Strategic recommendations for health research and innovation collaborations

Table of Contents

List of Figures

Abbreviations and Acronyms

Abbreviation, Acronym	Description
AMR	Antimicrobial resistance
CAS	Chinese Academy of Sciences
EC	European Commission
EEA	European Economic Area
EEN	Enterprises Europe Network
EJP	European Joint Programme
FP	Framework Programme
H2020	Horizon 2020
HE	Horizon Europe
ICD	Innovation Cooperation Dialogue
ICPerMed	International Consortium for Personalised Medicine
IDIH	International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living
IPR	Intellectual Property Rights
IPS	Institut Pasteur Shanghai
MoST	Ministry of Science and Technology of the People's Republic of China
NERBIMEC	Network of EU Biology Medicine Researchers
OECD	Organisation for Economic Co-operation and Development
PRC	People's Republic of China
R&D&I	Research, development and innovation
R&I	Research and innovation
WHO	World Health Organisation
WP	Work package

Executive Summary

SENET, the Sino-European Health Networking Hub aims to increase European and Chinese collaborative efforts addressing common health research and innovation (R&I) challenges, and to create a sustainable health networking and knowledge hub, improving the dialogue between Chinese and EU R&I entities.

For this matter, SENET has rolled out a comprehensive data collection methodology and implemented a bottom-up stakeholder consultation method to collect feedback from R&I stakeholders, policymakers, as well as intermediaries in the R&I Sino-EU collaboration process. The aim was to develop thee analysis reports – an *Initial Roadmap for enhancing EU-China Health research and innovation collaboration* aimed at presenting a pathway towards collaboration, pointing to barriers and opportunities, a report on *Strategic recommendations for health research and innovation collaborations* (further: SENET recommendations), as well as a *Consolidated action plan for research and innovation priorities in health* in order to present policy recommendations and consolidate the gained knowledge about needed support measures in an actionable manner.

The SENET recommendations, directed to policy makers, aim at enhancing long-term health research and innovation collaboration between Europe and China in increasing the participation of Chinese researchers in future EU health research programmes, and vice versa of European researchers in Chinese health research programmes.

The recommendations are structured into two main parts:

- SENET recommendations for research priorities

This part presents a list of eight thematic health priorities suggested by the experts invited in SENET meetings and participating to SENET surveys and interviews. For each priority, the scientific importance, the support measures already existing in China and in the EU and the reasons why it should be a common priority are detailed.

- SENET recommendations for EU-China health research and innovation collaboration

These challenges and related needs relevant to all thematic priorities presented above, have been classified into three major categories, each of them comprising two to three main recommendations as follows:

A.   Towards policy agreement on Sino-European health collaboration at the highest level
Recommendation 1: Researchers need a clear communication at the highest levels about collaboration with China
Recommendation 2: Joint programmes and coordinated calls would boost cooperation in selected topics (need of Flagships)
Recommendation 3: A reviewed co-funding mechanism would increase trust in the funding opportunities of Chinese partners

B.   Towards policy support to bottom-up initiatives
Recommendation 4: Research organisations need more support measures to foster bottom-up collaboration
Recommendation 5: Creating and diffusing knowledge about contemporary China

Recommendation 6: Administrative support shall be developed and accessible to all EU and Chinese researchers willing to collaborate

C. Towards policy consensus on framework conditions
Recommendation 7: Highest policy levels are asked to setting win-win framework conditions and reaching policy consensus on IPR regulations
Recommendation 8: Policy makers are encouraged to improving framework conditions and reaching policy consensus on data regulations

1   About SENET

The Horizon 2020 (H2020) funded project SENET, the Sino-European Health Networking Hub, was launched on the first of January 2019 and is running until the end of 2021. SENET aims to facilitate favourable conditions to establish sustainable dialogue between health research and innovation (R&I) actors from the European Union and China.

The project has two main objectives:

1. to increase European and Chinese collaborative efforts addressing common health R&I challenges, and
2. to create a sustainable health networking and knowledge hub, improving the dialogue between Chinese and EU Research and innovation (R&I) entities.

To reach the aforementioned objectives, SENET relies on its three pillars:

*   i) assessing strategic health priorities shared between Europe and China and mapping the health R&I landscape in both areas.
*   ii) engaging with various health R&I actors with the goal to develop strategic recommendations and design an initial roadmap and strategic action plan for enhancing collaboration between Europe and China.
*   iii) offering opportunities to forge cooperation and encourages collaborative R&I efforts through virtual ideation hackathons, call power partnering and the promotion of suitable Sino-European funding sources.

Figure 1. SENET's three pillars

Consequently, the main results of SENET project are: the roadmap, the recommendations and the action plan to facilitate Sino-European health collaboration, co-created with European and Chinese stakeholders.

2 Introduction

The European Union (EU) and the People's Republic of China (PRC) have a long-lasting history of cooperation in science and technology with the first formal establishment of a Science and Technology Cooperation Agreement[1] between the two political entities in 1998. The agreement was valid for an initial period of five years with the option for tacit renewal following a bilateral evaluation towards the end of each five-year period. In recent years, the EU's strategic approach towards China has undergone significant change, starting in 2016 with the joint communication *Elements for a new EU strategy on China*[2] and further refined in 2019 with the milestone joint communication *EU-China – A strategic outlook*[3].

> Excerpt of *EU-China – A strategic outlook*:
>
> "[…] China is, simultaneously, in different policy areas, a cooperation partner with whom the EU has closely aligned objectives, a negotiating partner with whom the EU needs to find a balance of interests, an economic competitor in the pursuit of technological leadership, and a systemic rival promoting alternative models of governance. This requires a flexible and pragmatic whole-of-EU approach enabling a principled defence of interests and values. The tools and modalities of EU engagement with China should also be differentiated depending on the issues and policies at stake. The EU should use linkages across different policy areas and sectors in order to exert more leverage in pursuit of its objectives. […]"

Europe is still in the middle of implementing and negotiating this strategic shift with the PRC and this entire process has not come to an end yet, broadcasting to all aspects of Sino-European bilateral relations and policy areas, including the cooperation on science and technology.

It is therefore noteworthy that there has not been a tacit renewal of the Science and Technology Cooperation Agreement in 2018. Only during the 4th innovation cooperation dialogue (ICD) in Brussels[4] in April 2019, the EU and China have formally expressed the commitment to develop a joint roadmap:

> "[…] *in order to enrich and balance their cooperation in research and innovation. The roadmap will cover both rules and mechanisms as well as specific science and technology fields for this collaboration. […]*".

On the other hand, in 2018, China reiterated the importance they attribute to Sino-European cooperation on science technology and innovation[5].

After two years of initiation of this common roadmap, both partners agreed to continue with its development, but it is currently not clear when to expect substantial breakthroughs in the negotiations.

One of the most important consequences of this complex current situation is the absence of a Sino-European co-funding mechanism[6] for Europe's 9th Framework Programme (FP) for research and

---

[1] Sino-European cooperation in science and technology – https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/europe-world/international-cooperation/china_en

[2] Elements for a new EU strategy on China – https://eeas.europa.eu/archives/docs/china/docs/joint_communication_to_the_european_parliament_and_the_council_-_elements_for_a_new_eu_strategy_on_china.pdf

[3] EU-China – A strategic outlook – https://ec.europa.eu/info/sites/default/files/communication-eu-china-a-strategic-outlook.pdf

[4] 4th ICD in Brussels, 2019 – https://ec.europa.eu/info/news/eu-and-china-step-cooperation-research-and-innovation-2019-apr-09_en

[5] China's policy paper on the EU, 2018 – http://www.xinhuanet.com/english/2018-12/18/c_137681829.htm

[6] Sino-European co-funding mechanism Horizon 2020 – https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020_localsupp_china_en.pdf

technological development (FP), Horizon Europe, similar to what had already been established for the 8th FP, Horizon 2020.

In line with SENET's overarching objectives of enhancing collaboration and setting up a sustainable networking hub involving the research, innovation and policy community, this report has been developed in order to support the Sino-European R&I collaboration by sharing recommendations for an evidence-based policy dialogue.

SENET chose two complementary approaches to extract and identify areas of mutual interest between Europe and China, see *Figure 2*.

- Top-Down: In-depth analysis of key research and innovation priorities for each geographic area based on top-level R&I policy and funding programmes. For Europe, SENET analysed the EC's Framework Programme for research and technological development, Horizon 2020. In the case of China, the 13th Five-Year Health as well as the Healthy China 2030 Plan were chosen as reference, the results are described in detail in *SENET Scoping paper – Review on health research and innovation priorities in Europe and China[7]*.
- Bottom-Up: Identification of overlapping interests and areas for mutual collaboration via consultations with both research and innovation R&I and policy stakeholder.
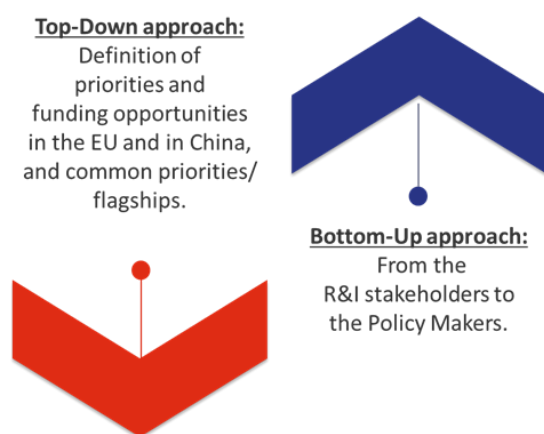

Figure 2. SENET's two approaches to identify common areas for Sino-European collaboration

This report directly connects to SENET's initial roadmap report, *SENET Initial roadmap for enhancing EU-China health research and innovation collaboration[8]*, where existing challenges as opportunities for a closer cooperation between the EU and China are discussed in detailed.

This report aims at presenting strategic recommendations to policy makers at the levels European Union and Member State level as well as R&I funding agencies to support Sino-European R&I collaboration. It notably aims at presenting the stakeholders' view gathered through SENET's bottom-up approach and suggesting how observed issues could be tackled on a policy level.

The recommendations described in this report are complemented by *SENET Consolidated action plan for research and innovation priorities in health[9]* (forthcoming) proposing an action plan to implement the strategic recommendations presented here.

We would like to stress, in the context of the current uncertainties regarding the formal collaboration on science and technology in combination with the harsh impact of the COVID-19 pandemic on

---

[7] SENET's Socping paper – https://www.senet-hub.eu/wp-content/uploads/2020/09/SENET_Scoping-paper_website-1.pdf. Accessed on December 9. 2021

[8] D2.2: Initial roadmap for enhancing EU-China health research and innovation collaboration, SENET, October 2021

[9] D2.4: Consolidated action plan for research and innovation priorities in health, SENET, December 2021

international collaboration and cooperation as a whole, not to mention the restrictions on international travel, the pivotal role that SENET has played in maintaining a constructive and sustainable dialogue with Chinese stakeholders in the health sector and bridging the growing divide of Europe and China. The collaboration and dialogue facilitated by SENET's various activities must not be underestimated and can objectively be considered to be an achievement for this challenging coordination and support action.

3   Methodology

This report has been developed on the basis of a comprehensive methodology that included i) thorough literature review, ii) the organisation of meetings with R&D&I and policy experts from the EU and China in order to gather their opinions, experiences and suggestions, and iii) extensive stakeholder consultations.

Figure 3 shows the concrete steps undertaken in order to develop several SENET reports:

- *SENET Initial roadmap for enhancing EU-China health research and innovation collaboration,*
- *SENET Strategic recommendations for health research and innovation collaborations, and*
- *SENET Consolidated action plan for research and innovation priorities in health.*

Figure 3. Methodology scheme

3.1   Literature review and analysis

In the early phase of the project, SENET has thoroughly reviewed scientific and grey literature (wide range of different information that is produced outside of traditional publishing and distribution channels[10]), available through desk research. Four reports were developed with the objective to better understanding the landscape of Sino-European health collaborations in terms of the current state of play and the major stakeholders involved (all following reports are to be found on SENET's website[11]):

- Scoping paper: Review on health research and innovation priorities in Europe and China.
- Map of major funding agencies and stakeholders in Europe and China.
- Guide for health researchers from Europe and China through the funding landscape.
- Strategy paper: Towards closer EU-China health research and innovation collaboration.

These reports comprise SENET's in-depth analysis on the current literature and form the basis of the further developments including the organisation of stakeholder consultations and expert meetings. Through the mapping of the Sino-European landscape on health collaboration a first set of joint health priorities between Europe and China were identified. Those priorities set the basis for the initial roadmap[12] identifying opportunities and challenges to a closer cooperation of the EU and China.

---

[10] Grey Literature: What is Grey Literature? –
https://libguides.exeter.ac.uk/c.php?g=670055&p=4756572
[11] SENET's reports on the current state of play of SINO-European health collaborations – https://www.senet-hub.eu/public-report/1
[12] D2.2: Initial roadmap for enhancing EU-China health research and innovation collaboration, SENET, October 2021

The gathered data on stakeholders facilitated the process of reaching out to representatives of funding agencies, in order to engage them in our policy dialogue meetings.

3.2 Expert Meetings

SENET organised five expert meetings, split into three categories:

1. *R&I expert meetings*,
2. *Policy stakeholder dialogues*, meetings with policy stakeholders and intermediaries[13], and
3. *Multi-stakeholder meetings*, comprising both R&I as well as policy experts.

Figure 4 visualises how an individual meeting was planned, set up, moderated, and eventually analysed as summarised in the individual meeting reports. The meeting reports can be accessed and read on SENET's website.
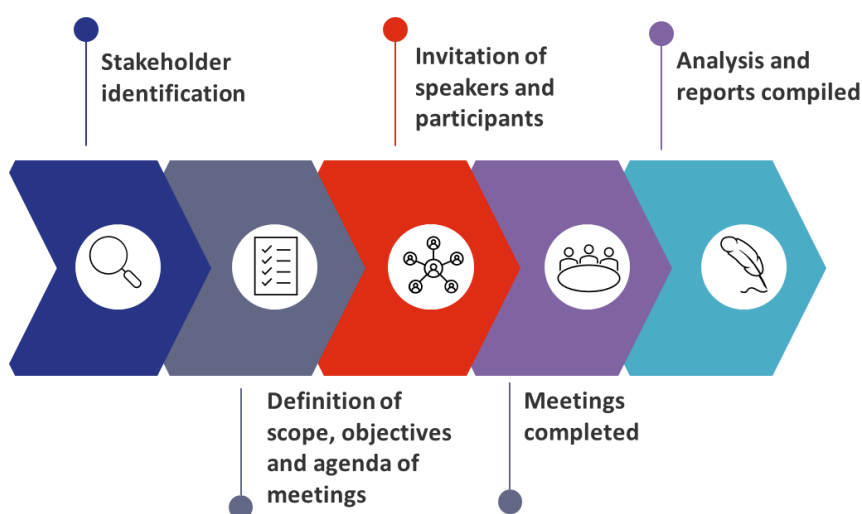

Figure 4. Set-up of expert meetings

3.2.1 Research & Innovation expert group meetings

In line with the scope and objectives defined for each meeting, selected stakeholders were invited to participate. Some experts were selected to give presentations on specific subjects relevant for the respective meetings and in the context of SENET's activities. Following the presentations and subsequent discussions involving all participants and speakers, outcomes and findings of the meetings were summarised in meeting reports. The different meetings built on each other, with findings from previous meetings being presented and validated during later meetings. The findings directly influenced the agenda and content of later meetings.

The two Research and Innovation expert group meetings[14,15] brought together 19 researchers from the academic and private sector working in areas of major societal and health challenges such as chronic diseases, infectious diseases and other areas of health-related research. The major goals of the meetings in June 2020 and May 2021 were to engage participants in discussions about specific opportunities in Sino-European health research and innovation collaborations. The experts were asked to identify and validate health research priorities of high importance relevant for their research fields and beyond. Additionally, the meeting exploited the experience of those experts who were already

---

[13] I.e. organisations with close ties to the R&I community and acting in the interplay with policymakers.
[14] SENET 1st Research Innovation Expert Meeting (23 June 2020) – https://www.senet-hub.eu/wp-content/uploads/2021/02/SENET_1st_Research_Innovation_Expert_Meeting.pdf
[15] SENET 2nd Research Innovation Expert Meeting (18 May 2021) – https://www.senet-hub.eu/public-report/

involved in joint China-EU actions to identify bottlenecks and hurdles blocking or impeding collaborations as well as to determine the most persistent challenges where innovations are instantly needed regarding R&D&I.

3.2.2 Policy stakeholder dialogues

SENET held two meetings of the *policy stakeholder dialogue* category in December 2020[16] and March 2021[17] with a total number of 50 participants. The first one was coordinated by the SENET partners in China and took place in a hybrid format, allowing the European participants to connect online via the ZOOM platform. The agenda included presentations from high-level policy makers, mostly from China but also from the European Commission (EC). The speakers presented detailed information on the policy background for fostering health research and international collaborations in the future. The second *policy stakeholder dialogue* was coordinated by the European SENET partners using an interactive format allowing for the co-creation of policy recommendations to bridge and ultimately eliminate existing gaps and barriers in research collaboration between the EU and the People's Republic of China. The discussion was triggered by a presentation about the initial insights gained in the SENET consortium and guided by predefined questions compiled by the organising committee. Participants of this meeting were mainly associated with intermediary organisations, such as R&I clusters, that play an important role in supporting researchers in finding international collaboration partners. The feedback from the Policy stakeholder dialogues allowed SENET to draft recommendations on how to increase the participation of European and Chinese counterparts in the respective research programmes and described ways to enhance research mobility mechanisms.

3.2.3 Multi-stakeholder meeting: Research Innovation and Policy Expert meeting

A major conclusion after two rounds of *R&I expert meetings* and of *policy dialogues* was the identified need to bring together the two stakeholder groups and co-design proposals for specific actions that will support Sino-European research collaborations in the future. Therefore, the third round of meetings was held as a multi-stakeholder meeting manly targeted towards further developing *D2.4: Consolidated action plan for research and innovation priorities in health*.

The multi-stakeholder meeting in September 2021[18] involved 33 participants with mixed profiles: researchers from the academic and private sector, policy makers, and intermediaries such as programme managers from clusters. The objective of the meeting was to translate identified opportunities, challenges, and policy recommendations into concrete actions that could be of value to all stakeholders in the R&I process. Therefore, in this meeting, it was important to gather the diverse perspectives of all the involved stakeholders. The format of the meeting followed an interactive approach, guiding the discussion with pre-set questions facilitating the open discussion format and encouraging well-balanced contributions from all participants.

3.3 Surveys and stakeholder consultations

3.3.1 Initial online survey and expert interviews

A first online survey was developed to prepare *SENET Strategy paper – Towards closer EU-China health research and innovation collaboration.* SENET chose to disseminate this survey mainly through its social media presence (Twitter, LinkedIn) and over its website. Eventually 30 complete answers were collected, with the survey reaching out to a large audience based on SENET's social media metrics. The

---

[16] SENET 1st Policy Dialogue (9 Dec 2020) – https://www.senet-hub.eu/wp-content/uploads/2021/08/SENET-Meeting-Dec-2020-Report-Final-External.pdf
[17] SENET 2nd Policy Dialogue (9 March 2021) – https://www.senet-hub.eu/wp-content/uploads/2021/08/SENET-Meeting-Dec-2020-Report-Final-External.pdf
[18] SENET 3rd Research Innovation and Policy Expert Meeting (14 September 2021) – https://www.senet-hub.eu/public-report/

online survey reached over 4000 views on Twitter alone. In addition to the non-targeted outreach via the online survey, the consortium chose to directly interview 20 experts with a proven track record collaboration with China. Both approaches led to a first identification of opportunities, challenges and thematic priorities for Sino-European health collaboration.

3.3.2   Final stakeholders' consultation

To complete the reports and to exchange with interested experts that had not been able to join SENET's meetings, an additional stakeholder consultation was launched between September and November through bilateral interviews with interested parties (17 in total), complemented by an online survey based on the previous results of SENET to confirm, complete and validate the project findings. Both SENET's European and Chinese partners have been involved in conducting the interviews and in disseminating the survey.

3.4   Communication of SENET's Recommendations and the Action Plan

To ensure that the recommendations and the action plan are well known by the European policy makers, SENET's consortium has developed and already partially implemented a communication and dissemination strategy, with three major axes:

➢ **Presentation of the project's results during the Sino-EU Health Collaboration Week**. SENET, in partnership with other European projects and initiatives supporting Sino-European collaboration, set-up a one five-day virtual event that took place from the 29th of November to the 3rd of December 2021, with a total of 109 participants. The event featured a number of webinars and matchmaking sessions, addressing both policy makers and researchers interested in Sino-European health collaboration. During the opening session, the recommendation and the action plan of SENET were presented. This event benefitted from cross-promotional efforts across the network of seven different projects and initiatives, thus addressing a large audience and maximising its potential impact.

➢ Once the strategic recommendations and the action plan are approved by the EC in the frame of the SENET project, **these two reports will be sent to all major European national funding agencies** identified in the course of the project. Furthermore, it will be sent to all participants in SENET activities and to the recipients of the SENET newsletter.

➢ Finally, all of the project's reports, including the roadmap, the strategic recommendations and the action plan, **will be disseminated on SENET's social media and website**, and will stay available for two years after the project end.

4   State of play of Sino-European health collaboration schemes fostering R&I collaboration

SENET's recommendations and action plan are meant to support and facilitate bottom-up initiatives to reinforce Sino-European collaboration between researchers and innovation actors. These initiatives can take different forms, as illustrated below through some examples of successful existing initiatives. They have been mostly set-up and conducted thanks to some researchers pioneering and being engaged in Sino-European collaborations often on the basis on strong personal links to the respective geographic areas (e.g. Chinese background, friends, etc.). With the appropriate support, Sino-European collaboration could be increased and made more accessible to a wider group of European health researchers.

The following sections provide an overview of existing Sino-European initiatives, clustered into four categories: i) researchers' mobility, ii) joint centres, iii) networks and clusters, as well as iv) collaborative R&D&I projects.

4.1   Researchers' mobility

Exchange activities are an important way to learn from each other, collaborate and support the development of future collaborative projects. Programmes have been developed at a European (e.g. the Marie Skłodowska-Curie actions and the Erasmus+ programme) and Member States' level to facilitate the exchange activities between European and Third countries. However, it's only been a few years since China was first recognised as a developed country with its top-level research organisations. This lack of recognition combined with a considerable language barrier and a scarcity of incentives to participate in such exchanges specifically targeting China still restricts the outgoing mobility mobility of European researchers to China, despite recent improvements and a growing number of mobility programmes. One of the few existing initiatives in this area is the Sino-German Centre Call for Proposals on Mobility launched in 2019.

On the Chinese side, the main funding programme for exchange activities are

- the "Thousand Talents Programme", established in 2008, 7000 European researchers have benefitted from it and have since visited China,
- the "Thousand Youth Talents Plan" administered by the Chinese Communist Party Organization Bureau,
- the "Recruitment Program of Foreign Experts," run by the State Administration of Foreign Experts Affairs of China (SAFEA), and
- the "Changjiang Scholars Program" of the Ministry of Education.

These programmes fund the recruitment of world-class researchers, professionals, and entrepreneurs with the intention to leapfrog the People's Republic of China into a leading position in various strategic fields.

In addition to the above-mentioned funding programmes, many foreign researchers work in China as part of smaller bilateral university cooperative projects, see also the section below on *joint centres*. These bilateral university cooperative projects and exchange activities allow the research institutes/universities to also benefit from the exchange of their researchers. Indeed, a European research institute or university will fund Chinese researchers to come to Europe or fund their own researchers to go to China, with the Chinese research institute/university proposing the same services to its own researchers.

Following are two examples of established exchange activities between European and Chinese research institutes:

- The Spanish research institute, Centre for Genomic Regulation (CRG), has developed a common Ph.D. programme together with China. This programme is dedicated to European and Chinese

students, offering them a work contract either in Europe or China (jointly paid by the Spanish and by the Chinese organisations). The research institutes provide a full administrative support for the researchers' integration in the hosting country.

- A Danish hospital, the clinic Idéklinikken, implements an exchange programme of doctors and Ph.D. students that has been running for 8 years. The manager in charge of this collaboration was especially attracted to China for personal reasons and found partner hospitals in China, interested to send and receive medical doctors. To support this collaboration and prepare Danish doctors to receive their Chinese counterparts and/or go to China themselves, a training scheme has been developed, allowing the doctors to better understand the Chinese culture and learn some basic knowledge of Chinese. It has been reported that this training played a huge part stimulating doctors' mobility.

Albeit not exhaustive, such single examples have been proven beneficial both to European and to Chinese researchers and research institutes. However, the fact that they are based on some individual researchers' initiatives drastically reduces their impacts at the EU-China level.

4.2   Joint centres

To facilitate collaboration and benefit from the advantages of being both in the EU and in China, some European research centres have opened so-called "joint centres" with their Chinese counterparts. A joint centre is an initiative with strong collaboration between different research institutes, characterised by important exchanges, scientific cooperation and the co-creation of laboratories shared by the European and Chinese research teams. There are numerous examples of such centres. During SENET's various expert meetings and experts' consultation, the consortium had the chance to exchange with representatives of several of these joint centres, including one from the Helmholtz association in Beijing[19] and the Institut Pasteur Shanghai (IPS), Chinese Academy of Sciences (CAS)[20]. An extensive list of joint research structures has been compiled by EURAXESS China[21].

Joint centres play a pivotal role in launching and implementing collaborative research projects, the organisation of common events such as conferences and seminars and drafting co-publications that are aiming at knowledge exchange. Besides the staff members of the joint centres, researchers from both regions/countries generally benefit from a privileged access to the co-created laboratories in the other country and from facilitated data exchanges.

It has been observed that the development of joint centres can be facilitated thanks to a strong personal interest of researchers or after a successful collaborative project (as for the Pasteur institute in Shanghai, those collaborative project in China funded by the EC was the basis for the development of a joint centre in Shanghai, as detailed by one expert in SENET's first R&D&I expert meeting), support from European embassies is highly critical. For example, the French embassy has largely encouraged the development of health-related joint centres in China, notably between 2005 and 2013 through a strong communication, the support to find new partners and the organisation of visits[22].

Several European Member States, such as France, Germany, Austria etc., have invested in the development of joint centres in China. Depending on the national strategies and support of the embassies, joint centres are focused on health or on other thematic areas such as energy, climate change or space research.

---

[19] Helmholtz association – https://www.helmholtz.de/en/about-us/the-association/international-offices/beijing-office/
[20] The Institut Pasteur Shanghai (IPS), Chinese Academy of Sciences (CAS) – http://english.shanghaipasteur.cas.cn/
[21] EU-China joint research centres – https://euraxess.ec.europa.eu/worldwide/china/joint-research-structures
[22] Ambassade de France en Chine – https://cn.ambafrance.org/Les-laboratoires-franco-chinois-de-type-public-prive

4.3   Networks and cluster organisations

One of the main roots to engage in international collaboration is to actively involve some of the key networks that exist for a specific thematic, both in Europe and internationally. By actively exchanging with these networks, researchers and innovation actors are able to find partners that share a common interest and complementary skills, often much faster than in the absence of these networks. Becoming involved and taking real engagement in a network has proven to be a very valuable first step into collaboration for many researchers and enterprises.

Indeed, such networks often organise expert group round tables for exchanging good practices and ideas in a collaborative and non-competitive way, some organise also tours and conferences. This can also be achieved in joining international project consortia.

Different networks provide regular support to the collaborative efforts between European and Chinese stakeholders. These networks have different background: they can be sustainable networks set-up by public institutions, networks developed in the framework of a project funded by public institutions or even networks developed from bottom-up.

Networks set-up by public institutions

Major networks for collaboration and international collaboration have been developed in close relationships with the EC. This is notably the case of EURAXESS China[23], which is part of the international network EURAXESS. EURAXESS is a unique pan-European initiative delivering information and support services to professional researchers, especially for researcher mobility and career development, while enhancing scientific collaboration between Europe and the world. EURAXESS China is therefore the main support provider for European researchers moving to China. In June 2021, it has created a network of European researchers working in China. This network is structured around thematic groups and one of them is dedicated to health research: the Network of EU Biology Medicine Researchers (NERBIMEC[24]). This group has already gained 60 members since its launch by the end of November 2021. It supports its members in exchanging good practices to facilitate collaboration with Chinese organisations and researchers, but it also supports researchers outside of China and willing to collaborate with Chinese organisations in better understanding the Chinese innovation landscape and finding the right partners.

Furthermore, the Enterprises Europe Network (EEN) also supports international collaboration, notably with China[25]. It has in fact developed a network of contact points to support business advice, consulting and opportunities for international partnerships. In China, these contact points can be found in seven different cities: Beijing, Changsha, Chengdu, Shanghai, Wuhan and Zhengzhou. One of its contact points in Beijing is the EU SME Centre[26], an initiative developed by the EC to provide a comprehensive range of hands-on support services to European SMEs, getting them ready to do business in China.

Not-for profit, public-private international network(s) created bottom-up

A bottom-up initiative and international non-for-profit association is ENRICH GLOBAL[27]. ENRICH GLOBAL is focused on internationalisation of European research and innovation worldwide, and vice versa. It was set up in 2020 under the French law of the 1st of July 1901 by a group of 12 renowned founding members, public and private organisations based in Brazil, Belgium, Estonia, France, Germany, Greece, Hungary, Italy, Portugal, Switzerland, and the USA; including public national agencies, centres or foundations such as APRE – Italian Agency for Promotion of European Research; DLR – German Aerospace Center/International Bureau of German Federal Ministry of Research, FORTH – Foundation

---

[23] EURAXESS China's website – https://euraxess.ec.europa.eu/worldwide/china
[24] NERBIMEC's website – https://euraxess.ec.europa.eu/worldwide/china/network-european-researchers-biology-and-medicine-china
[25] EEN's website – https://een.ec.europa.eu/about/branches/china
[26] EU SME Centre's website – https://www.eusmecentre.org.cn/
[27] ENRICH GLOBAL's website – https://www.enrich-global.eu/

for Research and Technology – Hellas, Greece; networks such as EBN – European Business and Innovation Centres Network and global consultancy firms. Members and potential members of ENRICH GLOBAL are those who support research, science, technology, innovation, business and internationalisation by working, training, or leveraging companies, researchers and innovative entrepreneurs, established worldwide. The objective of ENRICH GLOBAL is to contribute to the development of European scientific, technological and innovation excellence, reinforce innovation competitiveness and internationalisation, take European innovation global, and vice versa, by supporting and coordinating collaboration, supporting sustainability efforts of collaborative initiatives and building joint programmes, services, networks and tools. ENRICH GLOBAL recently launched the Health Innovation Thematic Group, that will host SENET experts and continue working on policy recommendation to facilitate international health collaboration. SENET's Chinese partners already expressed informal interest to join the Thematic Group in 2022. Many other networks are created from bottom-up initiatives, often through organisations willing to collaborate with China and therefore developing their own network, mostly thanks to pre-existing personal relations between some members of their personal and Chinese researchers (for example, the network set-up by the JUMO partners consulting firm[28]).

Project networks

Under the H2020 framework programme the EC has funded a series of Coordination and Support Actions (CSA) to support the engagement of Sino-European health experts into international collaboration. SENET is one of these projects, together with IC2PerMed[29] and Sino-EUPerMed[30] in the field of Personalised Medicine or IDIH[31] in the field of Healthy and Active Ageing. All of these CSA projects have developed their own expert groups and heavily engaged with them over the project duration period between three to four years. The sustainability of these projects is essential to keep all stakeholders involved in Sino-European collaboration, as long-term personal relationships are key for collaboration between the EU and China. ENRICH in China[32] is a good example of a sustainable European funded project, that has created an important network of SMEs based in Europe and in China and is willing to collaborate. ENRICH in China offers help through administrative support, legal advice, introduction to the local businesses and scientific communities and other training activities and events.

4.4 Collaborative R&D&I projects

Historically, health was not prioritised among the fields of common interest between the EU and China on a policy level. However, as previously mentioned, past EU funding programmes have offered the EU and China a framework for a more active and balanced approach for cooperation focusing on mutual interests and common benefits. Health is an area which significantly benefited from the openness of the Horizon 2020 funding programme, as highlighted by the participation of 604 Chinese entities in 279 Horizon 2020 projects, of which 21 Chinese entities applied to Health-related calls[33].

---

[28] JUMO partners' website – https://jumopartners.com/accueil/
[29] IC2PerMed's website – https://www.ic2permed.eu/
[30] SINO-EU PerMed's website – https://www.sino-eu-permed.eu/
[31] IDIH's website – https://idih-global.eu/
[32] ENRICH in China's website – https://china.enrichcentres.eu/en/
[33] https://webgate.ec.europa.eu/dashboard/sense/app/a976d168-2023-41d8-acec-e77640154726/sheet/0c8af38b-b73c-4da2-ba41-73ea34ab7ac4/state/analysis Accessed on December 10.
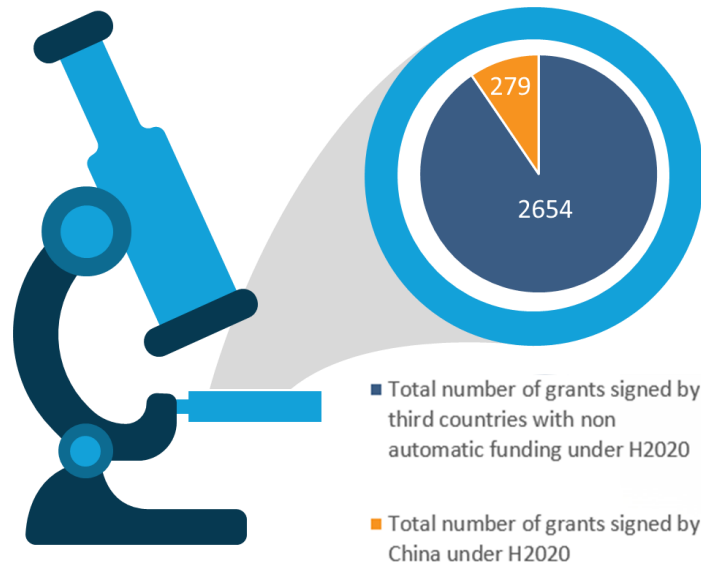
Figure 5. Total number of grants signed by China under H2020

The number of grants signed by Chinese organisations in H2020 represents around 10% of the total grants signed by third countries organisations (except third countries with automatic funding). However, the vast majority of grants signed by Chinese organisations were not signed in the health sector. Pieces of explanation for this result will be found below, in the recommendations.

Similar to international or bi-national networks, joining project consortia with European and Chinese partners is certainly an excellent means of starting collaboration.

5 Strategic recommendations for EU-China health research and innovation collaboration

5.1 SENET recommendations for research priorities

The SENET recommendations, developed according to the methodology presented in section 3, are explained in the subsequent sub-sections, starting with the explanation of the scientific importance of the thematic, then pointing out support from EU and China to this thematic and concluding by arguments why the thematic is recommended to be a priority for Sino-European collaboration.

5.1.1 Healthy Ageing

Scientific importance of the thematic

The ageing population is one of the most important challenges affecting both the European Union and China. In fact, this is followed by notable economic and health issues. Indeed, in the European Union, it is estimated that long-term health needs will increase and will impact 23.6 million people in 2030 and 30.5 million people by 2050, which means an increase of 56% of affected population compared to 2016. The stakes are not lower in China, on the contrary: according to the China's National Bureau of Statistics, it is estimated that by 2050, on average 100 working age adults will support 30 elderly people, which represents a doubling of people potentially requiring elderly healthcare compared to 2017[34].

EU and Chinese support to this thematic

Within the framework of Horizon 2020, the European Union responds directly to societal challenges by setting up different programmes that cover several essential sectors such as health and climate change. The programme "Health, demographic change and well-being" has been funded with an amount of 7.4 billion euros, and aims to improve health for all, including the elderly. Specifically, 340 projects have been implemented in the European Union in the period 2013-2020 to support healthy aging; this includes coordination and support action such as the IDIH project[35] (EC contribution: € 1 998 038). This project supports international cooperation in the field of digital health for healthy ageing: it (1) organises a Digital Health Transformation Forum to serve as a catalyst to encourage close collaboration with experts, agencies and RTI stakeholders from Canada, China, Japan, South Korea and the US with EU, (2) formulates priorities related to preventive care, integrated care, independent and connected living, and inclusive living; and (3) support establishment of new collaborations for digital solutions in healthcare, society and the health industry.

At national level, the Chinese government has set up a Healthy China 2030 programme, in which the strategy employed is to improve the specific targets of the Chinese health system: health level, healthy life, health services and health security, environmental health and health industry. Healthy aging is part of the health level and healthy life strategies. Indicators such as average life expectancy, major non-communicable diseases will be used to assess the effectiveness of the programme. To do this, the government will integrate the health system into its main policies in order to empower citizens and encourage them to improve their lifestyle. Research and innovation will also be at the heart of the health programme. In this framework, China is particularly keen on working on the "healthy ageing" thematic, as demonstrated in an international collaboration programme jointly set-up by the British and Chinese governments, called Healthy Ageing Flagship challenge programme, in which 5 projects have been co-financed. Each Chinese partners in these projects received up to 2,5 million yuan (an equivalent of € 350k) each from the National Natural Science Foundation of China. The strategy is to support research and innovation in both countries on this topic. Among the different programmes, we find the themes

---

[34] UK Research and Innovation's website - https://www.ukri.org/news/new-ukri-china-projects-tackle-the-challenges-of-ageing-societies/

[35] European Commission, International Digital Health Collaboration for Preventive, Integrated, Independent and Inclusive Living - https://cordis.europa.eu/project/id/826092, accessed on November 19, 2021

of the role of sleep and physical activity for the elderly people with cognitive disorders and dementia in China and England. There is also the theme of sexual health of the elderly. Finally, they also focused on the transformation of primary care in Scotland and China.

Why should it be a priority for Sino-European collaboration?

New solutions are needed to support healthy ageing both in the EU and in China. This is often related both to the development of research on chronic diseases, that mostly affect the elderly, and to the development of digital health, new technologies supporting the better diagnosis and treatments. Both Europe and China are also one of the pioneers in digital health technologies and in preventive care dedicated to the elderly.

5.1.2 Personalised Medicine

Scientific importance of the thematic

Personalised Medicine aims to deliver the right treatment to the right patient at the right time by relying on specific characteristics of individuals such as omics data or information on the lifestyle. With the emergence of Big Data and new medical technologies, Personalised Medicine, often also referred to as Precision Medicine in China, allows to improve diagnostic and risk prediction, to develop more targeted therapeutic strategies, to enhance therapeutic decision-making and to implement effective prevention measures. With Personalised Medicine approaches, the patient becomes a central actor of his health status and well-being, supporting the empowerment of citizens and their health literacy.

EU and Chinese support to this thematic

The International Consortium for Personalised Medicine (ICPerMed[36]) was initiated during several workshops organised by the EC throughout 2016. It aims to provide a flexible framework for cooperation between its member organisations that work on fostering and coordinating research as a driver of Personalised Medicine.

The European Commission has launched several projects in the framework of Horizon 2020 to support the inclusion of non-European countries in the ICPerMed, to bring the initiative on an international level and to align international research agendas on Personalised Medicine. In 2020, two projects (IC2PerMed[37] and Sino-EU PerMed[38]) have been funded by the EC. Both projects aim at supporting EU-China collaboration in Personalised Medicine research, innovation and policies through the ICPerMed initiative. The main objective is to provide people with access to personalised, smart and inclusive healthcare solutions in the near future. In its 13th Five-Year Plan, the Chinese government invested more than 9 billion dollars in research on Personalised Medicine, considering new digital technologies[39].

Why should it be a priority for Sino-European collaboration?

As explained before, China is at the forefront of research in terms of digital technologies applied to health and its population is keen to rapidly adopt new technological solutions. The European Union has a strong pool of expertise related to fundamental health research and health literacy, empowering its citizens and patients to take better decisions regarding their health. Collaboration on personalised medicine is of course of international interest, but a stronger collaboration between China and the EU would result in a faster growth of this field, allowing for faster large-scale tests of the impact of personalised medicine applied to citizens.

---

[36] ICPerMed's website – https://www.icpermed.eu/

[37] IC2PerMed's website – https://www.ic2permed.eu/

[38] SINO-EU PerMed's website – https://www.sino-eu-permed.eu/

[39] 3 ways China is leading the way in precision medicine – https://www.weforum.org/agenda/2017/11/3-ways-china-is-leading-the-way-in-precision-medicine/

5.1.3   Antimicrobial resistance

Scientific importance of the thematic

Antimicrobial resistance (AMR) is a global health and development threat. It is a phenomenon that occurs when bacteria, viruses, fungi or parasites develop resistance against antimicrobials, including antibiotics, antivirals, antifungals and antiparasitic compounds. As a result of this resistance, antimicrobial drugs become ineffective, and infections become difficult or impossible to treat[40]. This threat is more and more persistent at a global scale, especially for low- and middle-income countries. It spreads particularly in countries with more difficult living conditions, where hygiene is more limited, and concerns both animals and humans. Both the European Union and China are concerned about this threat. As a matter of fact, according to the Organisation for Economic Co-operation and Development (OECD), AMR will keep growing in the EU/EEA, from about 17% of infections with AMR in 2015 to 19% in 2030[41]. With China being the second largest consumer of antibiotics worldwide, AMR is a severe threat to human health and high economic burden. In addition to affecting human health, it poses great risk to animal health and food production. It is estimated that an average of 29.2% of the bacteria in China were resistant to antibiotic, in 2017.[42]

EU and Chinese support to this thematic

This theme has been taken very serious by the European Union reaching back to the 7th framework programme (FP7) under the specific health section. AMR has received further funding in the Horizon 2020 (FP8) health cluster. In total 16 projects aimed at fighting AMR have been funded, such as COMBINE[43], which was funded with €25 Mio. from European countries. The objective of the project is to create an IT infrastructure for the collection, storage and analysis of vaccine and antibiotic clinical trial datasets.

A European roadmap to fight AMR was developed in 2016[44], and it emphasises the importance of strengthening global governance in AMR. In 2017, the EU One Health Action Plan Against AMR was adopted, notably aiming at developing stronger partnerships against AMR and at shaping the global agenda[45]. In November 2020, the EC adopted the pharmaceutical strategy for Europe that addresses several AMR challenges[46]. At the same time, the EC published an Implementing Decision on the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria[47]. Finally, AMR research is now addressed and funded through the EU4Health programme, within the framework of Horizon Europe.

In 2016, the Chinese government launched its 13th Five-Year National Action Plan. The objective of this Plan was to proactively adapt to the country's development, considering all the profound changes, and the new normal of its economic development. To do so, the government made efforts to optimise many

---

[40] Antimicrobial resistance – https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance
[41] Michele Cecchini, Dominique L. Monnet, Antimicrobial Resistance Tackling the Burden in the European Union, *OECD*, 2019.
[42] Xuemei Zhen, Economic burden of antibiotic resistance in China: a national level estimate for inpatients, *Antimicrobial Resistance & Infection Control*, 2021
[43] H2020 COMBINE project – https://cordis.europa.eu/project/id/853967/reporting/fr
[44] Commission's Communication on a One-Health Action Plan to support Member States in the fight against Antimicrobial Resistance (AMR) – https://ec.europa.eu/smart-regulation/roadmaps/docs/2016_sante_176_action_plan_against_amr_en.pdf
[45] A European One Health Action Plan against Antimicrobial Resistance (AMR) – https://ec.europa.eu/health/sites/default/files/antimicrobial_resistance/docs/amr_2017_action-plan.pdf
[46] EU Action on Antimicrobial Resistance – https://ec.europa.eu/health/antimicrobial-resistance/eu-action-on-antimicrobial-resistance_en
[47] Commission Implementing Decision on the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=uriserv:OJ.L_.2020.387.01.0008.01.ENG

sectors such as the political and military system, its international openness especially with its neighbouring regions as well as the educational and health systems[48]. To improve its health care system, the government strengthened policies aiming to deliver new drugs and develop new diagnostic techniques, while limiting the sale of antibiotics to prescriptions. The plan also aimed at changing animal feeding habits, impacting AMR and human health. A specific National Action Plan to contain AMR has also been released in China in 2016[49]. This plan notably aimed at increasing the investments in R&D in antimicrobials, strengthen control systems of AMR (including the prevention and management), better inform and educate the larger public and conduct extensive international exchanges and collaboration, particularly at the ASEAN level, which is one of the more "at risk" area for AMR.

In addition, relevant international plans need to be put in place, especially since AMR impacts the entire food chain and spreads easily. Therefore, international cooperation has already been initiated, especially between the Chinese Ministry of Science and Technology (MoST) and the department of health and social in the United Kingdom. This international plan takes the form of a competition between small innovative companies in England and China. In this competition, the Chinese MoST has provided funding of 60 million RMB to Chinese companies.

<u>Why should it be a priority for Sino-European collaboration</u>?

AMR is an urgent global issue The resistant microbes do not know borders, and policy makers from different regions need to agree on relevant policies. Collaboration in monitoring will help for modelling of causes and make reaction faster. Thus, a broader cooperation between the European Union and China could be beneficial for both parties, as it would mobilise even more funds and researchers working on the subject. Furthermore, China is an amazing field for research on AMR: collaboration would therefore benefit to European researchers in accessing to more data.

5.1.4 Emerging pathogens

<u>Scientific importance of the thematic</u>

Infectious diseases occur when pathogens of any kind are transmitted. They include fungi, parasites, bacteria, and viruses, sorted into three sections according to their rarity, contagion, and level of risk. In section A, we find the pathogens that are particularly virulent and cause high mortality rates. In category B, we find less virulent diseases with lower mortality rates. Finally, in the last category C, we find the diseases that are quite virulent and with high mortality rates. Emerging pathogens have been intensely brought to public discussion again, as an international health and economic threat with the outbreak of Covid-19.

<u>EU and Chinese support to this thematic</u>

So far, the EC has invested €4.1 billion from 2007 to 2019 in infectious diseases research, which includes emerging pathogens. The Commission has also launched several special actions against Covid-19 in 2020, as part of a €1 billion pledge for coronavirus research. These actions addressed epidemiology, preparedness and response to outbreaks, the development of diagnostics, treatments, and vaccines, as well as the infrastructures and resources that enable this research. These are all parts of the necessary research that need to be conducted for emerging pathogens in case of a potential outbreak. These Covid-19 calls were open to international collaboration and saw a high participation of Chinese researchers. Horizon Europe will continue to invest in research and innovation to tackle infectious diseases including poverty-related and neglected diseases.

---

[48] Central Committee of the Communist Party of China – <u>The 13th five-year plan for Economic and Social development of the people's Republic of China</u>.
[49] China: National action plan to contain antimicrobial resistance –
<u>https://www.who.int/publications/m/item/china-national-action-plan-to-contain-antimicrobial-resistance-(2016-2020)</u>

Infectious diseases are funded by the National Health Commission of the People's Republic of China, set up within the framework of the 13th five-year National action plan. The objective of these projects is to reduce the risk of emerging infectious diseases. Indeed, as World Bank Country Director for China Martin Raiser states, "China is particularly a high-risk area for emerging infectious diseases. This is due to many factors such as population density and abundant wildlife and has recently been demonstrated with the outbreak of Covid-19. As a result, the World Bank has also contributed $300 million, as loan, to support these national projects. The total amount of loans for China is 19 billion dollars for 2019. China also funded many research projects against Covid-19[50]

Why should it be a priority for Sino-European collaboration?

Being recurrent phenomena that can spread very rapidly and impact populations on a global scale depending on the pathogen, these emerging infectious diseases require international cooperation that would benefit all countries. Indeed, a Sino-European collaboration could bring together Chinese and European researchers on emerging infectious diseases, while having access to a wider range of data. By having access to a larger panel of data, researchers will be able to consider more internal factors (genotype), as well as external factors (living conditions, etc.), and thus obtain their results with a better significance.

5.1.5   Chronic diseases

Scientific importance of the thematic

Chronic diseases are defined as long-term illnesses that require care for several months or even years. They differ from infectious diseases in the way that they are non-communicable. They are diseases that have a higher or lower mortality rate depending on their specificities. Among this category of diseases, we find cancers, cardiovascular diseases, chronic respiratory diseases as well as mental health and psychiatric affections. Most of these diseases are also characterised by a progressive evolution over time and a particularly low recovery rate.

If these diseases are generally incurable, we can impact its development, often not only related to internal factors (metabolism) but to external factors such as living conditions or environmental pollution. It is estimated that 50 million people had one chronic disease or more in 2017[51], knowing that the prevalence of this disease continues to increase in correlation with life expectancy. Indeed, more and more elderly people are affected by chronic diseases, both in Europe and in China. The prevalence rate of diabetes in China (10%) is equivalent to that in the United States according to the OECD.[52]

Although the medical sector is constantly innovating around the world, it is still rather powerless against this type of disease, hence the need to intensify efforts on an international scale.

EU and Chinese support to this thematic

Chronic diseases are one of the main European priorities for health. Launched in the framework of Horizon Europe, the European cancer plan will be financed with an amount of 4 billion euros[53] and will have as main areas of intervention: prevention, optimization of diagnosis and treatment, optimization of quality of life, understanding of the disease and equitable access to all.

---

[50] The World Bank
[51] Paul Brennan, Chronic disease research in Europe and the need for integrated population cohorts, *European Journal of Epidemiology*, 2017
[52] OECD iLibrary – Chronic Disease Morbidity.
[53] Horizon Europe and European Cancer Plan – https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/missions-horizon-europe/cancer_en#documents

In the past, several European projects have already been implemented to fight against chronic diseases. Among these projects is LIVERHOPE, funded with € 5,998,800[54], which aims to fight against liver diseases such as cirrhosis. The frequency of this disease is increasing, on a global scale, in both developed and developing countries. The project consists first in setting up a new combination of two drugs in particular, in order to reduce the associated inflammation, as well as the toxic products coming from the bacteria of the intestine. In a second phase, the project aims to identify biomarkers of treatment and disease progression.

As part of its Healthy China 2030 programme, the Chinese government has established a mid- to long-term plan for the prevention and treatment of chronic diseases. This programme started in 2017 and is expected to be completed by 2025. This plan has 6 objectives. Among them, the prevention and control of chronic diseases and the reduction of risk factors for their development, especially by encouraging people to improve their lifestyle through integrated health policies. The Chinese government also supports the development of Traditional Chinese Medicine (TCM) as one of the main methodologies to prevent chronic diseases. TCM has become one of the main health priorities of the country, that wishes to export its knowledge to Western countries and in particular to the European Union.

<u>Why should it be a priority for Sino-European collaboration?</u>

Pooling the different research works on these subjects through an international cooperation between the European Union and China could allow researchers to share their experience of chronic diseases and the development of new medical research. In addition, new digital technologies such as connected objects or big data analysis will allow to identify the disease faster, to have a better follow-up and a better medical diagnosis. Sino-European support could accelerate the democratisation of these promising new technologies for chronic diseases.

5.1.6 Health Policy and Systems Research

<u>Scientific importance of the thematic</u>

Health policy and systems research is an emerging concept that aims to improve health systems, and concretely seeks to improve the organisation of societies with respect to collective health. In other words, the proper functioning of HPSR relies on a combination of different disciplines: political, economic, medical, sociological. This area is important insofar as the combination of the different disciplines could enable the collaboration of researchers, decision-makers, and the different research actors of the different countries on the themes proposed above. Bringing together the key actors of the health systems with the political decision-makers will make it possible to adjust the different health policies so that they are as relevant as possible. Both European Union and China need scientific evidence to calibrate the health policies more efficiently for the future, adapting to the newest health challenges they meet.

<u>EU and Chinese support to this thematic</u>

EU countries hold primary responsibility for organising and delivering health services and medical care. EU health policy therefore serves to complement national policies, to ensure health protection in all EU policies and to work towards a stronger Health Union. The EU therefore supports, in particular, actions in public health that aim to protect and improve the health of EU citizens; support the modernisation and digitalisation of health systems and infrastructure; improve the resilience of Europe's health systems and equip EU countries to better prevent and address pandemics. Strategic health issues are discussed by representatives of national authorities and the EC in a senior-level working group on public health. EU institutions, countries, regional and local authorities, and other interest groups contribute to the implementation of the EU's health strategy and annual work programmes.

---

[54] H2020 LIVERHOPE's Periodic Reporting for period 2 – https://cordis.europa.eu/project/id/731875/reporting

Within the framework Healthy China 2030, the government seeks to improve the health service system and pay more attention to external factors that affect human health. In detail, the programme applies to several sectors of the health care system such as a healthier lifestyle for the population, the optimisation of health services, health insurance systems, and finally the health industry. The first initiative is to promote health education in schools, and to improve the habits of the population (including the practise of sports for all) at the local level in order to reach directly the households of the population. As a next step, prevention campaigns will be strengthened to limit and control the consumption of drugs, tobacco, and alcohol. Regarding health services, the main objective is universal access to these services, and the improvement of these services (medicines and medical techniques), while promoting traditional Chinese medicine. In addition, the programme aims to achieve equitable access to health care services by improving insurance systems more equitably between urban and rural areas, while regulating the medical drug industry to the maximum extent. Finally, the Healthy China 2030 aims to support innovation in the entire industry to develop new medical techniques on the one hand, and the sports industry on the other.

Thus, in its global programme, the Chinese government aims to improve all these different distinct sectors, to have a real impact on the health care system.

<u>Why should it be a priority for Sino-European collaboration?</u>

During SENET's policy dialogues meetings, experts from both regions highlighted the fact that China and the EU are experiencing similar demographic changes at the same time (with the population getting older and facing a higher degree of multiple chronic diseases and deteriorating structures in health and care). To exchange about it and confront health care systems that are completely different would be an excellent way to introduce innovation in both health care systems as it would allow to think more broadly and discover new ways of being innovative and disruptive.

5.1.7 One Health

<u>Scientific importance of the thematic</u>

The "one health" concept has emerged in the 2000s and links human health with animal health and their interactions with the environment. It has recently been defined by the One Health High Level Expert Panel, set-up by the World Health Organisation, as follows:

 "One Health is an integrated, unifying approach that aims to sustainably balance and optimise the health of people, animals and ecosystems. It recognises the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilises multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development."[55]

<u>EU and Chinese support to this thematic</u>

Both the European Union and China have representatives in the One Health High Level Expert Panel[56], and both contribute to guiding the World Health Organization and supporting improving cooperation on One Health among governments.

Within the framework of the Horizon 2020 Research and Innovation program, the European Union has launched a programme called « One Health European Joint Programme (EJP)[57]». This is a partnership

---

[55] Tripartite and UNEP support OHHLEP's definition of "One Health" – https://www.oie.int/en/tripartite-and-unep-support-ohhleps-definition-of-one-health/
[56] One Health High Level Expert Panel – https://www.who.int/news/item/11-06-2021-26-international-experts-to-kickstart-the-joint-fao-oie-unep-who-one-health-high-level-expert-panel-(ohhlep)
[57] One Health European Joint Programme – https://onehealthejp.eu/

which brings together 44 partners from different Member States - actors of the common European production, including renowned food, veterinary, medical laboratories, institutes and associations across Europe. This collaboration of the different actors will allow, in a first step, to make each one responsible in his field of action to support this initiative. Afterwards, it will allow to generate transparent data that will also be used for other projects on health, from the Horizon 2020 Programme.

Onehealth EJP has been financed by the Member States and the EC, with a total amount of € 90 Million[58]. The Programme aims to intensify the collaboration between the different institutions. For this purpose, transdisciplinary cooperation is to be ensured. The Programme also aims to educate on foodborne zoonoses, antimicrobial resistance and emerging threats by funding courses in these areas.

Although the first One Health forum was held in China in 2014, the One Health approach has been applied to address the practical problems in China for many years[59]. Many research institutes also conduct studies to address this thematic, without necessarily using the term of "One Health". This research are mostly conducted under the thematic of disease control and prevention and monitored by the Chinese Centre for Disease and Control Prevention[60].

Why should it be a priority for Sino-European collaboration?

Many, if not most emerging pathogens are of zoonotic origin. Health of animals and human health is related. In China the approach of one health is not very active yet. Even more, so as EU-China relations are bound to grow in the coming years through the New Silk Road, international concerted strategies are needed to protect humans and animals as well as the environment. Being closely linked in terms of world trade (goods and services), the European Union and China are dependent on each other, particularly in the event of an economic or health crisis. It was also seen with the Covid-19 crisis, a crisis that has impacted virtually all countries in the world, even the most developed. This concept makes sense if, and only if, the One Health initiative is launched on an international scale. Indeed, if the EU develops this concept without consultation with China, the efforts will be almost useless insofar as it will not protect itself from emerging risks in China, and the same goes for China for emerging risks in Europe.

5.1.8   Digital Health

Scientific importance of the thematic

The broad scope of digital health includes categories such as mobile health (mHealth), health information technology (IT), wearable devices, telehealth and telemedicine, and personalized medicine. These technologies use computing platforms, connectivity, software, and sensors for health care and related uses and participate to better diagnosis and treatment. The idea raised by the World Health Organisation is to create a shared understanding among all member states to improve health for all, and those around the world. However, there are limits to this idea, especially for poorer countries where innovative tools are not fully developed yet, or funds are lacking for purchasing and applying them. For this reason, this can only be truly effective on a global scale, if there is international cooperation between different countries, optimising the research and development process by considering diverse economical, societal, and political contexts.

EU and Chinese support to this thematic

In the framework of Horizon 2020, the European Union has launched a programme called "Support to a Digital Health and Care Innovation initiative in the context of Digital Single Market strategy". The main

---

[58] European Commission, Promoting One health in Europe through joint actions on foodborne zoonoses, antimicrobial resistance and emerging microbiological hazards – https://cordis.europa.eu/project/id/773830
[59] Wu Jianyong, Liu Lanlan, Wang Guoling, Lu Jiahai – https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5131455/, Infect Ecol Epidemiol, 2016
[60] Chinese Centre for Disease and Control Prevention's website – https://www.chinacdc.cn/en/

objective of the programme is to deploy digital solutions for chronic diseases and integrated care, at large scale. In this regard, collaborative platforms have been created for all stakeholders (including both, physicians and patients). Digital Health Europe is one of the projects and has been funded with 4 million euros[61]. It the deployment of digital solutions for individualised care, thus enabling the identification and replication of best practices.

China is particularly well-advanced compared to other countries on this topic, due to its global leadership in new digital technologies such as the Internet of Things, blockchain or Big Data analysis. The Digital China Health sector, created in 2016, is specialised in Big Data precision medicine.

<u>Why should it be a priority for Sino-European collaboration?</u>

The digital health market is set to grow exponentially in the coming years and collaboration would strengthen or speed-up innovations in digital health technologies even more. The European Union, currently developing new standards for digital technologies such as AI and cloud computing to protect its consumers and patients, would largely benefit from a tighter collaboration with China to align standards and thus facilitating market access for both sides. One of the biggest challenges to align might be regulations in terms of data protection. It will need reliable, secure, and sustainable digital infrastructures, in order to respect patients' privacy in China and the EU.

---

[61] Digital Health Europe's website – https://digitalhealtheurope.eu/

6   SENET's recommendations to foster EU-China health R&I collaboration

The exchanges conducted during the SENET project notably through the expert meetings and the consultation allowed better understanding of the major challenges that hamper Sino-European health collaboration. These challenges and related needs, relevant to all scientific topics presented above, have been classified into three major categories, and the recommendations which follow, are organised around these categories:

Towards policy agreement on Sino-European collaboration at the highest level

Why and how to collaborate with China is not always understood by European researchers. Many researchers decide not to try to collaborate actively with China as they fear this is not aligned with their national or the European strategies. Clear communication is therefore needed at the highest levels about collaboration with China. Joint programmes coordinated calls and a review of the co-funding mechanisms would also considerably facilitate collaboration.

Towards policy support to bottom-up initiatives

As seen previously, bottom-up initiatives are typically supported by physical persons who mostly have experience in China and want to develop stronger relations between their organisations and their network in China. Policy makers are expected to facilitate the set-up of these relationships and also to facilitate the establishment of collaborations for non-experienced researchers.

Towards policy consensus on the framework conditions

The EC and the Ministry of Science and Technology of the People's Republic of China (MoST[62]) are currently discussing a new joint roadmap for collaboration. The discussion is first taking place on the framework conditions for collaboration to be agreed on before choosing new flagships. So far, the EC and the MoST have agreed that 13 framework conditions are essential for collaboration. However, finding an agreement on each of these 13 framework conditions will be very long and is currently blocking the selection of specific flagships, those making the collaboration on research projects more difficult.

6.1   Towards policy agreement on Sino-European Health collaboration at the highest level

Recommendation 1
Researchers need a clear communication at the highest levels about collaboration with China

The challenge:

The political relations between China and the Western countries (mostly with the USA and with the EU) are not always peaceful. In Western countries, China is often denounced for its security law, human rights, intellectual property rights etc. and even its management of the COVID-19 by the World Health Organisation (WHO)[63]. Mainstream newspapers often refer to palpable "tensions", while sometimes aggressive reactions may be witnessed on both sides on social media. The recurrence of these articles can mislead researchers on their decision whether or not more collaboration is supported by their policy makers. This also sometimes even frightened them and lead them to give up on collaboration.

SENET team noticed that several research organisations and higher education establishments often hesitate to pursue an emerging collaboration when the political context isn't safe enough:

---

[62] MoST's website - http://en.most.gov.cn/
[63]   Accessed on December 16. 2021

A Spanish research institute mentioned that *"We do collaborate with China but we do not often advertise for it, fearing it would not be seen as something positive by regional, national and European funding agencies"*.

This can even prevent researchers from collaborating, for example in H2020 programmes:

A German research institute said: *"Some consortia do not want to include Chinese partners as they think this could be considered as a shortcoming and they may not be funded because of this"*.

Another challenge is that European Member States lack cohesion in their response to collaboration with China. Eastern European countries, for example, are part of a specific partnership with China, the "17 + 1", a platform created by Beijing in 2012 as part of its Belt and Road Initiative.

The opportunity:

Collaboration between China and the EU is needed to tackle global challenges but not at any cost. The EC is now more than ever particularly vigilant to have a balanced cooperation with Chinese stakeholders. We recommend the EC to communicate more regularly on the benefits of collaboration with China and on the conditions for a balanced collaboration, even though mainstream communication tools (social medias, newspapers etc.) The target of Sino-EU collaboration in research calls will also greatly facilitate the researchers' decisions to collaborate on specific thematic of joint interest. For instance, some calls announced in Horizon Europe already target collaboration with China for agriculture topics; for instance, the call EU-China international cooperation on nature-based solutions for nutrient management in agriculture[64] or the call EU-China international cooperation on unlocking the potential of agricultural residues and wastes for circular and sustainable bio-based solutions[65].

Recommendation 2
Joint programmes and coordinated calls would boost cooperation in selected topics (need of Flagships)

The challenge:

The experiences shared during the expert meetings and the consultation highlighted the need for an EU driven incentive to cooperate on certain calls: many researchers fear not being successful in the propositions if they include Chinese organisations and then realise their participation of not necessarily relevant to the EU or if the field is too strategic and the EC would prefer a European-only project.

During the 2014-2020 European programme period, most of the calls launched by the EC and targeting specifically China were Coordination and Support Action (CSA). However, CSA are excluded from the Co-funding mechanism (see below), which means that Chinese partners were often not funded, creating a frustration and hampering collaboration.

The opportunity:

An alignment on the funding priorities is highly expected among the research community. A selection of calls, especially targeting collaboration with China on topics of high joint interest, shall be presented and easy to identify on the European funding and tenders website and on the Chinese side too. In fact, a joint communication on calls dedicated to the collaboration could also facilitate the collaboration of

---

[64] HORIZON-CL6-2022-ZEROPOLLUTION-01-03 – EU-China international cooperation on nature-based solutions for nutrient management in agriculture
[65] HORIZON-CL6-2022-CIRCBIO-01-05 – EU-China international cooperation on unlocking the potential of agricultural residues and wastes for circular and sustainable bio-based solutions

researchers that do not have yet a network in China but are willing to develop stronger links to support their research and organisation's development.

Recommendation 3
A reviewed co-funding mechanism would increase trust in the funding opportunities of Chinese partners

The challenge:

The limited access to common funding of the Chinese partners for European calls and of the European partners for Chinese calls is one of the major challenges to support Sino-European health collaboration.

To date, a consortium formed with European and Chinese partners answering to a European call will first need to follow the normal procedure for a Horizon Europe proposal. If the proposal is successful and funded by the EC, another proposal has to be written by the Chinese partners of the consortium, addressing the MoST and matching the European proposal while also being aligned with the Chinese priorities and strategies. This often results in submitting a different proposal than the European one to maximise the chances of being funded. This is a long process, and only around 50% of the proposals successfully funded by the EC get funded by the Chinese national funding agencies.

Collaborating with Chinese partners for a European funded projects therefore represents a major risk of having a non-funded partner thus participation in the project will be consequently reduced.

An H2020 project explained that: *"Our Chinese partners have finally received their funding almost two years after the beginning of our project. During these two years, their collaboration was reduced to the minimum and we had to find the resources to compensate the extra work on the European partners. Now their project is officially funded, but it is substantially different than ours. The collaboration is still difficult and reduced because of the lack of funding"*.

This risk can be lowered for certain research thematic, when the project is especially close from the market, Chinese companies can be willing to invest and contribute to projects without being funded as they see short-term opportunities in the production and commercialisation of a product. This is usually not the case of health research collaboration, that involves a long-term vision and investments.

The opportunity:

Researchers need more funding security when they apply to European and Chinese calls: the co-funding mechanism needs to be reviewed to ensure that successful calls will be funded on both sides with no delay between the European and the Chinese funding.

This could be achieved with different scenarios:

The best-case scenario would be based on the co-funding mechanism currently existing with Switzerland, which means an automatic reciprocity for some specific funding opportunities (for example, for all Horizon Europe's RIA and IA) or for some previously selected calls or joint calls.

Another scenario is the set-up of a joint committee to evaluate proposals prepared by consortia composed of European and Chinese stakeholders (responding to EU or Chinese calls), notably to answer to joint calls. It must be noted that this was already done in the past with some countries, but it was considered to be a very complicated procedure. Proposals would be either successfully funded by both the European and Chinese members of the committee or only the EU or China would accept to fund their researchers for the project. In that case, the project partners would be informed prior to the signature of the Grant Agreement and have the possibility to adapt the project in close cooperation with the project's officer in case some partners do not want to participate without dedicated funds

6.2   Towards policy support to bottom-up initiatives

Recommendation 4
Research organisations need more support measures to foster bottom-up collaboration

The challenge:

Bottom-up collaboration can take different forms. SENET has notably observed four major forms of collaboration, previously addressed in detail: collaboration on a specific project, collaboration in a network or cluster, researcher exchanges, and the creation of Joint Centres.

These bottom-up collaborations are especially difficult to set-up in China, because of different factors including a reduced network and understanding of the Chinese priorities and funding mechanisms.

A European health network stated that: *"As a network related to health, we are very interested in collaborating with China. However, finding the right partners takes a lot of time and engagement, when it is way easier for us to find partners in other regions (North America, Latin America, Africa)"*

A French researcher working in China stated that: "*cooperation first seems difficult because of the cultural differences but this is an easy challenge to overcome. The personality of your partners is the most important deciding factor for the collaboration*".

Organisations willing to develop cooperation with Chinese entities therefore need more support to find the right partners and gain knowledge on the Chinese research landscape and funding opportunities.

Networking opportunities for European and Chinese researchers are currently being developed by different networks (for example EURAXESS China or Science Europe). However, these efforts are currently fragmented and the networks are not always sufficiently known by European researchers that would like to collaborate with Chinese researchers.

Embassies have also proven to be interesting intermediaries to support Sino-European Health Collaboration. It is however sometimes difficult for researchers to get to know the support provided by their embassies as the information are not necessarily online or aren't recent.

A German researcher stated that *"European strategies regarding China should be further refined and harmonised among the European Member States"*.

The opportunity:

The promotion, funding and support of researchers' mobility is a good way to support the set-up of bottom-up initiatives. Indeed, it allows researchers to create their own networks during the exchange and facilitate the signature of agreements at the organisation level, thanks to the trust thus created. The exchanges should have a sufficient length (from six months) to create personal links and trust between the researchers. Furthermore, as detailed below, it is important that both organisations agree on the framework conditions for collaboration before the exchange, on notably on IPR and data management.

Networks and platforms that aim at facilitating the collaboration between research organisations are really an important asset of the European internationalisation strategy. However, researchers would benefit from a more centralised, sustainable and well-known organisation or communication tool working as a single-entry point for Sino-European collaboration and gathering all the initiatives on the same page. The centralised initiative should be already well-known about researchers and research institutions to act as a reliable intermediary.

As mentioned above, international non–for–profit association ENRICH GLOBAL[66] , with the motto "Taking European innovation global, and vice-versa", has recently set up a thematic group "Health Innovation" with international expert forums [67].

Finally, more cohesion and collaboration between European embassies in China to support their companies would be of interest.

Recommendation 5
Creating and diffusing knowledge about contemporary China

The challenge:

In close relation with the recommendation #1, the SENET team noticed that many researchers are asking themselves: "why should I collaborate with European/Chinese researchers? And what exactly would this collaboration encompass?"

China provides numerous funding opportunities and access to high-level experts and students. However, the language barrier prevents European researchers to have knowledge of these opportunities and to get started with the collaboration.

A European researcher working in China said that: *"labs in China have a high basic funding, with funds dedicated to international researchers and easier to get than European funds. However, applications are only possible in Mandarin. Furthermore, China has great talents and experienced researchers, evolving in a growing ecosystem, which is not internationally well known".*

The opportunity:

In a time where international collaboration is mandated by most of European, national and regional institutions, researchers shall have the opportunity to quickly know and understand what are the benefits of collaboration with each possible other country in their field of research, and the existing support measures.

For China, this could be achieved with a common library accessible to all European researchers that would display some updated statistics.

On te 26th of May 2021, the Dutch Government launched two knowledge centres on China, Russia and Eastern Europe with the objective of deepening knowledge beyond opinions and develop more effective policies: this is a good practice, and it is hoped that the result of research undertaken by these and other knowledge centres will be shared and made accessible to all stakeholders potentially interested in collaborating with China. Sharing such knowledge shall be encouraged and supported.

Recommendation 6
Administrative support shall be developed and accessible to all EU and Chinese researchers willing to collaborate

The challenge:

Administrative support is needed both at the research organisation level and at the funding agencies level, and both in Europe and in China.

At the organisation level, collaborations are often set-up with a bottom-up approach, from one of the organisation's collaborators with no appropriate support of knowledge from the organisation itself to

---

[66] ENRICH GLOBAL's website – www.enrich-global.eu
[67] ENRICH GLOBAL's website: who are we? – https://www.enrich-global.eu/who-are-we/

facilitate these collaborations. Researchers rarely beneficiate from cultural training or language courses that would allow them to communicate and exchange in a more efficient manner with their Chinese counterparts.

A French researcher working in China explained that: *"Organisations should support their researchers in advertising the big funding and help them to prepare their proposals. As a researcher, I always find a student willing to help with a translation, but it often reduces the quality of the proposal. Cultural training is also often required on the European side, as collaboration with China perceived as being difficult: it's a highly competitive scientific ecosystem, where only "sharks" survive".*

Furthermore, most of researchers or their organisations are not qualified to accompany the administrative steps required for collaboration (for an exchange or even for a project).

A French researcher stated that: *"collaboration often goes smoothly between researchers but some administrative stages make the launch and follow-up of the collaboration truly difficult, such as different accounting systems in addition to the language barrier".*

A cluster representative said that: *"for a European Cluster, the reporting for collaborative project is tiresome and prevents some researchers to collaborate and apply to European calls".*

The opportunity:

All information related to Sino-European collaboration shall be easily accessible in one online space dedicated to Sino-European collaboration. The appropriate support shall be offered to researchers and their organisations at the national or European level. This support encompasses different aspects:

- Support to find partners: as already seen, networks can provide a great support to find reliable research partners (see above, recommendation 4). The different networks, their partners and support offers could be identified in the same place to facilitate the collaboration between networks and with researchers and research organisations.
- Support to prepare the collaboration (language classes, cultural training but also support to acquire general knowledge on the country etc.): specific support to prepare European researchers that have no prior experience in China is highly necessary to assist their successful collaboration. Language classes will allow them to create tight links with their Chinese partners, be able to access to the Chinese scientific literature (mostly not translated in English) and to apply for Chinese funds. Cultural training will allow to better understand business practices in China and prevent some important issues related to IPR and Data management, for example. Research organisations need to be supported to offer their researchers the appropriate support. This will be facilitated with dedicated funds, but also with the organisation, at the national or European level, of a dedicated pathway for collaboration and research organisations training, building on the knowledges and research of research centres for Chinese studies such as the MERICS in Germany or the Leiden Asia Centres in the Netherlands.
- Administrative support for the set-up of proposals during the collaboration: research organisations shall finally be trained to support their researchers in jointly applying to European and international calls, notably to Chinese calls. Many research organisations have developed a "European affairs" office, that will help them to apply to European calls. However, the mechanisms of collaboration with non-European partners (such as the co-funding mechanism, or how to access to the appropriate networks) is often unknown for the research organisations themselves. Furthermore, dedicated administrative support to facilitate exchanges would also largely increase the number of European researchers able to go to China to launch collaboration. The EU is therefore encouraged to set-up a dedicated European office, such as the China IPR SME Centre or support the set-up of joint offices by several research organisations.

6.3   Towards policy consensus on framework conditions

Recommendation 7
Setting win-win framework conditions and reaching policy consensus on IPR regulations

The challenge:

Framework conditions encompass legal rules that apply to all sectors of activity and thus to all scientific priorities indicated above. China and the European Union have major differences in their approach of IP, data protection, ethics, standardisation, open science, mutual access to research programmes, etc. In the absence of an agreement on these rules, the collaboration on common projects, especially in the health sector, can become particularly cumbersome. IPR regulations have notably been identified as a major aspect that can hinder effectful collaboration.

- IPR regulation:

China and European Union Member States are members of the World Intellectual Property Organisation (WIPO) and party to international agreements on protection of IPR, namely the Paris Convention, Berne Convention, and TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights). Therefore, the scope of IPR protection (e.g., the types of rights, duration of protection, geographical extent of protection, and basic protection requirements) is in principle the same in China and Europe. However, China is deemed not to apply the IPR regulation when it is not in favour of the Chinese stakeholders. This has been confirmed in speeches of the President of the People's Republic of China, as explained during the second SENET Policy Dialogue by the Head of the Science and Technology Section at the EU Delegation in China.

A German cluster reported that: *"at the moment IP protection and trust building are main issues with China. Investment is also a big problem: the Chinese side is blocking investments from Chinese funds in Europe. Direct investment from EU organisations in China is not possible, there needs to be a joint venture (but this is very much sector dependent)".*

Recommendation 8
Improving framework conditions and reaching policy consensus on data regulations

The challenge:

Similar to the aforementioned IPR regulations, data management have notably been identified as another major framework condition hampering collaboration:

- Data Management regulation:

Both the EU and China have strict data management regulations, which make the exchange of data of the main challenges for collaboration. From the EU to non-EU "Third Countries", data transfers are mostly prohibited by the GDPR. From China to other countries, cross-border data exchanges are even more restrictive. China has in fact put a complex system of regulatory requirements in place governing specific types of data with various supervisory authorities involved.

One of SENET experts revealed that his collaboration with China during an FP7 project had been impossible due to the restrictions to exchange data and bio samples. Because of these restrictions, each team was working on different parts of the project, that could not be considered as "one" anymore.

The opportunity:

Many stakeholders are available to provide advice on framework conditions related questions and support stakeholders willing to collaborate with Chinese stakeholders. This is notably the case of the China IP SME Helpdesk[68]. This is a great support to prevent some delicate IPR issues but it needs to be combined with other legal and technical tools to ensure the fair implementation of the regulation.

Regarding the exchange of data protection, technologies ensuring the anonymisation of data of currently developing and could be a great help to strengthen trust and facilitate the exchange of data between China and the EU.

Finally, the EC and the MoST are currently preparing a joint roadmap that will integrate measures and agreements on 13 framework conditions before reaching an agreement on the future thematic priority areas for collaboration. The set-up of this joint roadmap has no limited timeline. However, during SENET's expert meetings and exchanges with R&I stakeholders, it was noticed that some of these conditions may appear more challenging for researchers than other stakeholders. This is particularly the case for IPR, data management and investments regulations. A short-term agreement on these specific conditions would be beneficial for health collaboration, in order to facilitate further collaborative efforts.

---

[68] China IP SME Helpdesk's website – https://intellectual-property-helpdesk.ec.europa.eu/regional-helpdesks/china-ipr-sme-helpdesk_en

7 Conclusions and outlook

These SENET *Strategic recommendations for health research and innovation collaborations* build on the SENET *Initial Roadmap for enhancing EU-China Health research and innovation collaboration* and have been developed on the basis of a comprehensive stakeholder consultation methodology. This mechanism has resulted in some qualitative data gathering and the recommendations thus do not represent the SENET teams' sole thoughts but reflect the view of the representatives from all relevant stakeholder groups.

The SENET recommendations build on literature review and desk research, five meetings organised during the project, the SENET Initial Roadmap for enhancing EU-China Health research and innovation collaboration and the final SENET consultation (interviews and survey).

The report aims at presenting ideas on how Sino-EU R&I collaboration could be further enhanced and supported. The recommendations are addressed to policy makers but are also relevant to intermediaries in the R&I landscape (such as cluster organisations, networks, agencies...), Research Performing Organisations and of course the R&I stakeholders individually. SENET's recommendations above all aim at stimulating thoughts and discussions among the relevant stakeholders. Generally speaking, it can be said that a clear agreement on framework conditions for international (Sino-EU) R&I collaboration, defined collaboration mechanisms and clear communication about expectations on a policy level would certainly be an important and impactful step bringing real and tangible benefit to R&I stakeholders who wish to implement Sino-EU collaboration activities. More cohesion in all initiatives launched to support and facilitate collaboration would equally be of high value.

In order to suggest concrete means of operations, the SENET team has developed a further report, the *Consolidated action plan for research and innovation priorities in health,* which presents concrete ways of implementation in order to make the recommendations actionable.

It should be noted that the addressed stakeholders of course need to reflect on the recommendations and adapt their action to the context they are operating in – both with regards to the regional/national ecosystems they are addressing, as well as the possibly evolving European and international context that may evolve over time. Also, SENET's mission ends with the development of the recommendations, the associated action plan and their large dissemination. The decision on their take up is obviously left to the relevant organisations.

Annexes

Annex 1. Agenda of the first R&D&I Expert meeting:

SENET·HUB
SINO-EUROPEAN HEALTH NETWORKING HUB

RESEARCH & INNOVATION EXPERT MEETING
23rd of June 2020 Virtual meeting

9 am – 12:15 pm (CEST, Cenral European Summer Time)
3 pm – 6:15 pm (CST, China Standard Time)

Connection and registration 9:00-9:15 am CEST / 3:00-3:15 pm CST

9:15am - 9:30am CEST **SENET INTRODUCTION AND WELCOME**
3:15pm - 3:30pm CST

Rosanna D'AMARIO, *European Commission and* **Hicham ABGHAY**, *SENET coordinator at Steinbeis 2i GmbH*

9:30am - 10:30am CEST **SENET RESEARCH & INNOVATION EXPERT GROUP**
3:30pm - 4:30pm CST

Introduction of all participating experts (moderator: Sonja Reiland, Centre for Genomic Regulation)

Selected presentations on Sino-European collaborations in health research and Innovation highlighting benefits and challenges. (10 min per speaker + 5 min Q&A):

Jean-Claude MANUGUERRA, *Research director and Head of the Unit, Institut Pasteur, France*
Pia COSMA, *Research group leader, CRG, Spain & GRMH–GDL, China*
John ZHANG, *Director of International Partnership, Med Valley Beijing, China*
Dinja OOSTERHOFF, *Programme Manager, Intravacc, Netherlands*

Coffee break 10:30-10:45 am CEST / 4:30-4:45 pm CST

10:45am - 11:05am CEST **ROUND TABLE DISCUSSION I: COMMON CHALLENGES AND WAYS TO**
4:45pm - 5:05pm CST **OVERCOME THEM**

Moderated by **Svetlana KLESSOVA**, *GAC Group and* **Sonja REILAND**, *CRG*

11:05am - 11:20am CEST **REVIEW ON HEALTH RESEARCH AND INNOVATION PRIORITIES IN**
5:05pm - 5:20pm CST **CHINA AND EUROPE**

Johnny PAN, *Sociedade Portuguesa de Inovação*

11:20am - 12:10pm CEST **ROUND TABLE DISCUSSION II: VISION FOR FUTURE COLLABORATION**
5:20pm - 6:10pm CST **OPPORTUNITIES**

Moderated by **Svetlana KLESSOVA**, *GAC Group and* **Sonja REILAND**, *CRG*

12:10pm - 12:15pm CEST **CONCLUSION AND CLOSING**
6:10pm - 6:15pm CST

Hicham ABGHAY, *SENET coordinator at Steinbeis 2i GmbH*

Annex 2. Agenda of the first Policy Dialogue:

Date:
December 2nd, 2020
Location:
On-site: Beijing Science Center, Meeting Room 405
Online: Zoom

Time	Contents
Opening Ceremony **Host: Hao Xiaoning, Senior Research Fellow, Development Center for Medical Science and Technology, National Health Commission of P.R.C**	
8:30 – 8:50 (BJ Time:15:30-15:50)	**Opening remarks** • **ZHANG Yuhui**, DDG of China National Health Development Research Center • **GU Yanfeng** , DDG of China Centre for International Science And Technology Exchange • **TIAN Wen**, vice chairman of Beijing Science and Technology Association • **Professor YANG Yuexin**, vice chairman of Beijing Science and Technology Association, President of Chinese Nutrition Society, Academician of IUNS • **João Falardo**, Economic and Commercial Counsellor, AICEP - Trade & Investment Agency • Hicham Abghay, Steinbeis 2i GmbH, coordinator of the SENET Project
Keynote Speech **Host：Tang Minke, Professor, Beijing University of Chinese Medicine**	
8:50 – 9:20 (15:50-16:20)	• Promoting China-EU Health Collaboration under Health China 2030 and the 14th-five-year Health Development Strategy of China **Yunping WANG**, Researcher, China National Health Development Research • European Commission actions against COVID-19 and future strategy under Horizon Europe (Cluster Health) **Stéphane Hogan**, Head of "Stakeholder Engagement & Communication" Sector, People and Prosperity Directorates, DG Research & Innovation, European Commission
Thematic session 1- Prevention and control of chronic diseases **Host：LIU Xiao Yun, Deputy Director, China Health Development Research Center, Peking University**	
9:20 – 9:50 (16:20-16:50)	• The situation of prevention and control of chronic diseases and the development of big health industry in China **Xiaoning HAO**, Researcher, China National Health Development • Prevention and control of chronic diseases in Europe **Prof. Stefania Boccia**, Università Cattolica del Sacro Cuore, Coordinator of the IC2PerMed project, Italy.
Thematic session 2：Cooperation and development of China -EU health industry **Host： Richard Deng, Head of International STI projects, Chinese Health Experts Committee of Beijing Haizhi Program, the representative of ENRICH in China**	
9.50 – 10:20 (16:50-17:20)	• Post Pandemic Healthcare Innovation **Dr. Shanhong MAO**, Representative of National overseas talent offshore innovation and entrepreneurship base and senior expert of Beijing Municipal Government • Portugal: the right place to invest and build partnerships in Health **Joaquim Cunha**, Executive Director, Health Cluster Portugal
10.20 – 10:40	Q&A

(17:20-17:40)	

10.40-11:00
(17:40-18:00)
	Closing remarks
	    • Project leader of Chinese partners for the research on cooperation mode and key technologies for the prevention and treatment of chronic disease through Traditional Chinese Medicine between China and Europe under the National Key Research and Development Plan
	Yingzi WANG, Professor, Beijing University of Chinese Medicine
	    • SENET European project leader, STEINBEIS 2I GMBH, S2i
	Hicham Abghay, Steinbeis 2i GmbH, coordinator of the SENET Project

Annex 3. Agenda of the second Policy Dialogue:

Time	Title	Speaker
09.30-09.35h	Welcome and presentation of participants	**Hicham Abghay** – SENET's coordinator, Steinbeis S2i
09.35-10.00h	State of play of the EU-China cooperation in Science, Technology and Innovation *(15 min presentation, 10 min Q&A)*	**Philippe Vialatte** - Minister Counsellor, Head of the Science and Technology Section, Delegation of the European Union to China
10.00-10.10h	Short presentation of the SENET and of the project's first recommendations to facilitate and enhance Sino-European Health Collaboration	**Eva Fadil**, GAC
10.10-11.15h	Roundtable: How to incentivize and strengthen International Health Collaboration?	Moderator: **Sonja Reiland** CRG
11.15-11.30h	Conclusion – End of the meeting	**Stefan Jungbluth**, European Vaccin Initiative

Annex 4. Agenda of the second R&D&I Expert meeting:

Time	Title	Speaker
09.30-09.45h	Welcome and Tour de Table	Hicham Abghay – SENET coordinator at Steinbeis (S2i)
09.40-10.00h	Sino-European R&I collaboration support offer from SENET	Hicham Abghay (S2i)
10.00-10.20h	Roadmap for an enhanced EU-China R&I collaboration in health and suggested policy recommendations	Stefan Jungbluth (EVI) and Eva Fadil (GAC)
10.20-11.20h	Future Sino-European health R&I collaboration priorities: Facilitated group discussion	Sonja Reiland (CRG)
11.20-11.30h	Wrap-up and end of meeting	Eva Fadil (GAC)

Annex 5. Agenda of the final R&D&I expert meeting and Policy Dialogue:

Time	Title	Speaker
09h30-10h00	Welcome and Tour de Table of participants	Timo Strohäker – SENET coordinator at Steinbeis (S2i)
10h00-10h10	Sino-European R&I collaboration support offer from SENET	Timo Strohäker (S2i)
10h10-10h20	Sino-European R&I collaboration in health: status of relations, policy recommendations and action plan	Julie Saccomano (G.A.C.)
10h20-11h20	Facilitated group discussion – Researchers & Innovation Actors, Policymakers & policy support intermediaries: *How to implement, stimulate and facilitate Sino-European Health R&I collaboration?*	Moderators: Sonja Reiland (CRG) Eva Fadil (G.A.C.)
11h20-11h30	Wrap up and closing remarks	Tomasz Ilhéu (SPI)

Annex 6. Interviews guidelines for the consultation

Interview guidelines – Policy Maker

General

- Each SENET partner will interview at least 5 policy maker
- The interviewees need to sign a consent form
- The interviews will be performed online and recorded
- Analysis will not be done scientifically. We will extract missing information for the reports.

Obtaining consent from interviewee

- Send email with consent form to interviewee
- Ask the interviewee to sign and send it back before performing the interview.

The interview:

In the below sections, you find supportive text for the interviewer.

INTRODUCTORY PHASE

1. Welcome

Thank you for meeting with me today. My name is *Sonja Reiland I am partner in the SENET project. I am working as a scientific project manager at the biomedical research centre CRG, in Barcelona, Spain. My role in SENET is to coordinate the activities related to the consultation of stakeholder, by organising expert meetings, policy dialogues and interviews.*

2. Presenting SENET Project

SENET - the Sino-European Health Networking Hub - is a European Commission funded Horizon 2020 project with two main objectives: (1) Increase EU-China collaborative efforts addressing common health research and innovation challenges; (2) Create a sustainable health networking and knowledge hub, which facilitates favourable conditions for a dialogue between Chinese and EU research and innovation (R&I) entities.

3. Presenting the main goals of the interviews and benefits from the participation in the interview

SENET is consulting all actors in the R&I&D ecosystem, researcher in academia and industry, policy maker such as funding organisations, and any intermediary organisations as funding programme or innovation cluster manager. SENET wants to learn about opportunities, challenges, and expectations towards Sino-European research collaborations. The project will deliver a roadmap and specific recommendations and action plan proposal for the policy maker. By participating in this consultation your interests and experiences will be documented in the reports (anonymously) and might influence future policy decisions.

4. Describing the course of the meeting and rules of the interview (e.g. recording, confidentiality)

We will start the interview shortly, but firstly let me give you some basic information about our meeting. Our conversation will last 45 min (max 1 h). If you do not want to answer any of the questions, just let me know and we will move on to the next part of the interview. If you agree, our interview will be recorded, though the data will be used for developing the projects reports only. All the identifiable information about you will be anonymized. The recordings are confidential and will be stored safely at the local drive of the interviewer and backed up on the institutional server. Access will be restricted to the interviewer only.

5. Answering any possible questions concerning the interview from a respondent – concerning empirical material collected during the interviews, anonymization, data storage, use of the empirical material etc.

Do you have any questions concerning the interview material collected during the interviews / anonymization / data storage / use of the data?

6. Getting to know the interviewee

I will start with a few questions about yourself?

Where do you work (country/institution/department)?

What is your position in that organisation?

To which extend is supporting scientific collaborations between China and Europe part of your job?

MAIN PART OF THE INTERVIEW

The interview guide needs to be tailored to the characteristics of the interviewee. Some stakeholder might be able to give more details on specific funded projects, other might have a more strategic view. Therefore it is important to understand at the beginning of the interview the position of the interviewee and to adapt the questions during the interview if necessary. All insights are helpful for SENET reports.

Question 1: What are the criteria for your organisation to engage into bilateral and international agreements?

- What are your dependencies/limitations when it comes to establishing bilateral agreements?

Question 2: Does your institution have bilateral agreements with organisations in China (or European Countries)?

- If NO:
  - Why not? Did you come across obstacles?
  - Why is it currently not a priority?
  - Do you consider to establish agreements in the future?
- If YES:
  - What is the agreement about and what is the format?
  - Does it include the research area **HEALTH**?
  - Since how long does the agreement exist? How long will it run?
  - What are the experiences? Is it well received (number of applications to a programme/funded projects)?
  - Do you want to share a specific success story, e.g. a funded project that was very successful related to output, or continuity of collaborations? What do you think were the factors of success?
  - Do you think the agreement helped to increase Sino-European collaborations beyond the individual funded projects?
  - Do you have cases of less successful collaborations? What do you think were the limiting/inhibiting factors?
  - Do you want to summarise the most important lessons learned from the experience you have? (regarding establishing and implementing agreements)

Question 3: For the next 5 years in HEALTH R&D&I, where do you see major opportunities for an enhanced cooperation between the EU and China?

- Which specific thematic areas of HEALTH research?
- Specific types of funding schemes (e.g. collaborative research projects, mobility schemes)

- Which would be the optimal framework conditions for facilitating collaborations?

Question 4: Which impact do you think will have an increased research collaboration between China and Europe?

Question 5: Do you have the feeling that EU-China collaboration in research are sufficiently encouraged by policy maker in general?
- If NO: Why not? What is missing?
- Which measures do you think are most successful to engage researcher to collaborate between China and Europe?

Question 6: Bi-lateral agreements are rather top-down measures, to implement strategic objectives by policy maker. What kind of support measures could boost bottom-up collaborations? (e.g. support for existing collaborations; finding collaborative partner…)

Only for intermediaries:
> **Question 7:** Does your administration offer administrative support to facilitate the set-up of the collaboration or to support its implementation? If not, do you think that would be helpful to increase collaborations and their quality? (E.g. network events, training on inclusive collaboration in different cultures)
>
> **Question 8:** In your daily work, do you see framework conditions that should be tackled to enhance collaboration between researchers? Which one?

Interview guidelines – Researcher

General
- SENET partner will interview individual researcher, that are interested in SENET but could not attend the expert meetings
- The interviewees need to sign a consent form
- The interviews will be performed online and recorded
- Analysis will not be done scientifically. We will extract missing information for the reports.

Obtaining consent from interviewee
- Send email with consent form to interviewee
- Ask the interviewee to sign and send it back before performing the interview.

The interview:
In the below sections, you find supportive text for the interviewer.

INTRODUCTORY PHASE

1. Welcome

Thank you for meeting with me today. My name is Sonja Reiland I am partner in the SENET project. I am working as a scientific project manager at the biomedical research centre CRG, in Barcelona, Spain. My role in SENET is to coordinate the activities related to the consultation of stakeholder, by organising expert meetings, policy dialogues and interviews.

2. Presenting SENET Project

SENET - the Sino-European Health Networking Hub - is a European Commission funded Horizon 2020 project with two main objectives: (1) Increase EU-China collaborative efforts addressing common health research and innovation challenges; (2) Create a sustainable health networking and knowledge hub, which facilitates favourable conditions for a dialogue between Chinese and EU research and innovation (R&I) entities.

3. Presenting the main goals of the interviews and benefits from the participation in the interview

SENET is consulting all actors in the R&I&D ecosystem, researcher in academia and industry, policy maker such as funding organisations, and any intermediary organisations as funding programme or innovation cluster manager. SENET wants to learn about opportunities, challenges, and expectations towards Sino-European research collaborations. The project will deliver a roadmap and specific recommendations and action plan proposal for the policy maker. By participating in this consultation your interests and experiences will be documented in the reports (anonymously) and might influence future policy decisions.

4. Describing the course of the meeting and rules of the interview (e.g. recording, confidentiality)

We will start the interview shortly, but firstly let me give you some basic information about our meeting. Our conversation will last 45 min (max 1 h). If you do not want to answer any of the questions, just let me know and we will move on to the next part of the interview. If you agree, our interview will be recorded, though the data will be used for developing the projects reports only. All the identifiable information about you will be anonymized. The recordings are confidential and will be stored safely at the local drive of the interviewer and backed up on the institutional server. Access will be restricted to the interviewer only.

5. Answering any possible questions concerning the interview from a respondent – concerning empirical material collected during the interviews, anonymization, data storage, use of the empirical material etc.

Do you have any questions concerning the interview material collected during the interviews / anonymization / data storage / use of the data?

6. Getting to know the interviewee

I will start with a few questions about yourself?
- Where do you work (country/institution/department)?
- What is your position in that organisation?
- To which extend is supporting scientific collaborations between China and Europe part of your job?

MAIN PART OF THE INTERVIEW

The interview guide needs to be tailored to the characteristics of the interviewee. Some stakeholder might be able to give more details on specific funded projects, other might have a more strategic view. Therefore it is important to understand at the beginning of the interview the position of the interviewee and to adapt the questions during the interview if necessary. All insights are helpful for SENET reports.

1. **Do you already collaborate with Chinese partners?**

If YES:
Was it a successful collaboration? Why/Why not?

What were the framework conditions?
- Who funded the project?
- Did you encounter any restrictions or limitations?
- Which were success factors that were supportive for the collaboration?

Did you get any administrative support to facilitate collaboration?
- How did you find the collaborating partner? (e.g. Personal network, match making events)
- Did you receive any support from your own organisation or a third party? (e.g. training on multi-cultural communication, solving budget and cost related issues; infrastructure and knowledge about legal framework on data sharing etc.)

2. **Would you like to collaborate in HEALTH with EU/China in the future? If yes, on which research topic?**

3. **Is there a reason for you to specifically collaborate with EU/China?**

4. **Do you have the feeling that EU-China collaboration is sufficiently encouraged and supported?** (by your organisation but also local, national, European authorities)

5. **Can you think of any support measures that could boost bottom-up collaborations, basically supporting your interests?**
- Do you wish for any specific support e.g. from policy maker as the EC? Or from national or local authorities?

Annex 7. Consultation's survey

Stakeholder information

1. **Gender**
   - Male
   - Female
   - Others (non-binary)
   - Prefer not to say

2. **Age group**
   - < 25 years old
   - 26 - 40 years old
   - 41 - 60 years old
   - > 60 years old

3. **Country of residence** *[Drop-down country list]*

4. **Which type of organisation do you represent?**
   - Academic research / university / laboratory
   - Business association / cluster / business network
   - SME
   - Public authority
   - Non-governmental organisation
   - Consultancy

  o Other organisation (please specify) *[Insert text box here]*

5. **Position**
  o Researcher or innovator
  o Research or Innovation Management
  o Policy maker/advisor
  o Programme Manager/National Contact Point
  o Other (please specify) *[Insert text box here]*

6. **Please select your relevant field(s) of expertise**
  o Chinese Research (and Research Funding) Ecosystem
  o European Research (and Research Funding) Ecosystem
  o Health Research
  o Institutional Collaborations
  o International Affairs
  o Other research (please specify) *[Insert text box here]*
  o Other (please specify) *[Insert text box here]*

Part 1: The current state of Sino-EU collaboration

7. **Do you feel encouraged to collaborate with China/with the EU?**
  o Yes, from my institution
  o Yes, from the policy side
  o No, from my institution
  o No, from the policy side
  o By others (please specify)

8. **For what purpose(s) exactly?**
[Only displayed to users who pick "Yes, from my institution" or "Yes, from the policy side" in Q7, multiple-choice field]
  o For a research collaboration
  o For a collaboration related to innovation / technology transfer / market access
  o For networking
  o Other (please specify) *[Insert text box here]*

9. **Existing policies and communications by policy makers influence me to:**
  o Collaborate with Chinese/European partners
  o Not collaborate with Chinese/European partners
  o They do not influence me at all
  o I don't know

10. **Do you collaborate (individually or institutionally) with China/Europe?**
  o Yes
  o No

11. **What are your motivations for (existing or future) collaborations with China/Europe?**
  o Access to expertise and know-how
  o Access to service and infrastructure
  o Exploring R&I landscape in China/Europe
  o My research question targets China/Europe (or its people)
  o Supporting internationalization of my stakeholders

o   Other (please specify) *[Insert text box here]*

12. **What are your reasons for <u>not</u> collaborating with China/Europe?**
   o   Challenge to find collaboration partners
   o   Cultural difference is a challenge and risk for collaboration success
   o   Missing (or not ideal) framework conditions (legal aspects, research practices, funding schemes, etc.)
   o   Not specifically interested in collaborating with China/Europe
   o   Other (please specify) *[Insert text box here]*

13. **Which factors would encourage you to engage in Sino-EU collaborations?**
[Multiple-choice field]
   o   Clearer statement from policy makers that collaboration is wanted
   [Insert text box here for users to select this answer - "Please specify"]
   o   Incentives
   [Insert text box here for users to select this answer - "Please specify"]
   o   Support measures
   [Insert text box here for users to select this answer - "Please specify"]
   o   Tailored funding opportunities for Sino-EU collaboration
   [Insert text box here for users to select this answer - "Please specify"]
   o   I don't know

Part 2: Assessing China as a "research & innovation market"

14. **Which statement do you believe fits China's large data pool best?**
   o   It is a large database, but we/I don't know the origin of the data, so it's not trustworthy
   o   There is no other country with a larger data source, so it is useful and can make research more robust
   o   It is not the data pool that makes the research robust, but rather how the data is used in the research
   o   Other (please specify) *[Insert text box here]*

15. **For which purpose would you turn to the Chinese market?**
   o   Business networking
   o   Market uptake
   o   Research collaboration
   o   Testing a new technology
   o   None
   o   I don't know

16. **To what degree (scale: 1 – worst to 5 – best) do you think China is the adequate market to turn to for testing a new technology?**
   [Insert scale from 1 to 5 [tick boxes] or blank text box w/data validation]

17. **Do you have any non-business related reason(s) compelling you NOT to collaborate with China (e.g. of personal, ideological, political, religious or other nature)?**
   o   Yes
   o   No

18. **In case you answered "Yes" in the previous question, can you please elaborate?**
   o   *[Insert text box here]*

Part 3: Identifying areas for improvement in Sino-EU collaboration

19. **Are you aware of any Sino-EU funding opportunities for research and innovation projects?**
    - o Yes, on China-EU level
    - o Yes, on China-EU Member State level
    - *[Insert text box w/question here – "Which Member State?"]*
    - o Yes, on China-EU regional level
    - *[Insert text box w/question here – "Which region of the EU?"]*
    - o No, I am unaware of any funding opportunities

20. **Have you used / do you use / do you plan to make use of such a funding opportunity?**
    [Only displayed to users who pick ""Yes, on China-EU level", "Yes, on China-EU Member State level" or "Yes, on China-EU regional level" in Q19, single-choice field]
    - o Yes, in the next 3 months
    - o Yes, in the next 6 months
    - o Yes, next year
    - o No

21. **Why not?**
    [Only displayed to users who pick "No, I am unaware of any funding opportunities" in Q19, single-choice field]
    - o I don't know how to find collaboration partners
    - o Not interested
    - o Not related to my field of activity/research
    - o The funding scheme is not appropriate
    - o The financial support is not enough

22. **Do you believe there is an asymmetry with respect to funding opportunities? If so, which side do you believe needs to invest more in these areas:**
    - o China
    - o EU
    - o I don't know

23. **How do you rate (scale: 1 – worst to 5 – best) the existing mobility programmes (and networking events) for Sino-European research collaboration?**
    [Insert scale from 1 to 5 [tick boxes] or blank text box w/data validation]

24. **Who do you believe should be responsible for organising the programmes?**
    - o Political institutions at EU level
    - o Political institutions at EU Member State / Regional level
    - o Other institutions (academic, scientific, etc.)
    - o Other (please specify) *[Insert text box here]*
    - o I don't know

25. **Please rate the following factors for Sino-EU health cooperation from 1 (most important) to 3 (least important):**
    - o Funding opportunities
    - o People (e.g., trusted researchers)
    - o Project idea
    - o Other (please specify) *[Insert text box here]*
    - o I don't know

26. **Which factor for Sino-EU health collaboration would you like to receive further help with (e.g., funding opportunities)**
    [Insert text box here]

27. **Do you measure the success of your Sino-EU collaboration based on specific metrics? If so, please provide the most fitting answers from the options below:**
    - o Number of connections made (relevant persons met)
    - o Number of (scientific) publications
    - o Mobility/exchange programmes engaged in
    - o Successful research-to-market cases
    - o Other (please specify) *[Insert text box here]*
    - o I do not measure the success of my Sino-EU collaboration

Part 4: Sino-EU collaboration from the perspective of academic/scientific institutions
[Only displayed to users who pick "Academic research / university / laboratory" in "Which type of organisation do you represent?"]

28. **Do you support Sino-EU Collaboration?**
    - o Yes
    - o No

29. **How?**
    [Only displayed to users who pick "Yes" in Q28, multiple-choice field]
    - o Financial support to individual collaborative projects
    - o Mobility schemes
    - o Punctual collaborative events/conferences or similar
    - o Study tours/events in the other region
    - o Other (please specify) *[Insert text box here]*

30. **What is/What are your main reason(s) not to support or engage into Sino-European collaboration?** *[Only displayed to users who pick "No" in Q28, multiple-choice field]*
    - o Lack of budget to create funding opportunities
    - o Lack of interest
    - o Lack of trust in the benefits of Sino-EU collaboration
    - o Other (please specify) *[Insert text box here]*

Part 5: Sino-EU collaboration from the perspective of a researcher
[Only displayed to users who pick "Researcher" in Q5]

31. **From the perspective of a researcher, do you feel there are sufficient measures or incentives in place to promote Sino-EU research collaboration?**
    - o Yes

o   No

32. **From the perspective of a <u>researcher</u>, do you feel there is a well-defined set of institutions who could help in research collaboration efforts?**
  o   Yes
  o   No

33. **From the perspective of a <u>researcher</u>, do you feel there are sufficient measures or incentives in place to promote Sino-EU research collaboration?**
  o   Yes
  o   No

<u>Part 6: Sino-EU collaborating from the perspective of policy makers and intermediaries</u>
[Only displayed to users who pick "Research or Innovation Management", "Policy maker/advisor" or "Programme Manager/National Contact Point" in Q5]

34. **As a <u>policy maker or intermediary</u>, do you support Sino-European research and innovation collaborations?**
  o   Yes
  o   No

35. **What is/What are your main reason(s) to support Sino-European collaboration?** *[Only displayed to users who pick "<u>Yes</u>" in Q34, multiple-choice field]*
  o   To foster academic/scientific research
  o   To foster business collaboration
  o   To foster investment
  o   To foster market access
  o   To foster mutual understanding, independent of the type of collaboration
  o   Other (please specify) *[Insert text box here]*

36. **What is/What are your main reason(s) not to support Sino-European collaboration?** *[Only displayed to users who pick "<u>No</u>" in Q34, multiple-choice field]*
  o   Lack of budget to create funding opportunities
  o   Lack of interest
  o   Lack of trust in the benefits of Sino-EU collaboration
  o   Other (please specify) *[Insert text box here]*

37. **As a <u>policy maker or intermediary</u>, which would best define your degree of dependency from other policy levels?**
  o   I depend very much on higher policy levels
  o   I depend a lot on other policy levels, but still have some degree of autonomy
  o   I keep a balance between my dependency on other policy levels and my degree of autonomy
  o   I have a lot of autonomy and rarely depend on other policy levels
  o   I do not depend on other policy levels at all