due to their highly innovative nature.

# **Introduction – innovation and development**

According to the Innovation Policy Platform (IPP) developed by the World Bank Group and the OECD: "innovation can play a critical role in addressing socio-economic objectives"[[1]](#footnote-2). In these decades of transition from a post-industrial age to society 4.0, the most relevant fields in terms of innovative processes are:

1. **Growth and jobs** – The effects of innovation on the economy of a country, a region, or a productive or trade sector are of different natures and are sometimes at odds with one another. According to theoretical debate, the accumulation of knowledge and technological progress are considered as “the only way to achieve long-term growth”. This is done through the creation of new businesses, new products and services and new jobs. However, innovation ousts other businesses from the market and destroys other jobs, by making obsolete products and services that are replaced by better or more competitive alternatives. Innovation is a necessary phase of development, with possible social costs that must be contained and overcome through policies on job reallocation, lifelong learning and social safety nets.
2. **Environment –** For a number of years innovation has been seen as being particularly important for tackling environmental challenges, from climate change to global greenhouse gas emissions and the preservation of biodiversity. Environmental challenges can be overcome through new technologies and other non-technological innovation, such as organisational innovation (e.g. traffic in large cities).
3. **Social change** – In social terms – for example in relation to demographic trends, health conditions, conditions for the elderly or dietary education – innovative solutions that improve the quality of health, and therefore of life overall, are needed. Social innovation that creates new types of businesses and professions is also both a major challenge and a great opportunity.

These objectives are at the heart of the Juncker plan (2014) and were set out by President Xi Jinping in his opening speech at the G20 summit which took place in Hangzhou in September 2016. They are also contained in China's 13th Five-year plan for economic and social development 2016-2020.

# **Innovation in an EU and international context**

## The European Union ascribes a key role to innovation in achieving its economic and social growth objectives. **The Innovation Union**[[2]](#footnote-3)is one of the seven flagship EU initiatives established by the Europe 2020 Strategy[[3]](#footnote-4), with the aim of supporting innovation in sectors that pose the main challenges to European society, such as climate change, energy efficiency, food security, health and the ageing population.

## In this context, organised civil society will play a greater role in determining and monitoring the aforementioned **social challenges**, which receive more than a third of the Horizon 2020 funding earmarked for R&I projects (around EUR 30 billion). These objectives are also subject to redefinition in light of emerging problems such as migration and internal security.

## Two instruments have been developed to measure the EU's performance in the area of innovation:

* **The European Innovation Scoreboard (EIS)**, a comparative assessment of the innovative capacity of the EU and its Member States, against that of international competitors[[4]](#footnote-5).
* The **Regional Innovation Scoreboard (RIS)**, which classifies the European Regions on the basis of their innovative capacity[[5]](#footnote-6).

## The Innovation Scoreboard 2016 shows that during the period 2008-2015, R&I performance improved and 21 EU Member States recorded positive results. However, the crisis also had an impact on the process, with a reversal of this trend during the 2012-2015 period.

## Five countries are "innovation leaders" (Denmark, Germany, the Netherlands and Sweden) accompanied by others that are considered to be "strong innovators" (Austria, Belgium, France, Ireland, Luxembourg, Slovenia, and the United Kingdom), followed then by "moderate innovators" (Croatia, Cyprus, Czech Republic, Estonia, Slovakia and Spain) and by "modest innovators" (Bulgaria and Romania).



## It is important to note that the countries with the best ***innovation performance*** are among the top performers in all areas of innovation. This shows that a balanced innovation system is essential for achieving high level of performance.



## At global level, the EU, thanks to an innovation growth rate of +1.6% per year, has reduced the gap in innovation performance with the USA (+0.4% per year) and Japan (+1.1% per year). At the same time, having seen strong growth over the past eight years, China is rapidly closing the gap with the highest average growth rate of all, at 8.1% per year.

**Global innovation performance and global innovation growth rates**



**China and the United States: innovation performance**



## It is estimated that the EU will see an increase of 2.5% in the two year period 2016-2017. Current global trends should remain constant. Therefore, the gap should narrow between EU's innovation performance and that of Japan and the USA.

**Expected EU innovation index (2016-2017)**



**Expected innovation index for China and the USA relative to the EU (2016-2017)**

 

## According to the **OECD Report on Science, Technology and Innovation 2016**[[6]](#footnote-7), the current main environmental, economic and social "mega-trends" worldwide are: climate change, ageing of the population, e-health, migration, a reduction in available resources and security. These are factors which may have a significant influence on and be influenced by future research and innovation programmes.

## The OECD believes that in order best respond to challenges in the near future, a double revolution in terms of approach will be essential, through Open Science – i.e. greater sharing and reuse of research data – and Responsible Innovation, which integrates social and ethical objectives with R&I processes.

# **EU-China cooperation on R&I**

## For many years – and once again at this Round Table – the EU and China have come together to identify shared challenges and objectives to be achieved through cooperation mechanisms, which have gradually been gaining strength over the years.

## At the 3rd EU-China Innovation Co-operation Dialogue on 2 June, organised alongside the 19th EU-China summit, the willingness to continue to implement the Paris agreement on climate and sustainability was restated. This agreement, set in a wider context of scientific diplomacy, has even more value and could play a fundamental role in the development of future policies well beyond the field of science.

## Moreover, for the first time, the EU and China have set common objectives in the area of research and innovation, to be achieved through joint initiatives. The flagship initiatives (Food, Agriculture and Biotechnologies, Environment and Sustainable Urbanisation, Surface Transport, Safer and Greener aviation, and Biotechnologies for Environment and Human Health) were later set out as 15 actions that will receive sufficient funding through H2020.

## Against this background, the co-financing mechanism, which was launched for the first time in 2015-2017, was renewed until 2020. China, or more specifically "MoST"[[7]](#footnote-8), has allocated an annual budget of 200 million RMB (over EUR 25 million per year) to financing stakeholders who have their registered offices in China to take part in H2020 calls. This contribution will also be supplemented, in relation to specific initiatives, by other funds made available by Chinese institutions such as the MIIT[[8]](#footnote-9) or the NSFC[[9]](#footnote-10). This factor, alongside a "general opening" process in the areas of science and innovation should also enable new Chinese partners (primarily universities and research bodies) who have not been involved so far to access funding.

## For its part, the EU intends to invest over EUR 100 million from now until 2020, in projects financed by H2020 and allocated to partnerships which involve Chinese partners. Moreover, as part of the agreement on working towards a series of joint R&I flagship initiatives, there will be an increase in the number of H2020 calls dedicated exclusively to partnerships with Chinese stakeholders. In this regard, consideration should be given to transferring good practices and legislation already in force in the EU to achieving sustainability objectives, such as traceability and labelling in the agri-food sector.

## Over the last twenty years this dialogue has produced mutual benefits and many activities have been launched in the field of science, research and innovation that can be identified as good practices, to be replicated and supported. The new silk route (One Belt One Road), which was already covered in the 14th EU-China Civil Society Round Table[[10]](#footnote-11) will be important in this regard, aiming to create sustainable infrastructure and high shared added value. The ITER project is also fully in line with this approach. It aims to create a nuclear fusion reactor, replicating the same process that takes place in the sun, to produce energy in an unlimited, affordable, clean and safe way.

## As Carlos Moedas, the European Commissioner for R&I, recalled in his speech at the Chinese academy of science in Beijing in 2015: "many projects are already under way as part of the cooperation between the EU and China on R&I and the fact that the most interesting activities are marked by a reciprocal opening and sharing is not negligible". Some examples of projects of great strategic value include: VIAJEO (for an efficient and sustainable urban road network in the main cities worldwide, such as Athens, São Paulo, Beijing and Shanghai); HEFPA (to encourage universal healthcare in Asia); iCAP (to capture and reduce CO2 emissions) and SILVER (for tackling overlooked and/or emerging viruses).

## The DRAGON STAR and DRAGON STAR PLUS projects are also worth considering[[11]](#footnote-12). They are financed respectively by the FP7 programme and H2020 and fall under the "Coordination and Supporting Action" Category. These projects have: 1) encouraged and strengthened networking and collaboration between European and Chinese partners financed to take part in the H2020 calls or calls launched by the Chinese Government; 2) provided an important platform for cooperation between policy-makers, with a view to ensuring win-win bilateral cooperation and 3) provided a platform based on the ERA-NET model[[12]](#footnote-13) to fund agencies facilitating the exchange of best practices and the planning of joint activities in sectors of mutual interest.

## The framework conditions are another key aspect in the development of a joint R&I strategy between the EU and China. As was highlighted in the position paper *European Business in China 2016/2017* by the EU Chamber of Commerce in China, despite the major steps forward taken by China in recent years, European businesses and research centres still encounter difficulties relating to competing on a level playing field and transparency in China, in terms of accessing the market, calls launched by the Chinese Government and protecting intellectual property.

## This is all the more important at this historical moment, when major Chinese firms based in Europe have no problem in receiving financing directly from European funds, and large Chinese groups do not face objections in acquiring major European firms in various key sectors (banking, automotive, robotics, critical infrastructure, etc.), while European firms are blocked from such opportunities.

## With regard to protecting intellectual property and protecting patents, China has taken an important step by adopting a new regulatory system to tackle counterfeiting. However, the new rules are applied inconsistently, damaging and discouraging European businesses interested in investing in China or cooperating with Chinese companies.

# **The next challenges in EU-China dialogue: reciprocity in relation to human resources and businesses.**

## The exchange of students and researchers – which are two sides of the same coin – is no less important.

## The number of Chinese students abroad is constantly increasing (over 500 thousand in 2015[[13]](#footnote-14)). In Europe the number has increased from 18 thousand in 2000 to around 200 thousand today. It can be said that in a few years, China has become the primary global "exporter" of students. This has generated strong competition between European universities seeking to attract the highest amount of Chinese talent, by promoting their respective national areas of excellence (art, culture, technology, research).

## In the EU, there is a constantly growing propensity to study abroad and China has become a prime destination. In Italy for example, China overtook the United States as a study destination for the first time in 2015[[14]](#footnote-15). However, although on the increase, the number of Europeans who travel to China for study or research purposes is still relatively low in absolute terms.

## The reasons for this gap are related to real organisational and bureaucratic difficulties, and a lack of correspondence with the general standards found in Europe (labour and environmental protection). In this case once again, the lack of reciprocity is an obstacle to the implementation of a joint R&I strategy.

## For this reason, the Chinese government should take a holistic approach to simplify all bureaucratic and organisational processes, as well as addressing and resolving any disparities and the lack of reciprocity in the framework conditions that may be encountered when moving to China for study or research purposes.

## This is illustrated by the fact that even relatively simple practical tasks, such as obtaining a visa, may pose a problem. This particularly affects the researchers who are considered as workers by the Chinese Government, but do not have a genuine contract of employment. They have difficulties in obtaining medium- and long-term visas, even when they are the recipients of research grants (Marie Skłodowska-Curie Actions[[15]](#footnote-16)) or working on projects funded by H2020.

# **Start-ups – an innovative tool**

## Start-ups are another important area where the EU and China can find opportunities for discussion, the exchange of best practices and enhanced cooperation.

## The European Commission recently published the communication "Europe's next leaders: the Start-up and Scale-up Initiative" in which it states that "high-growth firms create many more new jobs compared to other firms[[16]](#footnote-17). Start-ups scaling up into bigger firms form a large share of these businesses. They increase EU innovation and competitiveness, strengthening the economy. Such "scale-ups" can also provide social benefits, including offering more flexible and modern working arrangements".

## The EESC is a strong supporter of the leading role played by SMEs and in particular start-ups and endorses the Commission's programme which supports and promotes their role, as they are able to anticipate and develop innovation and create new jobs, particularly for young people.

## China also pays significant attention to start-ups: the China Torch Program is considered to be one of the most successful programmes for innovative start-ups in the world. This programme, launched in 1988, generated hundreds of high-tech business incubators and university and industrial science parks[[17]](#footnote-18).

## According to the CB Insights Report 2017[[18]](#footnote-19), between 2012 and 2016 private companies operating in the high-tech sectors (particularly e-commerce) received total funding of over 46.7 billion dollars in investments. The important new element highlighted by this study is that for the first time China has overtaken the United States with regard to the number of e‑commerce companies eligible to receive funding of over 100 million dollars.

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1. <https://www.innovationpolicyplatform.org/>. [↑](#footnote-ref-2)
2. European Commission, Communication "Innovation Union", COM(2014) 339 final, 2014. [↑](#footnote-ref-3)
3. Europe 2020, COM(2010) 2020 final, 2010. [↑](#footnote-ref-4)
4. The European Innovation Scoreboard 2016 consists of 25 indicators that provide a detailed analysis of the strengths and weaknesses of the Member States, on the basis of key drivers for innovation — from research to public and private investment to the economic effects of innovation. Finally, for the first time the EIS 2016 includes a chapter on developments in terms of short-term performance as a way of intercepting future trends. [↑](#footnote-ref-5)
5. The first group, the "innovation leaders" consists of 41 regions and the second, "strong innovators", includes 58 regions. 39 regions are classified as "moderate innovators" and 52 regions are in the fourth group, which are classified as "modest innovators". [↑](#footnote-ref-6)
6. OECD Report, Science, Technology and Innovation Outlook 2016. [↑](#footnote-ref-7)
7. Chinese Ministry of Science and Technology. [↑](#footnote-ref-8)
8. Chinese Ministry of Industry and Information Technology. [↑](#footnote-ref-9)
9. Natural Science Foundation of China. [↑](#footnote-ref-10)
10. Report on Infrastructure and Investment: the One Belt One Road Initiative and the launch of the AIIB. Rapporteur: Palmieri, 2016. [↑](#footnote-ref-11)
11. <http://www.dragon-star.eu/dragon-star-plus/> [↑](#footnote-ref-12)
12. ERA-NET is the EU instrument that brings together and coordinates national and regional research programmes. This instrument, which was introduced under the FP6 programme has played, and continues to play, a central role both in H2020 and in the development of all European R&I initiatives. [↑](#footnote-ref-13)
13. Report by the Chinese Ministry of Education 2016. [↑](#footnote-ref-14)
14. AlmaLaurea Report 2016: In 2015, 2.9% of Italian students abroad chose China, while 2.8% chose the USA. [↑](#footnote-ref-15)
15. With a budget of EUR 6.16 billion until 2020, these actions support training and career development for researchers, focusing on the skills needed in the area of innovation. The programme finances cross-sectoral and international mobility and excellence in any field, employing a bottom-up approach. Researchers at all stages are eligible for grants, from doctoral candidates to expert researchers, in order to encourage transnational, cross-sectoral and interdisciplinary mobility. With funding for 25 000 doctoral research candidates, the Marie Skłodowska-Curie actions are the main European programme for post-graduate training. [↑](#footnote-ref-16)
16. According to Henrekson and Johansson, 2010, 4% of firms generate 70% of new jobs. See also:<http://www.kauffman.org/blogs/policy-dialogue/2015/august/deconstructing-job-creation-from-startups> [↑](#footnote-ref-17)
17. G. Atzori, blog entitled "Sinocronache" can be found at: [www.agichina.it](http://www.agichina.it/) (link in Italian only). [↑](#footnote-ref-18)
18. <https://www.cbinsights.com/> [↑](#footnote-ref-19)