


## FUSHAN ECOLOGICAL PARK – QINGDAO, SHANDONG PROVINCE, CHINA

Section	 <p><b>CLEARINGHOUSE</b> 中欧城市森林应对方案</p> <p><i>This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 821242</i></p>
<b>1</b>	<b>TITLE OF CASE STUDY AREA:</b> Fushan Ecological Park, Qingdao, Shandong Province, China
<b>2</b>	<p><b>INTRODUCTION</b></p> <p>Qingdao is located on China’s Yellow Sea coast. It is a major city in the eastern Shandong Province and has a metropolitan area of 10,654 Km<sup>2</sup>. It is a major nodal city of the One Belt, One Road initiative that connects Asia with Europe. The permanent resident population in Qingdao is 9.49 million and urban population has reached 67.92% in 2019. Qingdao is considered as one of the most liveable cities in China, with its fresh sea air, breezy and laidback vibe. With the GDP of 11741.31 billion (2019), Qingdao is also leading Shandong Province in the size of a local economy.</p> <p>This project is located in Laoshan district, Laoshan is a mountain in Qingdao city that near the East China Sea, which is close to the downtown of Qingdao City. The rapid development of urbanisation and tourism of Laoshan district has negative impacts on city environment and human settlements. The Laoshan has been destroyed by quarrying, and lots of illegal building had been built in that mountain. The real estate, hotels and sea farming also destroyed the coastline and habitats of plants and animals. The urban parks are unable to provide enough space for citizens, and the connectivity of urban greenspace landscape is poor.</p> <p>To restore the Fushan mountain environment in Laoshan districts, the government of Laoshan district has launched this project in 2016. The first goal of this project is to restore the Fushan mountain by NBS and improve the landscape connectivity. And another goal is to provide a space for the recreation of citizens.</p>
<b>3</b>	<p><b>KEY FACTS AND FIGURES OF THE CASE STUDY AREA</b></p> <p><b>Biogeographic region</b><sup>1</sup>: Humid subtropical and humid continental regimes  <b>Surface area:</b> 360.30 ha  <b>Country:</b> China  <b>Region/Province:</b> Qingdao, Shandong Province, China (code of Administrative boundary: 370200)</p>

<sup>1</sup> <https://www.eea.europa.eu/data-and-maps/data/biogeographical-regions-europe-3>

<p><b>4</b></p>	<p><b>LOCATION MAP(S)</b></p> <p style="text-align: center;">Location in China      Location in Shandong Province      Location in Qingdao City      Laoshan District</p> <p style="text-align: center;">Fushan Ecological Park</p> <p style="text-align: right; font-size: small;">This layout map is modified base on the Fushan Eco-Park Design and Planing</p> <p>Location of the study area – Fushan Ecological Park in Qingdao, Shandong Province, China (modified by Jiali Jin)</p>
<p><b>5</b></p>	<p><b>NAME OF MUNICIPALITY AND WEBSITE ADDRESS</b>  City of Qingdao: <a href="http://www.qingdao.gov.cn/">http://www.qingdao.gov.cn/</a>  Laoshan District: <a href="http://www.laoshan.gov.cn/n15555905/index.html">http://www.laoshan.gov.cn/n15555905/index.html</a>  Introduction of Fushan Ecological Park: <a href="https://www.youtube.com/watch?v=XDnQg49HEmo">https://www.youtube.com/watch?v=XDnQg49HEmo</a></p>
<p><b>6</b></p>	<p><b>LEAD ORGANISATIONS:</b></p> <ul style="list-style-type: none"> <li>• Metropolitan City of Qingdao</li> <li>• Zhonghan Sub-district Office in Laoshan district</li> </ul>
<p><b>7</b></p>	<p><b>LOCAL CONTACT(S)</b>  Zhonghan Sub-district Office  Qingdao, Shandong Province, China  Tel: + 86 0532-58515625</p>
<p><b>8</b></p>	<p><b>PRINCIPLE UF-NBS (Urban Forests as Nature-Based Solutions) ACTION(S)</b>  <b>Provision of new infrastructure/facilities:</b></p> <ul style="list-style-type: none"> <li>• Restoration of quarry and wastelands, remove the illegal buildings and reforested</li> <li>• Reforestation and afforestation</li> <li>• Improvement of landscape connectivity by reconnecting the ecological corridors</li> <li>• Protect native tree species</li> <li>• Improvement of water storage and flood management</li> </ul>
<p><b>9</b></p>	<p><b>OTHER PRINCIPLE NBS ACTION(S) – non-UF</b></p> <ul style="list-style-type: none"> <li>• Build new public infrastructures (e.g. roads, toilets, parking lot)</li> <li>• Recreational and environmental educational activities (e.g., workshops for urban birds, bees or butterfly biodiversity, as well as native tree species, based on the botanic garden and wetlands park)</li> <li>• Improve the cemetery landscape</li> <li>• Recover the coastline and beach</li> <li>• Build the playground for citizens</li> </ul>

10	<p><b>LOCAL STAKEHOLDERS LIST ONLY</b></p> <p><b>1. Governing authorities:</b></p> <ul style="list-style-type: none"> <li>• Zhonghan Sub-district Office in Laoshan District,</li> <li>• Municipal Public Utilities Bureau in Laoshan District</li> </ul> <p><b>2. Associations:</b></p> <ul style="list-style-type: none"> <li>• Jinjialing Ecological Protection and Development Center</li> <li>• Sciences and technology associations (e.g. education and cultural),</li> <li>• Cultural, and sports, non-government actors (e.g. project contractors, seedling nursery developers, NGO/volunteers, farmers, previous land contractors, scholars and social media)</li> </ul> <p><b>3. Citizens:</b></p> <ul style="list-style-type: none"> <li>• Park wardens (mostly not volunteer, usually the government pays for them),</li> <li>• Citizens for maintain and cleaning gardens (not volunteer, e.g. gardeners),</li> <li>• Citizens who are related association members,</li> </ul> <p><b>4. Municipalities:</b></p> <ul style="list-style-type: none"> <li>• Zhonghan Sub-district</li> <li>• Laoshan District</li> </ul> <p><b>5. Public/private institutions:</b></p> <ul style="list-style-type: none"> <li>• Public institutions:             <ol style="list-style-type: none"> <li>1) Related departments in Zhonghan sub-district (e.g. budget, communication);</li> <li>2) Jinjialing Ecological Protection and Development Centre</li> </ol> </li> <li>• State-owned enterprise: Urban and Rural Landscape Planning and Design Institute, China Construction Engineering Design Group Co., Ltd</li> </ul> <p><b>6. Park planner and authorities:</b></p> <ul style="list-style-type: none"> <li>• Planner: Urban and Rural Landscape Planning and Design Institute, China Construction Engineering Design Group Co., Ltd;</li> <li>• Authorities and administrative Division: Zhonghan Sub-district Office</li> </ul> <p><b>7. Technicians for park maintenance/monitoring and to educate and support citizens:</b></p> <ul style="list-style-type: none"> <li>• Zhonghan Sub-district Office and Municipal Public Utilities Bureau in Laoshan District, and other contractors/companies that have contracts with them</li> </ul>															
11	<p><b>UF-NBS FRAMEWORK</b></p> <table border="1" data-bbox="210 1357 1511 2121"> <tr> <td data-bbox="210 1357 274 1666">a.</td> <td data-bbox="274 1357 555 1666"><b>UF-NBS typology</b></td> <td data-bbox="555 1357 874 2121" rowspan="4" style="background-color: black;"></td> <td data-bbox="874 1357 1511 1666"> <ul style="list-style-type: none"> <li>• Forest plantation;</li> <li>• Woodland play area (e.g. urban forest parks);</li> <li>• Tree rows;</li> <li>• Coastal green corridors and belt park;</li> <li>• Rainwater gardens;</li> <li>• Ornamental trees;</li> <li>• Choice of plants (i.e., native tree species, non-indigenous ornamental tree and plant species)</li> </ul> </td> </tr> <tr> <td data-bbox="210 1666 274 1912">b.</td> <td data-bbox="274 1666 555 1912"><b>Integration</b></td> <td data-bbox="874 1666 1511 1912"> <ul style="list-style-type: none"> <li>• Water management system (e.g., water storage);</li> <li>• Built-up structure (e.g., environmental education bases);</li> <li>• Transport infrastructure (e.g., parking lot, above-ground roads connecting to the park are planned);</li> <li>• Seaside Playground</li> </ul> </td> </tr> <tr> <td data-bbox="210 1912 274 2058">c.</td> <td data-bbox="274 1912 555 2058"><b>Network/connectivity</b></td> <td data-bbox="874 1912 1511 2058">Reconnected the green patches by trees rows based on the roads system and coastline to create green corridors.</td> </tr> <tr> <td data-bbox="210 2058 274 2121">d.</td> <td data-bbox="274 2058 555 2121"><b>Multifunctionality</b></td> <td data-bbox="874 2058 1511 2121">Multiple ecological functions of urban forest and trees are combined such biodiversity conservation,</td> </tr> </table>			a.	<b>UF-NBS typology</b>		<ul style="list-style-type: none"> <li>• Forest plantation;</li> <li>• Woodland play area (e.g. urban forest parks);</li> <li>• Tree rows;</li> <li>• Coastal green corridors and belt park;</li> <li>• Rainwater gardens;</li> <li>• Ornamental trees;</li> <li>• Choice of plants (i.e., native tree species, non-indigenous ornamental tree and plant species)</li> </ul>	b.	<b>Integration</b>	<ul style="list-style-type: none"> <li>• Water management system (e.g., water storage);</li> <li>• Built-up structure (e.g., environmental education bases);</li> <li>• Transport infrastructure (e.g., parking lot, above-ground roads connecting to the park are planned);</li> <li>• Seaside Playground</li> </ul>	c.	<b>Network/connectivity</b>	Reconnected the green patches by trees rows based on the roads system and coastline to create green corridors.	d.	<b>Multifunctionality</b>	Multiple ecological functions of urban forest and trees are combined such biodiversity conservation,
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			improvement of city resilience, flood management and water storage. This project also meets the needs of the community (recreation, social activities, environmental education).
e.	Multi-scale		This project is totally located on Zhonghan sub-district.
f.	Strategic planning processes		This project has been characterized by a strong government intervention in terms of planning and implementation. Non-government (private project contractors, seedling/nursery companies, NGOs/volunteers, universities/research institutes or groups) and individual citizens have been involved in the strategic approach.
g.	Inter- and transdisciplinary		A variety of actors from different disciplines (e.g. landscape architecture, ecology, urban planning, water management, plantation), which include administrative authorities, landscape planners, scholars/professional experts and individual citizens.
h.	Social cohesion and biocultural diversity		Today, social cohesion occurs by sharing the ecological services provided by Fushan Ecological Parks. Citizens or tourists will do some sports activities in the rebuilt urban woodland playground and cycling in this park. Most people come here and enjoy their family time. Some environmental education workshops have been organized here. Also, some artists will come here for painting and photography.
i.	Governance arrangements	I. Project management structure.	<p><b>Project coordinator:</b> Laoshan District, altogether Zhonghan sub-district departments (Project coordinators usually confirm other project collaborator by opening tenders.)</p> <p><b>Project Planner:</b> China Construction Engineering Design Group Co., Ltd</p> <p><b>Project implementation</b></p> <p>1) Investment: Zhonghan sub-district office</p> <p>2) Construction, operation: some sub-contractors might also exist such as (road construction companies, plantation companies, seedling, etc.)</p>
		II. Local community engagement and the nature of their engagement.	<p>Several communities were involved during the whole cycle of Fushan Ecological Parks.</p> <p><b>Experts (e.g. planners, researchers, professionals) community:</b> experts on landscape architecture, ecology, urban planning, water management, plantation, biodiversity, landscape architecture, arboriculture, were engaged in the planning and implementation of Fushan Eco-Park. Their engagement was to review the planning of this project and provided their comments/suggestions. Usually, the project coordinator and planner organized several seminars during the whole cycle of this project, including planning and implementation.</p>

				<p><b>Local citizen stakeholders</b> (e.g. citizen, workers): the local citizens have the rights to review the planning of Fushan Eco-Park and can speak out their suggestions or questions. Also, the citizen monitoring always existed during the implementation of this project, citizen. Sanitation workers also use gravels to create marine animals on the ground.</p>
		III. City-scale and/or region-wide governance for the project and/or UF-NBS (city and regional stakeholders and character of their engagement)		Zhonghan sub-district office is the project coordinator, working with Jinjialing Ecological Protection and Development Centre, and Municipal Public Utilities Bureau in Laoshan District. Urban and Rural Landscape Planning and Design Institute, China Construction Engineering Design Group Co., Ltd do the planning of Fushan Eco Park and Road landscape improvement project. Zhonghan Sub-district Office is financially supporting the planning and implementation of this project.
		IV. National and international governance context (national and international stakeholders and character of their engagement)		First level control on the sub-district level that monitors the project implementation.
		V. Other (specify)		
j.	<b>Institutional frameworks</b>	I. Project staff responsibilities.		<p><b>Zhonghan sub-district office, Jinjialing Ecological Protection and Development Centre, and Municipal Public Utilities Bureau in Laoshan District staff:</b></p> <ul style="list-style-type: none"> <li>• Planning and organisation of project’s activities</li> <li>• Quality control</li> <li>• Planning, organisation, and implementation of project’s communication activities</li> <li>• Informing project manager about progress and problems with communication activities</li> <li>• Budget planning</li> </ul> <p><b>Urban and Rural Landscape Planning and Design Institute, China Construction Engineering Design Group Co., Ltd:</b></p> <ul style="list-style-type: none"> <li>• Project background analysis</li> <li>• planning and design work</li> <li>• Future benefits analysis</li> </ul>
		II. Project Management Committee (Y/N) if Y.		Y – consists of representative of project partners (project managers of project coordinator’s organisations)
		III. Frameworks <u>above the project</u> that exert influence on the project and/or UF-		Zhonghan sub-district office approves this project. When it is done, the government did quality acceptance and evaluation of project.

			NBS e.g. Municipality, National Forestry Department.	
			IV. Private companies that work on behalf of/or are embedded within the project.	Project planner: China Construction Engineering Design Group Co., Ltd Construction contractors: companies that planting trees and other infrastructure construction.
			V. Trade representative organisations that are involved in the project	n/a
			VI. Regulatory frameworks that the project operates within (i.e. bylaws, municipal laws, national laws, licences and leases, partnership agreements etc)	Urban and Rural Planning Law of the People’s Republic of China Forestry Law of the People’s Republic of China Qingdao’s overall planning Qingdao Greenspace system Planning Other related guidelines that related Fushan Eco-Park
			VII. Other (specify)	n/a
	<b>k.</b>	<b>Economic frameworks</b>	I. Community fundraising	n/a
			II. Project delivered services and monies raised by project	n/c
			III. City, regional general funds	Yes
			IV. Special funds e.g. National Lottery, Challenge funds	n/c
			V. National government funds	n/a
			VI. Private sector investment	Very few non-government investments also exist, for various economical purposes such as tourism.
			VII. International funds e.g. European Union structural funds, LIFE + etc.	n/a
			VIII. Other (specify)	n/a
	<b>i.</b>	<b>Sino/European comparative relevance</b>		Qingdao could be translated ‘Green Island’ literally, and often dubbed as the ‘Switzerland of the East’. Also, Qingdao is one of the major cities of the One Belt, One Road initiative that connects Asia with Europe. This project located close to the seaside and aims to restore the coastal mountain and landscape connectivities, which can be compared with other

			coastal cities in Europe. However, the governance, institutional and economic framework of this project are quite different from European example, which is valuable for comparison (to find the similarities and differences). This also provide a good example to how to implement renaturing/NBS in a coastal urbanised area that can help to enhance the city resilience and provide more ES for citizens or tourists.
	<b>m.</b>	<b>UF-NBS valorisation</b>	Like other Chinese case histories, this project is also a government-dominated intervention that promoting the sustainability and resilience of Qingdao city. Restoration the Fushan Mountain by forests or trees (e.g. woodland, urban parks or other small greenspace patches) can maintain and improve the animal and plant biodiversity in high urbanised area. This project also can contribute to water storage and flood management. It is quite important for a coastal city. Besides, the new Fushan Eco-Park provide more recreation space for citizens, people can come to this Eco-Park cycling, running, or just enjoy the nature. This project also contributes to provide more job opportunities for social society (e.g. need more workers or staff to manage the new afforestation sites, develop eco-tourism).
	<b>n.</b>	<b>Procurement of UF-NBS</b>	This was organised by three-level hierarchical system, which include Laoshan District and Zhonghan sub-district, and project contractors. The Laoshan District and Zhonghan sub-district office controlled the whole project, such as making rules, appropriating funding and lands, organizing public bidding for project planning and design, implementation and project supervision. Those who got the tender were project contractors, including planner, and other engineering companies. Overall, this project has a top-down administrative systems.
	<b>p.</b>	<b>Ecosystem services (list the three most important services being provided in no more than 50 words)</b>	<ol style="list-style-type: none"> <li>1) Restoration of quarrying</li> <li>2) Improved the green and blue landscape connectivity in the coastal mountain, which is good for biodiversity conservation;</li> <li>3) the health and wellbeing benefits gained through the use of the recreation facilities.</li> </ol>
	<b>q.</b>	<b>Renaturing</b>	Reforestation and environmental redevelopment of areas that were quarry, illegal buildings, waste yard and vacant lots.
<b>12</b>	<b>LESSONS AND TRANSFERABILITY</b>		
	The whole cycle (including planning and implementation) of Fushan Ecological Park project had been completed in three years (from 2016 to 2018). This project shows the strong administrative capacity has improved the efficiency and effectiveness of project in high urbanised area. Despite the increased ecosystem services provide by Fushan Eco-Park, this project also contributes to improve the citizens' awareness of environment protection. However, how to manage this new park and improve the living conditions of newly planted trees? The future management of Fushan		

	Eco-Park is also challenging. The citizen participation was insufficient during the planning and implementation of this project.
<b>13</b>	<b>REFERENCES (Harvard style)</b>  All information is based on the Fushan Ecological Park project.