



ENRICH – European Network of Research and Innovation Centres and Hubs, China

The STI landscape in China



I.

China's innovation landscape

II.

(Trends), Challenges and opportunities for RDI collaboration

III.

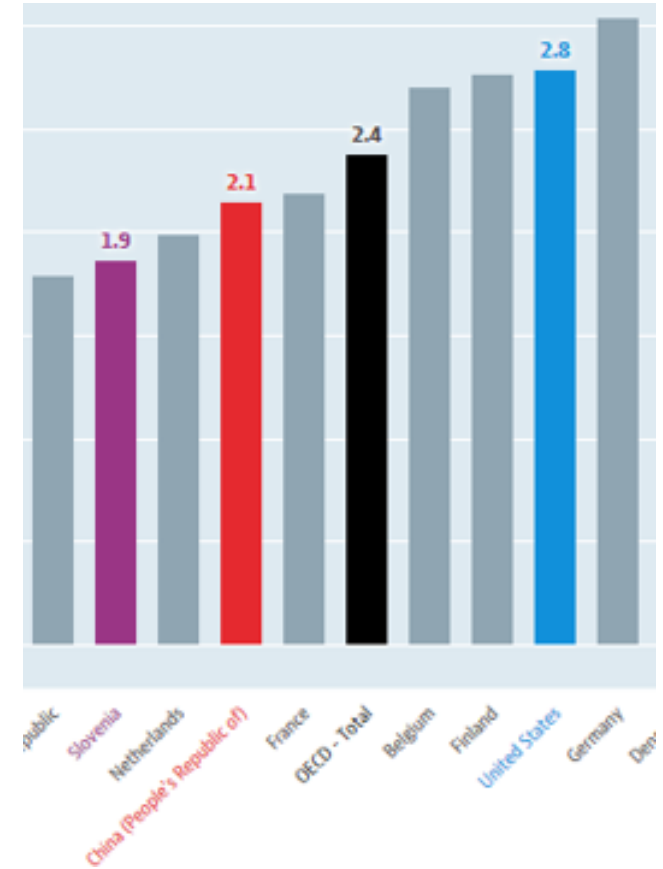
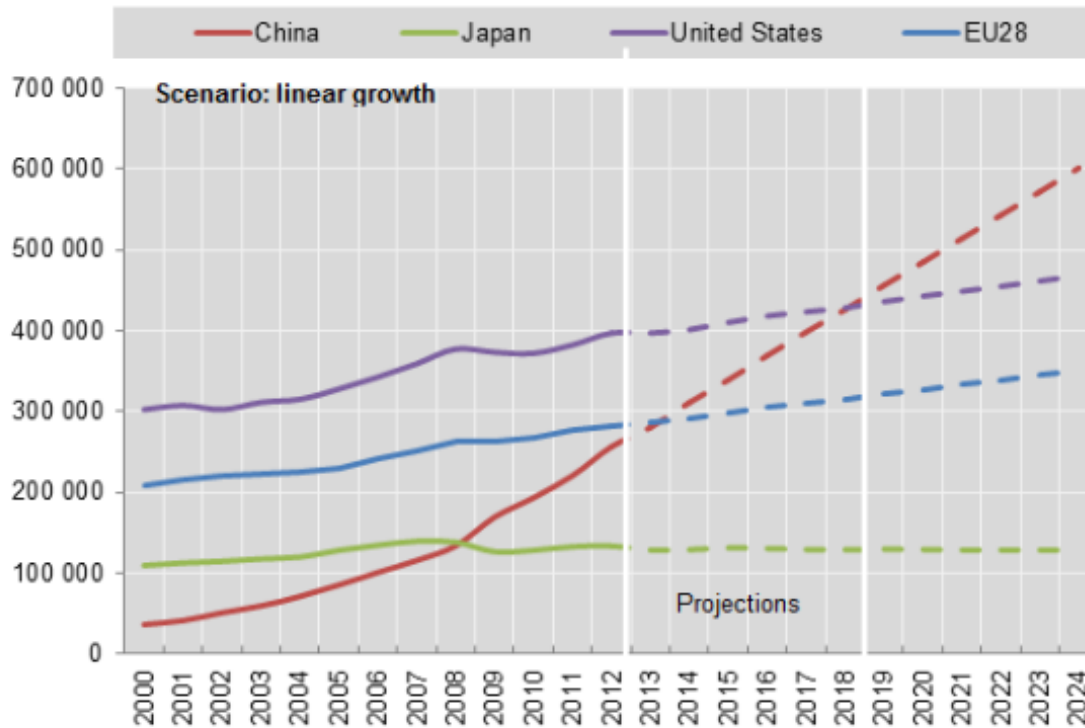
Conclusions

I. China's innovation landscape

STI in China (...)

Spending on R&D (percentage of GDP in 2018)

China poised to outpace the US in R&D spending around 2019
GERD, millions of 2005 USD PPP, 2000-12 and projections to 2024



Source: oecd.org

I. China's innovation landscape

STI in China (...)

Economic and social trends

2018 China's 40th anniversary of reform and opening-up

- 40 years ago the private sector was almost non-existent; today, private firms contribute to ~70% of China's GDP
- Wide range of incentives in Social Economic Zones (e.g. Shenzhen)
- Improving English language skills and connection to the rest of the world
- Increasing mobility and digitalisation towards an 'Online and Smart society' moving on from 'pay by phone' to 'pay via face' solutions
- Steadily growing middle class with rising incomes and purchasing power



Electric vehicles sales grew by 62% in 2018 to 1.3 million

I. China's innovation landscape

STI in China (...)

Urbanisation



1,4 billion people
living in China

- China's urbanisation rate has increased in the last 40 years from 18% to 60% with 640 million people migrating from rural to urban areas
- **New challenges:** need for increasing public services, housing, medical care, rapidly rising house prices and social integration; social problems such as children being left behind with elderly people, waste of cultivated land resources in rural areas; environmental pollution
- **Goal:** sustainable urbanization with clean water, clean air and healthy food

I. China's innovation landscape



21. EU-China
Summit

4. High Level EU-China
Innovation Coop. Dialogue

STI in China

International cooperation in RDI (...)

- **21. EU-China Summit and 4. High Level EU-China Innovation Cooperation Dialogue** (on 9 April 2019 in Brussels). Joint declaration to continue to use synergies between
 - **China's Belt and Road Initiative (BRI)** and the
 - **EU's initiatives to improve Europe-Asia connectivity**
- **'Made in China 2025'** industrial policy (issued in 2015) targeting 10 high-tech sectors under the guidance of the Chinese state to make China's manufacturing more competitive and intelligent as answer to Industry 4.0 in Europe
- **Horizon 2020 Co-funding Mechanism (S&T Agreement since 1998)**

I. China's innovation landscape

STI in China

International cooperation in RDI (...)



1.54 million Chinese
patent applications
~ 50% of global total

- **Chinese patent applications:** hit the record in 2018
- **Scientific publications released by Chinese researchers:** surpassed 2016 that of U.S. and EU scientists
- **Foreign universities:** open R&D facilities in China or satellite campuses
- **Research funding agencies:** collaborate with the National Science Foundation of China (NSFC) and open up joint calls, e.g. Research Foundation Flanders, Dutch Research Council, FFG, etc.

I. China's innovation landscape

STI in China

International cooperation in RDI (...)



170 million highly
educated/skilled talents
81 million science workers

- **Thousand Talent Plan** boosted the number of researchers coming to China to join government-funded institutions

<http://chinainnovationfunding.eu/thousand-talents-plan/>

- **Recruitment program for foreign experts**

<http://www.1000plan.org.cn/en/foreign.html>

I. China's innovation landscape

STI in China

International cooperation in RDI



50 AI unicorns in 2019
with a total value of
440 billion USD

- Artificial Intelligence (AI) unicorns (28 out of 50) are located in Beijing (Zhejiang (7), Shanghai (6) and Guangdong (5))
- **Tsinghua University:** main incubator of China's AI unicorns, with 26% of the founding teams and partners having graduated from Tsinghua
- **AI industry scene in China:** driven by 5 main trends (i) AI-based autonomous driving technologies (ii) AI-based services (cloud and big data) (iii) AI-based financial services (iv) AI hardware (Internet of Things) (v) AI-based education
- 4 new experimental zones for AI development

II. Trends, challenges and opportunities for RDI collaboration

Chinas R&D Policy and Regulations (...)

- Trend 1 Research and education reforms
- Trend 2 Market oriented technology innovation
- Trend 3 Intellectual Property Right protection
- Trend 4 Technology commercialization
- Trend 5 Legal and policy environment matureness



II. Trends, challenges and opportunities for RDI collaboration

Chinas R&D Policy and Regulations (...)

Trend 1 Research and education reforms

- Reforms in higher education and research institutes
- Increased spending on basic research
- Increased funds for institutes to carry out independent projects
- Increased investments from private sector (transportation, energy, etc.)



1070 Higher Education Inst.

2300 HEI / 98M Chinese with HE

195M Chinese with HE

II. Trends, challenges and opportunities for RDI collaboration

Chinas R&D Policy and Regulations (...)

Trend 2 Market oriented technology innovation

- Increase in diversity of technology innovation collaborations between business and university, driven by companies
- Rapid growth in SME specific innovation services and technology and innovation incubators
- 2,500 technology company incubators

and accelerators e.g. **Zhongguancun**

Science Park in Beijing (20,000 high-

and new-tech enterprises, e.g. Lenovo and Baidu)



II. Trends, challenges and opportunities for RDI collaboration

Chinas R&D Policy and Regulations (...)

Trend 3 Intellectual Property Right protection

- Increased power to adjudicate in civil and administrative cases concerning patents, new plant species, designs, protected technology, computer programs, etc.

Trend 4 Technology commercialization

- Increased and diversified funding of innovation and entrepreneurship
- Possible ownership of and benefit from IPRs for research institutes and corporate R&D personnel

Doing Business
2019 (World
Bank Group
Flagship Report)
ranking:

New Zealand 1

SLO 40

China 46

CRO 58

Somalia 190

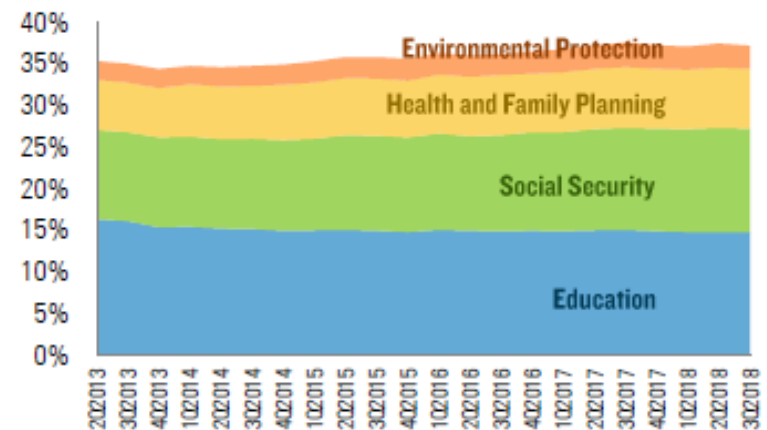
II. Trends, challenges and opportunities for RDI collaboration

Chinas R&D Policy and Regulations

Trend 5 Legal and policy environment matureness

- Extraordinary momentum for innovation and entrepreneurship due to decrease of administrative and non-administrative government obstacles
- Transition from resource and investment driven development to innovation driven growth model
- Actions in institutional innovation
- Optimisation in fiscal and tax policy

(2019 'big gift package')



Government social expenditure in China

Source: Ministry of Finance, Rhodium Group

II. Trends, challenges and opportunities for RDI collaboration

Challenges: Environmental protection

- **Challenge of severe air pollution, water pollution and soil pollution:** need for new technologies in environmental protection. This significant driver has been acknowledged by many companies developing **environmentally-friendly products**
- **Enterprises are the most important innovators in manufacturing:** Chinese companies are building up their innovation capabilities using foreign talent, technology and resources and learning from their foreign peers
- **Mass entrepreneurship and innovation:** leading technology firms to cluster in dynamic spaces such as science and technology parks are on the rise



6.66 million hectares of new forest are planted each year

II. Trends, challenges and opportunities for RDI collaboration



Challenges: ICT

- China is the manufacturing hub of the world's most electronics. China's IT market is the fourth-largest market around the globe, after the US, Japan, and Germany, in terms of spending,
- Encouragement of large IT companies to open up their resources for SMEs
- In 2014, only two of the world's top 20 internet companies were from China. That number has jumped to nine within 5 years (11 are American and none from Europe)
- **Exponential usage boom of smartphones, QR-codes, social networks, WeChat, E-commerce and online payment and 'pay via face'!**

1 billion
mobile phone
users
700 million
internet users



II. Trends, challenges and opportunities for RDI collaboration



Challenges: Level playing field

- **Protectionism:** European firms can have a disadvantage compared to their Chinese counterparts due to the Chinese legal framework and unequal access to the Chinese market as well as government funding
- **Ethics and data protection:** standards can mismatch with protection of national security, values, human rights or privacy in Europe
- **Social Credit System in China:** Big-data collection and analysis to monitor, shape and rate behavior via economic and social processes doesn't stop at China's borders. Social credit regulations can be used to control people and businesses
- **Trust** (building missions)

II. Trends, challenges and opportunities for RDI collaboration

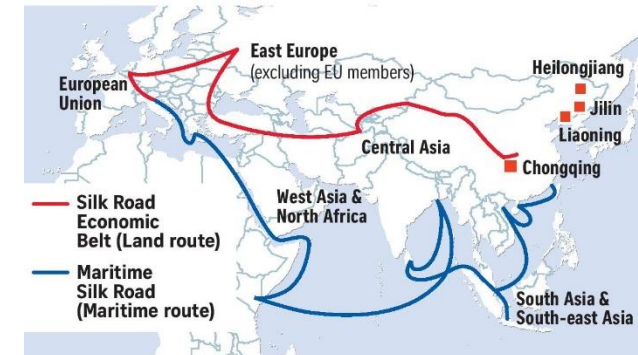
Opportunities for RDI collaboration: New Initiatives

- “**Belt and Road Initiative (BRI)** ” initiative revived with great infrastructure projects providing opportunity for companies to commercialize and test innovations



Premier Li Keqiang poses with the leaders of the 16 Central and Eastern European countries and new member Greece, in Dubrovnik, Croatia, on Friday. [Photo/Provided to China Daily]

China's One Belt, One Road initiative



- **China-CEEC Platform 17+1**
8th summit in April 2019 in Dubrovnik

III. Conclusions

- **China represents a very big market: geographic and thematic focus areas**
- **China has an increasing and very powerful middle class: leading trends and increasing opportunities**
- **China has a very promising future in RDI : with increasing investments and strengthening international collaborations**

III. Conclusions



Existing initiatives and service providers:

- **ENRICH in China** <http://china.enrichcentres.eu>
 - EUPIC, regional hub in Chengdu <http://www.eupic.org.cn/>
 - 3 certified Soft Landing Zones:
 - Horsten Xi'an Innovation Services <http://www.horsteninternational.com/>
 - BSEAC in Shijiazhuang <http://www.bseac.com/>
 - FinChi Innovation Centre in Shanghai www.finchicn.com
- **EU SME Centre** www.eusmecentre.org.cn
- **EU Chamber of Commerce in China** <http://www.eurochamber.com.cn/en/home>
- **China Innovation Funding and Policy Platform** <http://chinainnovationfunding.eu>

III. Conclusions



Existing funding opportunities:

➤ Co-funding mechanism

<https://ec.europa.eu/research/iscp/index.cfm?pg=china>

China country page

https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020_localsupp_china_en.pdf

Q&A

https://ec.europa.eu/research/iscp/pdf/news/ec_rtd_eu-china-cfm_052019.pdf

➤ Call topics for International Cooperation between the EU and China (extracted by FFG)

<https://www.ffg.at/sites/default/files/downloads/China.pdf>

elli.stepanovic@ffg.at

www.china.enrichcentres.eu

china@enrichcentres.eu

Beijing, China



Chengdu, China

Room 910, Sunflower Tower, No. 37
Maizidian West Street
Chaoyang District 100125, Beijing, China
Tel: +86 (0) 10 8527 5300

Floor 7, Business & Innovation Centre for China-
Europe Cooperation, No. 1577 Tianfu Avenue
Chengdu, China
Tel: +86 (0) 2885337021



Brussels, Belgium

Avenue de Tervuren,
168 B-1150 Brussels, Belgium
Tel: +32 2 772 8900

