Kingdom of the Netherlands

Factsheet Sponge City Construction in China

This factsheet gives background information regarding the Sponge City Construction launched by the Chinese government as an approach to tackle water related problems in the cities of China. The concept of a sponge city was first mentioned in 2013 and refers to cities that are like sponges: with an infrastructure that collects excess rainfall and integrates flood control in urban planning. A "sponge city" will not only be able to deal with "too much water", but also reuse rain water in order to deal with "water shortages".

Background
China is a country with severe water problems, both in terms of water scarcity, flooding and water quality. Due to the rapid process of industrialization and urbanization and high frequencies of global extreme weather, the urban water problems have become very prominent in the last decade. This is reflected in the following 4 aspects:

- Clotting of urban flooded rainfall and low utilization of rainwater resources;
- Over-exploitation of groundwater. There is a severe shortage of urban water resources;
- Serious pollution of urban water bodies;
- Shrinking of river and lakes and wetlands. Increased water and soil erosion.

One important reason that leads to urban water flooding and scarcity is the wide use of cement in the urban construct leaving no room for woodland, grassland, lakes and wetlands that could have naturally detained water and which thus cut off natural water recycling. Rainwater can only be drained and discharged as waste water instead of being reused or supplementing ground water. Many cities' drainage network is out of date and functioned insufficiently. For instance, in Beijing, the construction of a drainage network didn't catch the pace of urban expansion, that has witnessed a double expansion in the past 10 years.

In order to tackle these problems, the concept of Sponge Cities was put forward since end of 2013. "Sponge Cities" are cities with an infrastructure that collects excess rainfall and integrates flood control in urban planning. A "sponge city" will not only be able to deal with "too much water", but also reuse rain water to help with "not enough water". Such transformation will reduce the economic losses due to urban flooding. At the same time, it will also create investment opportunities in infrastructure upgrading, engineering products and new technologies.

Sponge City Pilot project

The sponge city pilot program was launched in the end of 2014, under the direct guidance and support by the Ministry of Housing and Rural-Urban Development (MOHURD), Ministry of Finance, Ministry of Water Resources (MWR)

Overall objective: 70% of rain water will be absorbed and reused, by taking measures on improvement of water permeation, water detention, water storage, water purification, water drainage and water saving and water reuse. This goal should be met by 20% of urban areas by the year 2020 and by 80% of urban areas by the year 2030. Through the sponge city project, the impact of urban construction on natural eco-system is expected to be mitigated.

Overall approach: Construction and renovation of towns should be carried out in an integrated way. From the year 2015, all newly planned urban districts, all types of industrial parks, development zones and living community should be designed and built according to the new standard. The renovation work of old town community should focus on solving problems of water clogging, treatment of polluted water bodies and collection/reuse of rainwater. Building of cities constructions and related

infrastructure facilities with sponge function and related infrastructure, construction of public greenland(park) and eco system restoration will be pushed forward.

Implementation

Financial support: the Central government will initially allocate around RMB 5.9 billion starting funding for the next three (2016-2018). The distribution of that amount to pilot cities is based on the city level/size. For average, 600 million goes to municipalities directly under Central government, 500 million goes to provincial cities and 400 million is for other cities. For those cities by which PPP are introduced that reach a certain scale, additional subsidies up to 10% of the initial funding are added as the bonus. However, this subsidy is far from enough for accomplishing the whole project. The majority of funds are still expected to be raised by local municipalities. The commitment of funding from local municipalities is one of basic preconditions to apply for a sponge city project.

Selection of a pilot city: The three ministries are responsible for reviewing, evaluating and approving candidate cities recommended by their respective provincial governments, based on a series of criteria concerning rationality and feasibility of pilot goals, financing mechanisms and effectiveness of supporting measures from local government. The three ministries are also responsible for assessment of pilot project performance. For those that have achieved satisfactory result, 10% of basic funds will be given as a bonus; for those that fail funds will be taken back. The specific performance evaluation methods will be detailed later. So far, there are in total 16 pilot cities approved across China. It is expected that a total of RMB 86.5 billion will be invested in these projects, with the total constructed area of over 450 square kms. The average investment per km^2 reaches around RMB 190 million.

Other policy support: Other supportive policies are also outlined through the Guidance Opinions that has been released in October 2015:

1. innovation on mechanism of construction and operation;
2. Support from government should be clearly reflected on prioritized public fiscal budget allocation and government purchase portfolio;
3. Expanding financial methods and engage policy financial institutes and commercial financial institutes to work out innovative loan support.

Relevant Policies issued on Sponge City and Water Pollution Management

- Twelfth-Five-Year-Plan for Waste Water and Recycling Infrastructure Planning (State Council, 2012): Improve the overall capacity of waste water treatment; Total sewage treatment rate reaches 85% by 2015; Sludge harmless disposal rate reaches 70-80% by 2015; Recycled water utilization rate reaches 15% by 2015.
- Instructions for Urban Waterlogging Drainage System (State Council, 2013): Division of rainwater and sewage systems by 2018.
- Instructions on Enhancing Urban Infrastructure Construction (State Council, 2013) & Technical Guidelines for Urban Waterlogging Drainage System (MoHURD, 2013).
- Guidelines for the Sponge City (Low-Impact-Development) (MoHURD, 2014) & Guidelines for Promoting Sponge City Construction (State Council, 2015): Annual total runoff rate 80%-85%.
- Action Plan for Urban Water Management (State Council, 2015) & Guidelines for Urban Polluted and Odor Water Management (MoHURD & MEP, 2015): Reduce city odorous rivers to 10%, and eliminate all by 2030.
- Promoting Financial Support to Sponge City Development (MoHURD, National Development Bank, Dec 2015)
- Promoting sponge city' as one of the key priorities in the National Urbanization Conference (中央城市工作会议) (Dec 2015)

The working responsibilities of government:

The respective municipality is responsible for planning and construction of Sponge city projects at city level. The following central government bodies are directly involved in supporting:

National Development and Reform Commission (NDRC): Strengthens support on specially allocated funds on sponge city construction

Ministry of Finance: Promotes PPT and gives financial support

Ministry of Urban and Housing (MOHURD):

- Issue systematic objectives for urban flood and water logging control;
- Issue standards on urban infrastructure renovation and construction that meets the requirements of sponge cities
- Supervise sponge city work implemented by local governments and inspect and evaluate results of sponge city construction on 6 aspects, namely water ecology; water environment, water security, institutional capacity building and execution effectiveness.
- Popularize successful experiences of pilot projects.

Ministry of Water Resources: is responsible for functioning, guidance and supervision on water conservancy aspect of sponge cities

- Puts forward key water conservancy projects / measures and give technical support. For instance, develop key technical standard on water level, flow scale, water quality in key water saving spots within the cities and effective connection between water conservancy facilities and city drainage networks.
- Strict spatial control on rivers, lakes or other water body in cities and protection of the space of ecosystem essential for water circulation.
- Making smooth water mobility between different parts of city water system such as rivers, lakes, wetlands.
- Pushing forward treatment and restoration of city water eco system. Leaving river room and use ecological friendly measure on protection of river bank. Restoring of ecological functions of coastal areas. Strengthening treatment of polluted water body and restricting on exploitation of groundwater.
- Constructing on water conservancy engineering facilities that may help with water adjustment, storage and releasing compatible with natural conditions.
- Improving city flood prevention and drainage system with the combination of engineering facilities and emergency responding management.
- Strengthening management and conservation of city water resources with the principles of "three red lines".
- Guaranteeing work of city water supply and rainwater reuse.
- Working on prevention of city soil erosion and ecological treatment of water area based on small unit of water areas.

List of pilot sponge cities 2015

	City	Province	Chinese name
1	Bai Cheng	Ji Lin	白城, 吉林
2	Qian An	He Bei	迁安, 河北
7	Ji Nan	Shan Dong	济南, 山东
3	He Bi	He Nan	鹤壁, 河南
4	Chang De	Hu Nan	常德, 湖南
5	Wu Han	Hu Bei	武汉, 湖北
6	Ping Xiang	Jiang Xi	萍乡, 江西
8	Gui An New Area	Gui Zhou	贵安新区, 贵州
9	Zheng Jiang	Jiang Su	镇江, 江苏
10	Jia Xing	Zhe Jiang	嘉兴, 浙江
11	Chi Zhou	An Hui	池洲, 安徽
12	Xia Men	Fu Jian	厦门, 福建
13	Nan Ning	Guang Xi	南宁, 广西
14	Chong Qing	Chong Qing	重庆直辖市
15	Sui Ning	Si Chuan	遂宁, 四川
16	Xi Xian New Area	Shan Xi	西咸新区, 陕西

List of pilot sponge cities 2016

1	Beijing	Beijing	北京
2	DaLian	Liao Ning	大连，辽宁
3	Gu Yuan	Ning Xia	固原，宁夏
4	Qing Yang	Gan Su	庆阳, 甘肃
5	Qingdao	Shan Dong	青岛, 山东
6	Xi Ning	Qing Hai	西宁, 青海
7	Yu Xi	Yun Nan	玉溪, 云南
8	Yun Cheng	Shan Xi	天津
9	Ningbo	Zhe Jiang	宁波, 浙江
10	Shanghai	Shanghai	上海
11	Fuzhou	Fu Jian	福州，福建
12	San Ya	Hai Nan	三亚，海南
13	Shen Zhen	Guang Dong	深圳, 广东
14	Zhu Hai	Guang Dong	珠海，广东