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1 Executive Summary

This report examines the scope for **future EU China collaboration on Nature Based Solutions (NbS)**. In the original call for “demonstrating innovative nature based solutions in cities” (H2020-SCC-2016-2017) the call made reference to the EU-China Sustainable Urbanisation Partnership and the EU-China Innovation dialogue and the aspiration of the creation of a “global market for nature-based solutions”. In 2017, GrowGreen was one of the projects approved in this call and the original project proposal included a report on the feasibility of establishing an EU China NbS platform.

In 2017, the term NbS was not mainstreamed and collaboration on NbS between the EU and China limited. However, as GrowGreen and other projects in the “demonstrating innovative nature based solutions in cities” call and the subsequent “nature-based solutions for restoration and rehabilitation of urban ecosystems” call were underway, EU China collaboration on NbS has now been embedded. An EU-China ecosystem is now established with a variety of networks and platforms. A result, the emphasis of this report is “how EU-China collaboration can be sustained” rather than an evaluation of the feasibility of an EU-China platform which already exists, albeit across different projects.

To this end, the report determines the benefits and challenges of the collaboration to date and identifies the key ingredients of continued successful collaboration.

The two key benefits of EU and Chinese partners involved in the two waves of H2020 NbS projects are knowledge and information. This has been achieved by a range of means including site visits (pre-Covid) webinars, journals, videos, podcasts and a MOOC (Massive Open On-Line Course). The evidence shows that the collaboration is much deeper when Chinese partners are able to access funding and dedicated projects e.g., Proglreg who have co-created an actual Living Lab in China.

The main challenges cited are language, time, culture and differences in political, decision making and endorsement processes. Pre-COVID-19 travel costs and time were in themselves a challenge to collaboration but could be overcome with adequate resources. However, since the outbreak of the pandemic in January 2020, the opportunities to travel to and from China have been extremely limited and continue to be so at the time of writing.

Critical success factors for continued collaboration on NbS include ensuring the correct strategic fit so that funding can be secured and a quadruple helix of representatives from government, academia, industry and local citizens. In terms communicating with Chinese partners, a core partner who is impactful in the local community such as a local university is extremely useful a project consortium.

In conclusion, there has been a great deal of effective collaboration on NbS between China and the EU since 2017. The most effective way of sustaining this is by including funded Chinese partners in project consortia and sustaining current networks such as UbN¹ and IURC² along with existing platforms such as Regreen and Oppla. This would allow stakeholder relationships to be further enhanced and expanded rather than funding the development costs of new networks and platforms yet to be developed.

¹ Urban By Nature - www.urbanbynature.eu

² International Urban and www.iurc.eu

2 Introduction

2.1 Context of EU-China Nature Based Solution Collaboration

In the original call for “demonstrating innovative nature based solutions in Cities” (H2020-SCC-2016-2017) the call highlighted the importance of international cooperation in line with the (COM (2012) 497). It made reference to the EU-China Sustainable Urbanisation Partnership and the EU-China Innovation dialogue and the aspiration of the creation of a “global market for nature-based solutions”.

The EU-China Sustainable Urbanisation Flagship Initiative was one of five flagship initiatives agreed by the EU and China to foster the cooperation between the two sides in science and technology in the period 2014-2020. The EU-China Urbanisation Partnership began in 2012 with the Joint declaration on the Partnership by President Barroso and Premier Li, and it was initially led by the Directorate-General for Energy (DG ENER). With the EU-China Joint Workshop on Urban Innovation, held in the city of Foshan in May 2013, the research and innovation dimension was reinforced, identifying topics of common interest on sustainable development, urban planning, green urban mobility, and sustainable energy solution for cities. This confirmed the importance of innovation and socio-economic aspects in sustainable urbanisation.

In response to the political commitments, the EU and China set targeted research and innovation actions in a range interrelated topics surrounding cities (transport, environment, energy, urban planning etc.) in Horizon 2020. The two sides implemented cost-effective, integrated technological and NbS that could provide multiple benefits. These looked at resource and energy efficiencies, reducing greenhouse gas emissions, increasing urban resilience to change, better health and leveraging costly problems into opportunities for growth, jobs and creating improved living conditions for millions of urban citizens both in Europe and China.

The Horizon 2020 work programme (2016-2017) marked the start of the flagship initiative. Two platforms of Sustainable Urbanisation Stakeholders were launched to pave the way to EU-China cooperation in this field. The two platforms brought together industry, academia and public administrations to promote EU-China science-industry partnerships on sustainable urbanisation. The platforms identified common challenges and recommended joint priority areas for collaborative research and innovation cooperation, linked European and Chinese cities and promoted joint demonstration projects.

Building on the outcome of Fushan Conference from 2013 a wide topic on “**Demonstrating innovative nature-based solutions in cities**” was launched, including Research and Innovation Action on Urban Planning. The following NbS projects were awarded in the 2016-2017 programme:

- Unalab
- CleverCities
- EdiCitNet
- Connecting Nature
- proGReg
- URBiNAT
- GrowGreen
- UrbanGreenUP
- Urban EU China
- Trans-Urban-EU-China

Capitalising on existing practices, actions from H2020 Work Programme 2018-2020 brought together European and Chinese research partners, government agencies and urban authorities, private sector and civil society with relevant expertise and competence. One topic was proposed to strengthen international cooperation on sustainable urbanisation, targeting specifically **nature-based solutions for restoration and rehabilitation of urban ecosystems**. Two further projects were awarded:

- Regreen
- Clearing House

The initiative on Sustainable Urbanisation was able to mobilise Chinese entities in cooperating with a variety of organisations, with a prominent role played by municipalities and other organisations linked to municipal administrations (e.g. municipal companies and agencies).

This report evaluates the experiences of the partners involved. It examines the **benefits** of the collaboration from a Chinese and EU partner perspective, the **main challenges** for partners and explores how the collaboration can be **sustained** beyond the H2020 programme.

A review of deliverables and reports pertinent to EU-China NbS collaboration that have been produced by the relevant projects was undertaken. Additional data has been collected via an on-line questionnaire to each of the H2020 projects listed above along with semi-structured interviews with project coordinators.

3 Overview of EU-China NbS projects in the Horizon 2020 programme

3.1 2016-17 Programme -Demonstrating innovative nature-based solutions in Cities

GROWGREEN www.growgreenproject.eu

Nature of Chinese collaboration: A knowledge exchange programme has been developed between Wuhan and the six GrowGreen cities of Manchester, Valencia, Wroclaw, Brest, Zadar and Modena. This has focussed specifically on the “sponge cities” approach adopted in Wuhan to reduce flood risk and improve water quality. This included a site visit to Wuhan in November 2018 by GrowGreen representatives and a number of webinars sharing good practice and results.

Chinese Partner/s: Wuhan Development and Reform Commission

Funding for Chinese partner/s: No

Main outcomes: Webinars, site visits, Deliverable 2.9 Wuhan Research Exchange (public) - summary of learning exchange on the sponge cities concept.

UNALAB www.unalab.eu

Nature of China collaboration: Hong Kong is a follower city in UNaLab. UNALAB’s work partnering with the Hong Kong Polytechnic University has been on the integration of permeable pavement systems to improve urban drainage and stormwater harvesting to mitigate seasonal water shortages.

Chinese Partner/s: Hong Kong Polytechnic University

Funding for Chinese partner: No

Main outcomes: Journals

Journal of Infrastructure Preservation and Resilience - Planning considerations of green corridors for the improvement of biodiversity resilience in suburban areas Yuhong Wang, Siqi Jia, Zhe Wang, Yang Chen, Shicong Mo & N. N. Sze (April 2021)

Journal of Cleaner Production - Development of a methodological framework for evaluating biodiversity of built urban green infrastructures by practitioners Yang Chen, Yuhong Wang, Jia Huan Liew & Phoenix L. Wang (June 2021)

CLEVER CITIES www.clevercities.eu **CONNECTING NATURE** www.connectingnature.eu

Nature of China collaboration: CLEVER Cities and Connecting Nature have joined together to bring the UrbanByNature (UbN) programme to China. UbN China is using CLEVER Cities' expertise on NbS for urban regeneration and Connecting Nature's knowledge on NbS for climate and water resilience. Tailored to the needs and interests of Chinese local governments and urban stakeholders, UbN China is providing capacity-building and good practice exchange on a variety of topics including stakeholder engagement, technical implementation and monitoring of nature-based solutions.

Chinese Partner/s: Xi'an Jiaotong University, ICLEI East Asia

Funding for Chinese partners: Yes

Main outcomes: UbN China has provided capacity-building and good practice exchange on a variety of topics including stakeholder engagement, technical implementation and monitoring of nature-based solutions. A six-part webinar series for China was provided between June 2021 and February 2022 - details <https://urbanbynature.eu/hub/china>.

URBANGREENUP <https://www.urbangreenup.eu/>

Nature of China collaboration: Chengdu is a follower city in the Urban Green Up project. Chengdu, the capital of Sichuan Province, covers an area of 14,600 km square and has a resident population of more than 16 million people.

Urban GreenUp's work with Chengdu has been to replicate the Renaturing Urban Plan approach developed during the project in planning the new Jinjiang greenway system in the Chengdu.

Chinese Partner/s: Chengdu

Funding for Chinese partners: No

Main outcomes: Networking and information sharing

PROGIREG <https://progireg.eu/>

Nature of China collaboration: Ningbo located in the north eastern province of Zhejiang between the East China Sea and various mountain ranges, is a front runner city in ProGireg. A living lab has been developed in Ningbo's Yuehu Park. This parkland surrounding an urban eutrophic lake in the central district of the city district of the city called Yuehu Park (Moon Lake Park). The living lab in Ningbo has been focusing on innovative water quality monitoring and aquatic plant maintenance in 2021 to improve the water quality in Moon Lake and to gather data to support the planning of local environmental compensation processes.

Chinese Partner/s: The Forestry Bureau of Ningbo, City Institute of Urban Environment, Chinese Academy of Sciences

Funding for Chinese partners: Yes - part-funded by the National Research and Development Programme for Chinese-EU Research Collaboration

Main outcomes: An impact evaluation of the Ningbo living lab will be produced at the end of the project.

May 2019 - Lead Coordinator from proGireg partner the Institute of Urban Environment, Chinese Academy of Sciences, visited the project team in Dortmund. The purposes of the visit was to exchange ideas and learn about different technologies and approaches, which could be used to implement nature-based solutions in proGireg front-runner city Ningbo,

Nov 2020 - Co-design of Ningbo's Living Lab -Yuehu Park (Moon Lake Park) with local stakeholders in Ningbo

2021 - On going water quality monitoring and observations on users.

Sept 2022 - MOOC on nature based urban regeneration

UrbiNAT <https://urbinat.eu/>

Nature of China collaboration: Nanhai district is a high technology area in Foshan, Guangdong province in south China, and is an Observer city in URBiNAT. A Healthy Corridor will be built and act as a “green connection” that connects important nodes of the city, improves citizens' travel convenience, and contributes to healthy footpaths in the city. Five Living labs will be built and various NbS will be implemented when creating the healthy corridor. China’s participation is coordinated by the National Smart City Joint Lab (NSCJL), founded by the Chinese Society for Urban Studies (CSUS) to create a strongly networked body focused on supporting a development-oriented smart cities agenda across China. NSCJL cooperates closely with numerous cities in China, such as Shenyang, Nanhai (Foshan), and Hefei, that are connected with and get inspiration from URBiNAT’s notions of NBS, Healthy corridors, Living Labs, and co-creation.

Chinese Partner/s: Nanhai district

Funding for Chinese partners: No

Main outcomes: The NSCJL has invited various URBiNAT partners to take part in events promoting URBiNAT in China. A larger number of experts and senior city officials in China have become aware of the project, its focus and key objectives.

EdiCiNet <https://www.edicitnet.com/>

Nature of China collaboration: Guangzhou is follower city in EdiCiNet. The Guangzhou City Team, which includes representatives from government agencies and specifically municipal community engagement teams, research institutions, and a design agency, is a policy research and planning team that aims to promote ECS planning projects effectively. The main objectives of the team are to promote a safe, stable, and efficient food supply in the city, and to encourage community-based public participation in urban food planning.

Chinese Partner/s: Guangzhou Urban Planning & Design Survey Research Institute

Funding for Chinese partners: Yes

Main outcomes: Webinars, networking sessions

Jan 2022-Webinar Integrating Edible City Solutions in Southern China – Best Practices from Guangzhou
 Guangzhou has successfully embedded urban agriculture into its city landscape, and in collaboration with the EdiCitNet Project, the Guangzhou City Team has developed an Edible City Masterplan that aims to take that good work one step further.

Urban EU China (2017-2019) <https://www.urbaneuchina.eu/en>

Nature of China collaboration: The key impact of URBAN-EU-CHINA was to develop a robust, evidence driven bottom-up approach to complement the existing top-down EU-China strategic pathway to sustainable urbanisation. This was accomplished via a coordinated series of actions including: a Strategic Research & Innovation Agenda (R&I agenda/RIA1 and RIA2), scoping and assessment, networking events, peer-to-peer exchanges, benchmarking and monitoring, and joint demonstration projects. By creating tighter coupling between city-level, national, and supra-national programmes, planning, policies, and projects, URBAN-EU-CHINA aimed to yield a significant increase in cooperative EU-CHINA R&I activities.

Chinese Partner/s: European Union Chamber of Commerce in China (EUCCC), China Academy of Urban Planning and Design (CAUPD), China Centre for Urban Development (CCUD), China Intelligent Urbanization Co-creation Centre for High Density Region (CIUC), University of Nottingham Ningbo (UNNC)

Funding for Chinese partners: Yes

Main outcomes: Network meetings, surveys and publications.

Dec 2019- The EU-China Smart Sustainable Cities Event, in Brussels brought together around 40 actors involved in EU-China Cooperation on sustainable urban development.

Publications

Strategic Research and Innovation Agenda for EU-China Cooperation on Sustainable Urbanisation Volume 2 University of Nottingham, Österreichische Forschungsförderungsgesellschaft (2019)

Urban-EU-China alignment paper (no. 2) Urban-EU-China innovation platform on sustainable urbanisation -University of Nottingham, Österreichische Forschungsförderungsgesellschaft (2019)

Cooperation Plans and Guidelines -Nikolaos Kontinakis (EUROCITIES), Liu Yue, Hou Baige, Li Yun, Jinjing Zhang (CCUD) Yu Wang, Pål J. Aune, Annemie Wyckmans (NTNU), Michelle Zhang (EUCCC) Julianti Putri Setiawan (NTNU) (2019)

TRANS-URBAN-EU-CHINA <http://transurbaneuchina.eu>

Nature of China collaboration: TRANS-URBAN-EU-CHINA aimed to help policy makers, urban authorities, real estate developers, public service providers and citizens in China to create socially integrative cities in an environmentally friendly and financially viable way. It also aimed at helping urban stakeholders in Europe to increase their knowledge about urban development in China and to reflect their own approaches towards sustainable urbanisation.

Chinese Partner/s: The China Academy of Urban Planning and Design, The Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, The Chinese Academy of Science and Technology for Development, The China Centre for Urban Development, China Intelligent Urbanization Collaboration Co-creation Centre for High Density Region, Tsinghua University

Funding for Chinese partners: Yes

Main outcomes: Policy briefings, journal articles, reports. A compendium of tools for the transition towards socially integrative cities was elaborated. It comprises the definition of socially integrative cities, thirty tested tools which have proven to be useful in a number of cities in Europe and China, good practice examples, and further references for reading.

Policy briefs as well as guidelines for cities, storylines and recommendations regarding the transition towards socially integrative cities were elaborated. They contain a number of practical suggestions for strengthening urban sustainability. They have been discussed with experts from practice, academia and the civil society in both parts of the world.

Publications

Towards Socially Integrative Cities – Perspectives of Sustainable Urbanisation in Europe and China” Bernhard Müller, Jian Liu, Jianming Cai, published in May 2021. The book deals with the transition towards urban sustainability through socially integrative cities in Europe and China. It shares the impactful original research results of an EU-funded R&I project involving eight European and six Chinese partners and shares original research results of the project. ISBN-10 : 3039366785

3.2 2018-2020 Programme- Nature-based solutions for restoration and rehabilitation of urban ecosystems.

REGREEN <https://www.regreen-project.eu/>

Nature of China collaboration: REGREEN works through Urban Living Labs (ULLs) as the central elements of the project, where co-creation of knowledge involves local citizens, schools, businesses, organisations and public administrations enabling new forms of urban innovation. Three Chinese cities are part of the project:

Beijing - the following ULL actions are in place: development of best management practices in urban greening, involvement of a broad range of stakeholders in NBS projects, educating school children

Shanghai - the following ULL actions are in place: preparation of a wetland field practice base for college students, organisation of bird watching tourism and mangrove planting

Ningbo - the following ULL actions are in place: integration of policy guides and business models with technical measures of NBS, participation of stakeholders in participatory boards, implementation of educational outreach of NBS knowledge

Chinese Partner/s: Shanghai University of International Business and Economics, Tsinghua University, Fudan University

Funding for Chinese partners: Yes

Main outcomes: Videos, Podcasts, Journals, factsheets, webinars, urban eco explorer app, educational platform

Journals

Banzhaf, E., Wu, W., Luo, X., Knopp, J., (2021) Integrated mapping of spatial urban dynamics-a european-chinese exploration. Part 1-methodology for automatic land cover classification tailored towards spatial allocation of ecosystem services features.

Banzhaf, E.; Anderson, S.; Grandin, G.; Hardiman, R.; Jensen, A.; Jones, L.; Knopp, J.; Levin, G.; Russel, D.; Wu, W.; Yang, J.; Zandersen, M. (2022) Urban-Rural Dependencies and Opportunities to Design Nature-Based Solutions for Resilience in Europe and China.

Wu, W.; Luo, X.; Knopp, J.; Jones, L.; Banzhaf, E. (2022) A European-Chinese Exploration: Part 2—Urban Ecosystem Service Patterns, Processes, and Contributions to Environmental Equity under Different Scenarios.

CLEARING HOUSE <https://clearinghouseproject.eu/>

Nature of China collaboration: CLEARING HOUSE uses trees as a means to improve urban living in both Europe and China. The main objective of CLEARING HOUSE is to analyse and develop – across China and Europe – the potential of UFNBS (Urban Forest Nature-Based Solutions) for enhancing the resilience of cities facing major ecological, socio-economic, and human wellbeing challenges. The experiences of the European case studies are shared and compared with those of the Chinese cases in Beijing, Hangzhou, Hong Kong, Guangzhou, Huaibei and Xiamen

Chinese Partner/s: The Research Institute of Forestry Chinese Academy of Forestry, Beijing Forestry University, Guangzhou Institute of Forestry and Landscape Architecture, Zhejiang University, Shenzhen Fairy Lake Botanical garden. The University of Hong Kong – Shenzhen Institute of Research and Innovation.

Funding for Chinese partners: Yes

Main outcomes: Podcasts, Journals, factsheets, webinars in English and Mandarin, Sino European case studies

Journals

Jiali Jin; Stephen R.J. Shepard; Baoquan Jia; Cheng Wang (2021) Planning to Practice: Impacts of Large-Scale and Rapid Urban Afforestation on Greenspace Patterns in the Beijing Plain Area

4 EU-China Co-Funding Mechanism (CFM) In Horizon 2020

In 2014, the Horizon 2020 programme ceased to automatically fund Chinese applicants. Cofunding mechanisms (CFMs) are now used to fund the activities of some Chinese partners in H2020. The CFMs involve Chinese ministries: Chinese Ministry of Science and Technology (MoST), China Science and Technology Exchange Centre (CSTEC) and the Ministry of Industry and Information Technology (MIIT), as well as one Chinese funding agency, the National Natural Science Foundation of China (NSFC).

Under Horizon 2020, MoST cofunded eight projects out of 12 (67%). Those not being covered by MoST account for 15% of the overall Chinese financial contribution to urbanisation projects, meaning that by covering eight of twelve, MOST has supported 85% of the costs incurred by Chinese participants in sustainable urbanisation.

The funding framework needs to be considered in this report. Projects where Chinese partners have not received any funding have been limited in their activities and consequently their impact.

5 Summary of Benefits Of EU-China Collaboration On NbS

The questionnaire findings show the overall benefit of the EU-China collaboration on NbS at a partner level. 53% said that the key benefit of their collaboration had been a general awareness raising on NbS. The **knowledge and experience sharing** has mainly been via webinars, workshops and networks e.g., Urban By Nature (UbN). The collaboration has allowed stakeholders from Europe and China to learn more outside their local/regional or thematic areas on a range of topics such as:

- Sponge cities and urban flood protection
- Planning NbS
- Monitoring and evaluating NbS
- Replicating NbS
- Urban nature planning and management
- Urban climate resilience
- Nature based economy
- Urban forests and NbS delivery
- Ecosystem restoration

NbS as an umbrella concept provides another angle for local members and stakeholders to realise the correlations, synergies, and multi-scale benefits of their activities. Using this they can gain an **in-depth understanding of China's urban NbS practices**. This has been particularly apparent when partners from European visited China and vice-versa.

Exchanges between practitioners across Europe and China have helped them to further develop approaches suitable for upscale or deepen their practices. An opportunity for **cross sectoral learning and reflection** has been provided during webinars. These have included Chinese participants from various fields such as Sponge Cities, Urban Forests etc.

The collaboration has been strengthened when there is direct funding to Chinese partners. The REGREEN project has been able to develop a number of innovative methods of collaboration e.g., podcasts, apps, films and MOOC³s, as well as reports and journal articles. When funding is available, there is evidence of learning on NbS being put into practice.

³ Massive Open On-line Course

A practical example of this is in the proGInreg project. When staff from the Institute of Urban Environment - Chinese Academy of Sciences, visited the project team in Dortmund in 2019 the visit led directly to the co-design of Ningbo's Living Lab -Yuehu Park (Moon Lake Park) with local stakeholders in Ningbo.

Funding aside, there is also evidence that the learning on NbS from China can be replicated in Europe if pre-existing relationships between European partners and Chinese partners are built on in project work. A practical example is on the GrowGreen project when partners from the local University and City Council in Manchester did a site visit to the Wuhan Sponge Cities programme in November 2018. As a consequence of this visit a sponge park was constructed in Manchester based on the design principals observed in Wuhan.

Extending on from this, the evidence would suggest that the collaboration on NbS between Europe and China can be strengthened when working on a specific area of NbS such as sponge Cities or Urban Forests as in the case of the Clearing House project which has a number of Chinese forestry partners and has developed a joint Sino-European Urban Forest-NBS typology and Sino-European Urban Forest Co-design event.

6 Challenges of EU China Collaboration

As previously stated **funding** for Chinese partners can improve the depth of collaboration. For projects where Chinese partners have not had any funding such as GrowGreen, Unalab and UrbanGreen Up-collaboration has been less.

Urban EU China have also alluded to the fact that despite Chinese researchers being told that MoST co-funding is not compulsory to participate in H2020 and that they can find their own sources of funding, the reality is that there are only a limited number of priority topics. Hence, if they are not prioritised at the national level, they are also unlikely to be prioritised at the provincial or municipal levels. There are no other opportunities to find funding for participation in international cooperation's.

In the Urban EU China Deliverable #11 Cooperation Plans and Guidance (2019), the challenges of Chinese and European Cities working together are described in detail:

- Language barriers.
- Business culture and practices gap.
- Incomparable structural contexts/situation (e.g. city size, development dynamics, demographic changes, etc.).
- Differences in political systems, power and administration structures, decision-making and endorsement processes.
- Differences in time management and design and implementation timelines.
- Long distance between Europe and China requiring costly and time consuming travel.
- Lack of staff and resources dedicated to long-term international cooperation, especially when benefits are not tangible or are more long term.
- Criticism in the local press for the resources invested in international activities instead of addressing local needs.
- The need to be up-to-date on changes and developments (political, economic, social, regulatory, etc.).
- It is difficult to follow or be aware of changes in key staff/personnel that may result in unexpected communication channels shut-down or stall project implementation.

- Political cycles (both for elected and appointed politicians) can create periods of inactivity or indifference to international relations,
- Difficulty to identify relevant joint projects,
- City-to-city partnerships are slow to deliver concrete results. It is challenging to handle expectations with limited resources and pressure from stakeholders.
- Some cities wait for their counterpart to take the initiative or bring the ideas and expertise. One of the counterparts may feel that there is an uneven or unbalanced flow of knowledge or resources. There may be a lack of reliable partners or lack of the direct contact with the counterpart city.
- Lack of adequate or suitable organisations/institutions that can work with and represent a city's interests abroad (European cities' interests in China and vice versa).
- Local government cannot always communicate, work with or understand and represent the objectives of all their local triple/quadruple helix stakeholders.
- Differences in the size, priorities, working rationale, result measurement, and/or the capital structure of European and Chinese companies that work with/for cities.
- Lack of a reliable, jointly created platform which facilitates bilateral exchanges.

These challenges also apply to EU China collaboration with travel restrictions post COVID presenting more of a challenge than in 2019. Survey results and interviews all echoed issues around travel, language and political/cultural barriers and were cited as the main challenges to collaboration.

Feedback from ICLEI East Asia, coordinators of the Urban By Nature China network articulated some of the non-financial and travel related challenges as “**getting the right mix of stakeholder engagement**”. Pivotal actors and collaborators are required to access local stakeholders and more detailed stakeholder mapping work is needed. A core partner who is impactful in the local community such as a local Chinese university is very useful to have as part of a project consortium.

7 How can EU–China NbS collaboration be sustained beyond H2020?

A number of key factors have emerged to maintain successful NbS collaborations between the EU and China.

7.1 EU-China NbS Collaboration at Project Level

Strategic fit at EU-China level - In China, the “13th Five Year Plan for Economic and Social Development” has goals for improving the quality of the environment and resolving serious ecological and environmental problems. The 14th Five Year Plan will prioritise climate change and sustainable development. In the frame of China’s Ecological Civilisation policy, targets are set for sustainable development. They are tested in several provinces that are defined as experimentation zones. 90 cities are Ecological Civilisation demonstration zones.

China is a champion of NbS and has already made good progress. NbS have been gradually integrated into China’s policies, for example the National Strategy for Climate Change Adaptation 2035, and the Guidance for Ecological Conservation and Restoration Programmes of Mountains, Rivers, Forests, Farmlands, Lakes, and Grasslands. China has also accumulated a great deal of experience in spatial planning, and conservation and the restoration of landscapes and important ecosystems across the country.

In Europe, the ambition of research and innovation policy is to position the EU as leader in innovating with nature to achieve more sustainable and resilient societies. NbS supports major EU policy priorities, in particular the European Green Deal, biodiversity strategy and climate adaptation strategy, as a way to foster biodiversity and make Europe more climate-resilient. There are funding opportunities for NbS projects in Horizon Europe, European Structural and Investment funds, LIFE (l'instrument financier pour l'environnement) and COST (European Cooperation in Science and Technology). Evidence suggests that the strategic direction is well aligned for continued EU–China Collaboration on NbS.

Funding for Chinese partners - Funding partners is essential for impactful collaboration to take place. The most likely source of funding for EU-China collaboration on NbS will be via the CFM in Horizon Europe. The EU and China intend to bring forth two flagship initiatives under Horizon Europe:

- Food, Agriculture and Biotechnologies
- Climate Change and Biodiversity.

Through the future CFM, the Chinese Ministry of Science and Technology (MOST) will provide financial support to Chinese mainland participants in Horizon Europe projects under the flagship initiatives.

Right mix of stakeholders in the consortium - Urban-EU-China has looked at what steps the most successful city-to-city cooperation between Europe and China have taken to get there. In the cooperation plans guidelines (2019) they suggest the quadruple helix of partners from government, academics, industry and civilians can overcome some of the challenges. In the helix model the different organisations play overlapping roles. In this way, a degree of joint representation can be created. For example it is not necessary for a local government to participate in all delegations if the local university or chamber can represent the interests of the whole city. According to their research the flexibility in participation and use of resources by all partners is a direct result of working in a helix.

Local liaison teams in China - Research from Urban-EU-China and direct experiences of UbN and GrowGreen highlight the importance of identifying resources in China who will provide local liaison. Work with European and Chinese Cities suggests that a difficult communication link or an active / passionate person or team can make or break a successful partnership.

As highlighted by ICLEI East Asia, pivotal actors and collaborators are required to access to local stakeholder. A core partner who is impactful in the local community such as a local Chinese university is very useful to have in a project consortium. This concept is also highlighted by Manchester City Council on the GrowGreen project in their work with Wuhan. A Manchester City Council funded officer in the Foreign and Commonwealth Office in Wuhan was played a critical communication role with the local stakeholders at the university and across different departments of the municipality.

7.1.1 Collaboration in a formal NbS network and research portal

60% of respondents to the questionnaire said they would wish to continue to access a formal NbS network such as UbN and two thirds (66%) would like access to a NbS research portal. Setting up a formal NbS network and research portal would always have the inherent risk that it ends when project funding finishes. Various networks and research portals relating to sustainable urban development have been created since the EU-China Urbanisation Partnership started in 2012 but not many of these have been sustained beyond the end of the funding.

For example, the EC-Link platform (October 2013 – September 2020) cofunded by the Directorate General for International Cooperation and Development of the European Union. The platform brought

together stakeholders from economics, science, municipalities and NGOs through various functionalities to help to overcome barriers such as lack of experience, lack of contacts and language barriers. If this was still in existence, a dedicated area on NbS could have been added to the platform. If on an going EU- China NbS network and portal are to be provided it would be resource efficient to develop and sustain current networks rather than setting up new ones to replace expired ones.

7.1.2 Urban By Nature (UbN) China programme

Continuation of the UbN China programme developed in Connecting Nature and Clever Cities would provide a continuing formal NbS network. Launched in November 2020 and tailored to the needs and interests of Chinese local governments and urban stakeholders, UbN China provides capacity building and good practice exchange on a variety of topics including stakeholder engagement, technical implementation and monitoring of NbS. The China programme is part of a wider initiative that facilitates capacity building programmes promoting exchange among cities, researchers, SMEs and NGOs to build bridges with NbS communities across Europe, Asia, Latin America, and other interested regions. UrbanByNature is powered by ICLEI Europe, in cooperation with ICLEI's regional offices across the world and ICLEI's World Secretariat. The programme is hosted by ICLEI's Cities Biodiversity Centre through its Cities With Nature platform.

In their work managing the China programme, ICLEI East Asia, have identified a number possibilities for a continuation of the China programme to move from knowledge and information sharing to specific action on NbS:

- Community supporting 'next-step' exchanges → action pathways, integrated methods, replicable experience
- A toolbox for systematic understanding of NbS → providing different scenarios and approaches to applying NbS
- Localisation or re-evaluation of local/traditional knowledge and practices → developing local experience database/information centre for NbS practice at different scales
- Community development:
 - Open-end question and answer sessions
 - Social networking groups
 - Engagement based activities
- A development of a hub for:
 - Synergising different aspects, practices, resources for capacity-building
 - Bridging resources and financial support to actors
 - Knowledge-to-action dialogue

As the Chinese programme is part of the wider UbN programme and is hosted by ICLEI's Cities Biodiversity Centre through its Cities with Nature Platform, this option provides potential to sustain these activities beyond the life cycle of individual project funding. The Cities with Nature Platform is not NbS specific but provides a shared platform for cities and their partners to engage and connect, working with shared commitment towards a more sustainable urban world.

7.1.3 IURC (International Urban and Regional Cooperation)

As the second phase of the International Urban Cooperation programme (IUC) (2016-2020), IURC aims to lead and develop a form of decentralised international urban and regional cooperation in sustainable urban development and innovation. This is in partner countries and regions in line with the external dimension of "Europe 2020." IURC aims to provide a Global Network of reference for urban and regional innovation.

The overall objective of IURC China Programme is to lead and develop urban and regional cooperation between the EU and China.

- Component 1 supports cities from both sides to develop approaches and implement solutions to common urban challenges.
- Component 2 supports a limited number of Chinese and EU regions/provinces – to be understood as sub-national entities – to develop and implement innovation actions for regional and local development cooperation and investments on a mutual benefit basis.

Whilst this project is not focused on NbS specifically, the thematic networks of Ecological transition and Green Deal, Urban and Regional renewal and social cohesion, innovative sustainable and carbon neutral ecosystems align with the NbS agenda.

The REGREEN Nature Solutions Platform - is still being developed and shares insights, knowledge and experience on NbS with SME's, NGOs, Cities, schools and other interested communities. It is also an online crowdfunding site where NbS owners can gain insights on crowdfunding and connect with opportunities to fund their NbS.

Oppla - is the EU Repository of Nature-Based Solutions. It provides a knowledge marketplace where the latest thinking on natural capital, ecosystem services and NbS is brought together. Oppla is an open platform that is designed for people with diverse needs and interests, from science, policy and practice; public, private and voluntary sectors; organisations large and small, as well as individuals. Although the platform does not contain data solely on China it has a good filtering system to access research information on China and can provide a useful repository for current EU-China based research on NbS.

8 Conclusions

This document demonstrates that there has been a great deal of collaboration in the field of NbS between the EU and China since the start of the EU-China Urbanisation Partnership in 2012. Both within and also outside of the H2020 funding programme there have been various networks and platforms established between the EU and China on the topic of sustainable urbanisation.

The findings of this report suggest that there continues to be value in EU and Chinese stakeholders collaborating in NbS. However, the development of a new NbS network and research portal does not need to be established as existing initiatives such as UbN, IURC, Regreen and Oppla could be utilised to meet this objective.

From a project perspective, the EU and China policy on sustainable development is still aligned to the extent that Chinese partners strengthen future Horizon Europe consortia. However, to increase the likelihood of their successful participation they require co funding to ensure adequate financial and human resources are available. When identifying local Chinese partners to join a consortia the quadruple helix of partners from government, academics, industry and citizens would help to overcome some of the inherent challenges in collaboration.

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