



City profile

City profile: Ningbo

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ABSTRACT

Ningbo is located in the south-east of Yangtze River Delta by the East China Sea, 220 km south of Shanghai. The city has been an important port in East China for foreign trade since 7th century. Since 1980s, encouraged by China's economic "open-door" policy, one of the ways the city attracted foreign investment and thus grew its economy was by establishing multi-functional economic development zones near its deep-water port. As a result, Ningbo is now one of the top ten coastal ports in the world (as measured in Twenty-Foot Equivalent Units, TEUs). Similarly, the city's GDP per capita is approximately three times the national average.

The current and historic prosperity of Ningbo is in no small way related to its geographical position, just 20 km inland from the Hangzhou estuary and the gateway to the East China Sea. It is also the approximate centre of a 1000 km² coastal plain, at the confluence of the Fenghua and Yao Rivers, and from where the Yong River leads to the sea. However, also a result of this geographic location the city is now facing an increasing risk of coastal flooding caused by increase in urban area; climate change (increased rainfall intensity); and predicted sea-level rise. As a result both water management and current flood management practice (and related infrastructure) are under scrutiny. In addition to describing the evolution of the city, this paper focuses on the implication of current planning practices in Ningbo, which aim to ensure the sustainable development of the city both in terms of its natural resources and its expected rate of economic growth.

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Introduction

Ningbo is a major Chinese city located in lower corner of Yangtze River Delta (YRD) (Fig. 1), ranging between latitude 28°51' and 30°33'N, longitude 120°55' and 122°16'E. Human activity in the area appeared relatively early: archaeological evidence from Hemudu (present-day Yuyao City Administrative district) indicates rice growing has existed in the area since the Neolithic era (about 5000 BC). The region was known as 'Mingzhou' between the 7th and 12th centuries and 'Qingyuan' between the 12th and 14th century, with the name 'Ningbo' only appearing since the Ming dynasty (1368–1644 AD). At that time, its general territories covered the region of Ningbo today, and Zhoushan archipelago, which has become a prefecture level city in its own right. By contrast, Yuyao County (now upgraded to a county-level city) was only added into the territory of Ningbo as recently as 1985.

Ningbo has been a city of both historical and economic importance in international trade since early 20th century despite being overshadowed by Shanghai which lies just 150 km across the

Hangzhou bay. Since the first settlement in 200 BC, the location of Ningbo on the 'Marine Silk Road', coupled with the fact that it was very near a natural deep-water port, brought prosperity to both Ningbo and the lower YRD as a whole. The current population of Ningbo is 7.5 million, and the city enjoys the special designation of a 'separate planning city' which grants it provincial level administrative status. This also means that powers and responsibility for integrating the progression of industry development with various aspects of urbanisation are allocated to the city government (Tanner, Mitchell, Polack, & Guenther, 2009). The municipal government of Ningbo thus bypasses the Zhejiang Provincial government, and directly reports to the central government in Beijing (Tanner et al., 2009).

Similar to other populous coastal cities of the region, continuous agglomeration of the population, frequent cyclonic effects (typhoons), and climate change exacerbate the risk of drought and flood. In profiling Ningbo, we first highlight the influence of geographical factors that attracted immigrants to the area. We then evaluate the combined effect of increasing population and the climatological characteristics of the region, both of which increase the susceptibility of the city to flood and drought. The accelerated agglomeration of the city since 1980 has led to an

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increasing need for preservation of available water resources and improvements to flood management. We therefore review a number of initiatives that the Ningbo Planning Bureau has implemented to mitigate these issues. Further challenges facing the city with respect to the increasing probability of extreme weather resulting from climate change are also discussed.

Current administrative organisation

This paper describes the region that the Ningbo city administration governs today (Fig. 1): Ningbo city (six districts), two counties

Table 1
Summary of the administrative areas of Ningbo City Government.

Regions	Land area (km ²)	Residential population (2010) [*]	Population density (persons/km ²)	Town [*]	Township ^{**}
Urban District	2,461.76	3,491,597	1418	78	11
Haishu	29.38	373,742	12,721	22	2
Jiangdong	33.75	366,648	10,864	0	0
Jiangbei	208.16	361,242	1735	1	0
Beilun	599.03	612,267	1022	2	1
Zhenhai	245.9	418,500	1702	2	0
Yinzhou	1,345.54	1,359,198	1010	17	1
County	7,354.47	4,114,092	559	56	9
Xiangshan	1,382.18	503,279	364	10	5
Ninghai	1,843.26	646,074	351	11	3
Yuyao	1,500.80	1,010,659	673	14	1
Cixi	1,360.63	1,462,383	1075	15	0
Fenghua	1,267.60	491,697	388	6	0

^{*} Bureau of Statistics of Ningbo (2011).

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(Xiangshan and Ninghai), and three country level cities (Yuyao, Cixi and Fenghua). Amongst the 7.5 million people in Ningbo, roughly one-third of them reside in metropolitan areas. The oldest districts surrounding Sangjiangkou (the intersect point between Fenghua, Yuyao and Yong Rivers), are located at the centres of Haishu, Jiangbei, and Jiangdong districts. Highest population density are still in the city's commercial centre (Haishu), while the relatively new Yinzhou district is the largest in terms of area and total population (see Table 1). However, recently, the city government has gradually reallocated itself from Haishu to Jiangdong district, implying the intention of the government to stimulating further development outside Sangjiangkou. Beilun and Zhenhai with major harbours are the lifeline of the city for international trading. The two harbours are expected to play a vital role for continued economic development of the city with the 'marine economy' commanding greater emphasis in the government's 12th Five-Year Plan (Ningbo Municipal People's Government, 2011).

The population density of counties and county-level cities within the municipality are much lower (see Table 1), coinciding with lower level of industrialisation. However, because of the relatively unaltered marine environment along parts of the costal line, especially Xiangshan, the planning authority suggests developing such areas as marine tourism destinations (Ningbo Urban-Rural Planning Research Center., 2011).

Weather and climate

Ningbo has a subtropical climate: summers are hot and humid and winters are relatively dry with occasional snow. The humidity peaks in June when the Asian plum-rain monsoon moves in. A stronger or weaker summer monsoon period in any year can result in flooding or drought respectively (Ju & Zhao, 2005; Ningbo

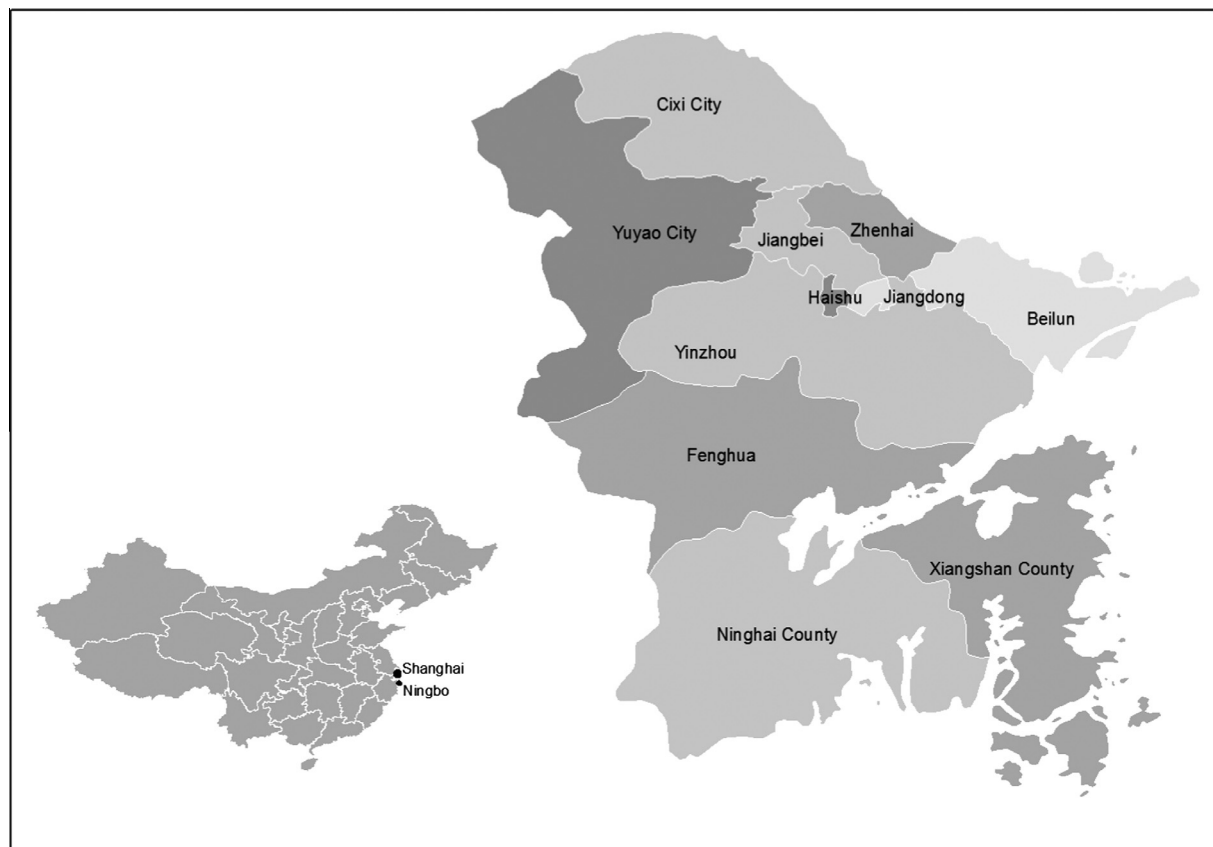


Fig. 1. The administrative areas of Ningbo in relation to China. Source: Plotted by Authors.

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