The Urban Drainage System Project of Quanzhou

China

Best Practice

New for 2002

Categories: Disaster and Emergency:
- hazard reduction and mitigation
-reduction of vulnerability
-response capacity

Environmental Management:
- ecological sustainability
-environmental health
-pollution reduction
-urban greening

Level of Activity: Metropolitan

Ecosystem: Coastal

Summary

Situated in the southeast littoral of China and as one of the three largest central cities of Fujian Province, Quanzhou belongs to the first group of 24 historic cultural cities designated by the State. It is one of the most economically active and vibrant areas in Fujian Province with a per capita GDP of US$2100 in 2001. The Quanzhou metro area covers 11,000 square km with a population of 7.28 million, of which 680,000 people are living in the central urban area of 40 square km.

The purpose of the Urban Drainage System project was to improve the quality and sustainability of the urban environment. The method applied is that of detaining floodwaters with appropriate drainage facilities. The implementation of the project solved the long-standing problem of water logging in urban Quanzhou thus ensuring a safer and healthier environment for the urban population as well as improving the ecological conditions of the inner city zone.

Narrative

Situation before the initiative began

The former urban drainage system of Quanzhou was originally composed of several urban drainage ditches. As a result of lack of maintenance over a long time, the ditches piled up with sludge. Whenever typhoons, rainstorms or mountain torrents broke out, the quantity of water combined with tidal forces resulted in water logging. For the past few decades this situation has occurred four or five times each year causing considerable damage to property and creating unsanitary conditions. In Quanzhou's history, every time water logging happens, serious damage to people's lives and properties were occurred. The total loss of the water logging since 1949 amounts several hundred millions of US dollars. For example, the water logging of 16-20 September 1956 affected 37 communities, the flooding of 57 villages, over 5000 houses damaged resulting in direct economic loss of US$27,000,000 according to current prices.

Establishment of priorities

By the end of the 1980s, the waterlogging problem became a matter of top priority. The urban drainage system of Quanzhou no longer fulfilled its function owing to lack of maintenance. Whenever typhoons, rainstorms or mountain torrents broke out, the quantity of water combined with tidal forces resulted in water logging, affecting both the eco-system and the city's infrastructure and living environment. The lives and properties of the people and cities around the Jinjiang River were at risk. In order to solve these problems the Municipal Party Committee and government decided to completely realign the urban drainage system. The key points were: realigning the inner city drainage canal with a total length of up to

28.79 km; laying drainage pipes for rainwater and sewage; building three pumping stations in Puxi, Beifeng and Jinshan; two flood detention basins in Xibeiyang and Puxi; and one waste water treatment facility (the Baozhou Waste Water Treatment Plant).

Formulation of objectives and strategies

The Municipal People's Congress and Political Council Committee began to organize studies and surveys in 1996. Municipal departments responsible for public works and construction and experts began a series of on-site inspections and discussions. Public consultations were held to ascertain people's unmet needs and priorities. In January 1999, the Municipal People's Congress adopted a resolution on the Construction of Quanzhou Urban Drainage System. The technical objectives were quite clear and involved the implementation of a drainage and storage system that would withstand 100 year flood risk and 20 year torrential rain risk; and a water purification facility in compliance with the highest national standards with a daily capacity of 50,000 tons. The strategy adopted was to implement the project to the highest technical standards possible; to ensure maximum protection and preservation of the historic centre of the city and to take advantage of the substantial investment involved to undertake urban greening and other environmental improvements to promote more sustainable urban development. The project design team adopted a phased approach to implementation so as to minimize disruptions to people's lives and commerce.

Mobilization of resources

Financial resources: The total investment required amounted to US $86,230,000 of which US$ 52,420,000 were raised locally; US$ 6,030,000 in loans from Quanzhou Commercial Bank; US $18,120,000 in loans from the China National Development Bank; US$ 9,060,000 from Central Government support, and US $600,000 in subsidies from the Provincial Government.

Technological resources: The project was designed jointly by the China Civic Project Mid-South Design and Research Institute and the Quanzhou Planning Design and Research Institute. During construction a complete quality and safety control system was set up and applied to every construction team. The project was supervised, checked and verified to a strict standard.

Human resources: Under the leadership of the municipal government, people from the party, the government, the army, the police and the residents participated in volunteer project activity. Support was mobilised from departments at all levels of local government and from the participation of local residents. 67 professional construction teams, 4 supervising departments and 4 quality control departments participated in the project.

Process

The mayor of the city established an inter-departmental committee for project management and coordination. However, the key step was to seek the approval of the 12th People's Congress of Quanzhou City. As a result of awareness building campaigns led by the municipality and the media, the project was accorded the highest priority among all urban projects by the local congress. The congress noted the benefits that would accrue directly to more than 150,000 people in terms of improved environmental health and safety; prevention of damage to property; and, an improved natural ecosystem of the littoral. Mayor Shi Yongkang subsequently approved the No.8 Act of Quanzhou Municipal Government for the project. Volunteer Campaigns were launched such as the Sludge Cleaning Campaign, the Hundred-Day Campaign and the Three-Month Campaign to mobilise public opinion, awareness and participation in various aspects of the project.

During the project, technical methods were applied to reduce negative impacts on the environment and to reduce inconvenience for the residents. Firstly, technicians organized a study of the plan to ensure the quality and security of the project. Secondly, government official consulted with households in the demolition areas to move people in a timely and stress free manner. Under the principal of Voluntary Choice and according to the law, affected households were provided with compensation for re-housing. Poor families, overseas Chinese families and families with disabled or elderly persons were given priority. 1578 people of this category were re-housed. Thirdly, construction teams used the highest standards possible for on-site quality and security so as to minimize noise and dust pollution and traffic congestion.

Quality control departments appointed fully empowered teams to supervise and direct the construction work and to ensure compliance with technical standards and design parameters. These teams operated on site 24 hours a day, 7 days a week to provide continuous technical advice and problem solving. These teams played a very effective role and it is largely due to their inputs and involvement that the project was realized on time and without any major hitches.

Result achieved

The project solved the long-standing problem of water logging in urban Quanzhou. It has contributed significantly to the improvement of environmental health and safety. In 2000, a typhoon struck the area with five major rainstorms during which no water logging occurred. The overall standard of the city has being upgraded. The waterways and water system after the realignment have become new scenic features of the city. The historical profile of Quanzhou as a "Clean spring and fresh flowers" has been restored. The urban ecological condition and living environment have substantially improved. The Xibeiyang Flood Detention Basin has a capacity of floodwater detention of 82.3 hectares and 2 million cubic meters; and the Puxi Flood Detention Basin has a capacity of floodwater detention of 20.1 hectares and 900,000 cubic meters. The

project not only solves the long-term menace that threatened life and property of the residents, but has also enlarged urban water and green areas which are extensively used by the citizens for recreation and entertainment. The value of previously undesirable land and real estate around the urban drainage has increased. The completion of the project has seen major improvements in business and investment in the city. New residential estates, recreational and commercial areas and office blocks are being built all over the city. New residential communities such as Xinhua Community, Baolong Community, Xihu Community have since been established. The establishment of the Quanzhou water quality control centre now plays a significant role in ensuring civilian health, improving quality of life and protecting the Jinjiang River and Quanzhou Bay water system. The improved water quality and the newly designed parks and gardens along the banks of the waterways have become the new urban homes of several birds that are breeding in the city. Air quality has reached Class 2.

Sustainability

Financial and economic sustainability: Of the total investments of US$ 86,230,000, US$ 9,060,000 came from Central Government support, used for the construction sewage treatment facilities; US$ 600,000 was provided in the form of subsidies from the Provincial government, used for the construction of water treatment facilities; US$52,420,000 came from local fund raising of the municipal civic construction fund, equivalent to 25% of the municipal budget over the four-year duration of the project; US$6,030,000 came from loans from Quanzhou Commercial Bank, used for project construction, with an interest rate of 7.02%, repaid through the municipal budget. US$18,120,000 came from loans from China National Development Bank to be paid off within 8 years starting in 2001 at an interest rate of 7.02%, repaid by the municipal budget. The loan repayment represents 11% of annual municipal budget. No new taxes or fees were established to help pay back the loans, however, the improved economic climate has already raised municipal revenues.

Social and environmental sustainability: The Project, besides having contributed directly to reducing risks and vulnerability of people and property, has also contributed directly to cleaner water and better environmental health. Citizens feel much safer and are therefore in a better position to partake in public life. The parks and gardens and waterways created through the project have increased per capita green space from 4.3 square meters in 1997 to 8.14 square meters in 2001, providing for more convivial urban space. The historic heritage and centre of Quanzhou as a city of spring and flowers has been restored. The investment induced by the project has instilled a sense of renewed pride in the city. Together with the transparent and efficient manner in which the project was implemented, people have become much more engaged in civic life and activities. The realignment of the waterways has also contributed to a more rational use of space, which has become a premium in this very densely populated city.

Lessons learned

Strong leadership and political will are key contributing factors to the successful and smooth implementation of urban projects of this size. The leadership exercised by the Mayor and by the congress led to the establishment of well-coordinated committees, teams, supervision and quality control. By delegating authority to those committees and teams closest to problems that need to be solved, the project was completed in a timely manner. Also, efforts were made to ensure transparent contracting and bidding processes, in accordance with international norms and standards. This not only avoided cost overruns but also instilled confidence of both citizens and enterprises.

The phased approach to implementation minimized disruption to people's lives and their daily business. With careful planning and tight control of construction-site quality and the minimization of pollution, fears and potential resistance to the project were allayed.

Transferability

Within these two years, research teams and administrative construction officials from Guangdong, Shandong, Anhui, Jiangsu, Zhejiang, Jiangxi, Shanghai and some other provinces and cities have visited the Urban Drainage System of Quanzhou. They gave high praises on the construction and the functioning of the Urban Drainage System Project of Quanzhou and are presently seeking to adopt some of the methods, approaches and lessons learned to solving their own problems.

The numerous visits have also revealed further challenges that need to be addressed. Key among these is the rehabilitation of the upper reaches (not belonging to the urban drainage system) of the canal system which need to be further protected. Greening and water-earth balancing should be carried out to ensure better quality of water and improved water detention capacity.

In 2002, during the China Living Environment Seminar and The Third Public and Civic Facilities Exposition held in Beijing, and the China (Xiamen) International City Greening Exposition held in Xiamen, the urban drainage system project of Quanzhou was exhibited and received high praises.

After the initiative began, the People's Daily, the China Construction Paper and the Quanzhou Evening Paper and media has publicized and reported the relevant activities of the project.

Key Dates

May 1997: The initiative began, The Hundred-Day Campaign began

September 2000: The Three-Month Campaign began

January 2001: The project was completed

References

Title: The Regulation to Tighten the Administration of Urban Inner Drainage Canal of Quanzhou Municipal Government

September 11th, 1997, Page 5 of the Quanzhou Evening Paper, Title: Historic Project Victory in One Hundred Days - on the hundred-day realignment campaign of Urban Inner Drainage Canal

September 9, 1999, Page 1 of the Quanzhou Evening Paper, Title: A New Quanzhou -- Carp into Dragon

September 29, 2000, Page 4 of the China Construction Paper, Title: Great Change in Quanzhou

November 21, 2000, Page 15 of the People's Daily, Title: Speeding up "Vast Quanzhou" Construction, Carrying forward Urbanization Process

December 7, 2000. Page 1 Edition A of the Quanzhou Evening Paper, Title: The Living Environment of Quanzhou People Once Again Greatly Improved

January 2, 2001. Page 1 Edition A of the Quanzhou Evening Paper, Title: Dragon Jumping Tiger Leaping: Great Environmental Improvement in Quanzhou

January 2, 2001.Page 8, Edition B of the Quanzhou Evening Paper, title: City Construction of Quanzhou, Change With Each Passing Day

September 26, 2001. Page 8 of the Daily Tele Communication of the Xinhua Agency, Title: The Unfolding with a magnificent scale

November 31, 2001. Page 4 of the China Construction Paper, Title: The Urban Drainage System of Quanzhou Awarded the China National Award for Best Practices of Improving the Living Environment

January 8, 2002. Page 2 of the China Construction Paper

Contact

Zhuang Jingmin
#24 Zhuangfu Lane
Quanzhou Fujian 362000
P. R. China

Tel: 86-595-2285862/86-595-2282313
Fax: 86-595-2183519
Email: qzjsj@fjjs.gov.cn
Type of Organization: Local Authority

Nominating Organization

Ministry of Construction of the People's Republic of China
Zheng Guangda
9# Sanlihe Road
Beijing 100835

Tel: 86-10-68394750
Fax:86-10-68394749
Email: unchspek@public.bta.net.cn
Type of Organization: Central Government

Partners

Ministry of Finance of the People's Republic of China

Type of Partner Support: Financial Support

Fujian Provincial Government

Type of Partner Support: Political Support

China National Development Bank
Wang Xuefeng
29# Outer Street Buchengmen Beijing

Tel: 86-10-68306722
Fax:86-10-68306744
Type of Organization: Financial Institution
Type of Partner Support: Financial Support

Financial Profile

Year	Budget (USD) x1,000	Central Government	Fujian Provincial Government	Quanzhou Municipal Government	National Development Bank	Quanzhou Commercial Bank
1997	$12,450	Nil	Nil	14.44%	Nil	Nil
1998	$3,060	Nil	Nil	3.55%	Nil	Nil
1999	$18,120	Nil	0.70%	20.32%	Nil	Nil
2000	$52,600	10.50%	Nil	22.48%	21.01%	7.00%
Total	$86,230	$9,060	$600	$52,420	$18,120	$6,030

Main Menu Search Database Sponsors To Order