

## Containership-Info



**2006 Autumn Special:**

# Port Development in the Greater Shanghai Region

includes  guided tour



In addition to this pdf-file, containership-info provides a guided Google Earth tour of the container terminals in the Shanghai region. To download and view this tour please read the instructions in the annex.

### Where Growth Seems Unlimited: Shanghai

Strategically located in the middle of the Chinese coast and at the mouth of the river Yangtze, an artery into the Chinese interior, Shanghai today is nicknamed the Dragon's Head. With just little over one percent of China's population, the city of Shanghai accounts for some five percent of China's gross domestic product. Adding the surrounding provinces of Jiangsu, Anhui and Zhejiang – the region that might be called Shanghai's manufacturing hinterland – raises this share to nearly 25 percent. Shanghai's port ships more than a quarter of China's total exports. Last year Shanghai has overtaken Rotterdam as the world's number one port in terms of tonnage handled. Presently, work is under way to more than triple the Greater Shanghai region's port capacity. So there seems to be little doubt that the city and the nearby towns of the Hangzhou Bay region will develop into the world's leading container ports within the next few years. Shanghai is one of the fastest growing metropolises of these days its ports have enjoyed double digit growth rates for several years in a row. Located at the river Yangtze's mouth, it has traditionally been China's gateway to the world. The river Yangtze valley, Shanghai's vast

and populous hinterland, is home to more than 300 million inhabitants. In recent years, China's coastal regions have attracted a vast manufacturing industry that produces all types of goods destined for markets around the globe. In 1984, Shanghai had been partially opened for foreign investors and the city's Pudong district was later declared a special economic zone. The ambit of the more liberal legislation of these zones was gradually extended along the Yangtze and the coastal areas around Shanghai. Ever since China joined the WTO in 2001, the Jiangsu, Anhui and Zhejiang provinces have attracted even more business and investment. Shanghai remains the central hub for all these new industrial and commercial estates.

**+++ Shanghai Fact Box +++**

**population in 2004**

total population: 19 million

temporary workers: 4 million

**gross domestic product in 2004**

GDP per capita: USD 4,500

Chinese average: USD 840

rate of change: +13.5%,

**foreign investment in 2004**

contracted: USD 11.69 bn

rate of change: +12.6%

actual: USD 6.54 bn

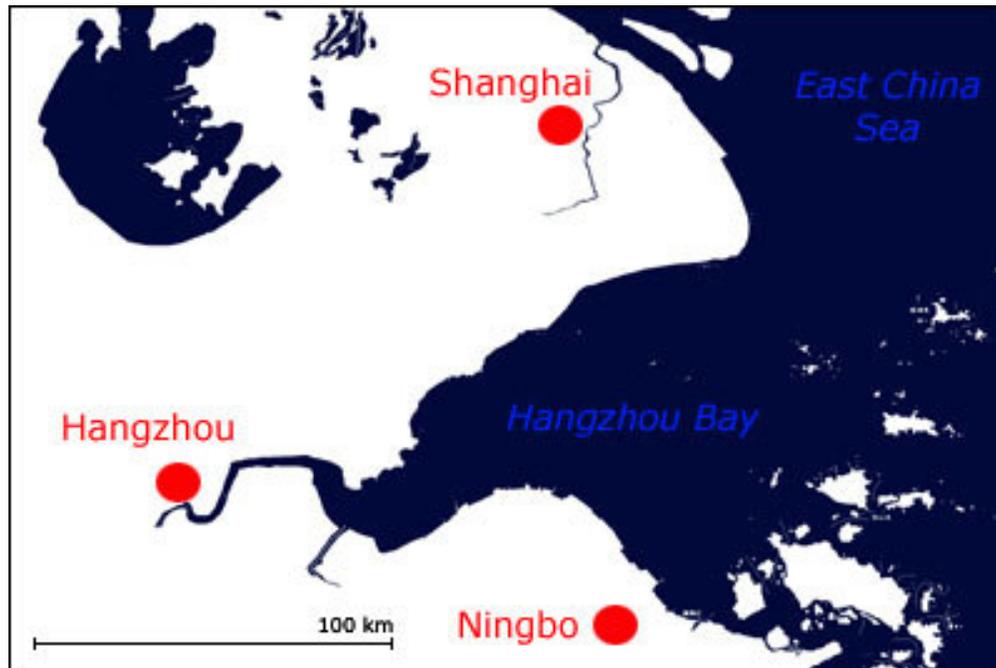
rate of change: +11.8%

Source: Shanghai Foreign  
Investment Service Center

## **Greater Shanghai and Hangzhou Bay Area**

The region's first container terminals were built near central Shanghai on the Huangpu River. Larger facilities were later constructed on the banks of the Yangtze, mainly in Shanghai's Pudong district and at Ningbo in the Zhejiang province. These terminals are considerably larger than the previous facilities at the Huangpu river. The latest and greatest addition to the region's container facilities is the giant Yangshan development scheme: It will eventually create the world's largest container port – a deep water facility located on a group of islands some 30 kilometres off the coast. The move of many of Shanghai's port facilities – including entire terminals and shipyards – from locations relatively close to the city centre towards the banks of the Yangtze and eventually towards the Yangshan archipelago was triggered by two main factors. One of these was the limited seaward access: The Huangpu River meanders through the city for several miles and can be difficult to navigate. Maintaining the river fairway's depth at a level suitable for large commercial ships has proven to be very an elaborate and – most of all –

costly process. Dredging the Huangpu to a depth of more than 12 metres is not economically feasible.



**Overview of the Greater Shanghai Region**  
**Map: Jan Tiedemann**

Access to the river terminals is therefore limited to mid-sized vessels. The second factor is probably even more important: Shanghai's tremendous growth needs space. Today, every terminal near the city is completely surrounded by a very dense urban environment of industrial, commercial or residential estates. Extending the size of one of the older terminals has become virtually impossible. Furthermore, Shanghai's government plans to redevelop large parts of the Huangpu waterfront into new housing and office districts. The largest such redevelopment scheme – although it does not affect any container terminals – is the conversion of several hundred hectares of shipyards, warehouses and storage and industrial spaces into the grounds of the 2010 world fair. So maybe it will just be a matter of time, until the terminals along the Huangpu will have to close altogether. Today, the bulk of Shanghai's container handling capacity is concentrated in the Waigaoqiao area on the Yangtze's southern bank. The terminals here are sometimes also referred to as the port of Pudong. It has to be acknowledged that these ports are river ports, too. The Yangtze's sheer size might be deceiving in this respect, but

ships have to navigate some 40 nautical miles of comparatively shallow estuary waters in order to reach the Pudong terminals. Thus, they are only suitable for vessels that draw no more than 14.2 meters of water. Today, most of Shanghai's terminals and port facilities are operated by Shanghai International Port Group (SIPG) or a joint venture between SIPG and a partner. Presently the company manages 137 berths in the greater Shanghai area. However, not all of these are containership berths. Presently, SIPG has not yet build up an international portfolio of terminal interests, but the group is expected to expand beyond China, soon. Recently, SIPG has bought a minority stake in APMT's container terminal at Zeebrügge, Belgium. SIPG has gradually bought into numerous river terminals along the Yangtze, for example at Wuhan, Changsha,

The two  
Kanji  
characters  
that form the  
name of  
Shanghai  
literally  
translate „on  
the sea“.

上  
海

Yangzhou, Nanjing and Jaijiang. This way, the Shanghai port operators have grater control of the river feeder services to and fro Shanghai. The second most important local player is the Shanghai Port Container Company (SPC), involved in the operations of three of the Waigaoqiao terminals. The first foreign

company (since Hong Kong is considered foreign to a degree by most mainland Chinese) that invested in Shanghai's port facilities was Hutchison Port Holding (HPH). As a very experienced terminal operator, Hutchison did not only invest money into Shanghai's port, but also a lot of know-how. Hutchison was later joined by AMPT. The Netherlands-based subsidiary of Danish shipping, offshore and retail giant A.P. Møller was Shanghai port's second foreign investor.

## The Terminals Along the Hunagpu River

As mentioned before, the very first container terminals at Shanghai were build along the Huangpu river that flows right through the city's downtown area. The Huangpu's natural water depth is only some seven or eight meters. At high tide it will reach around 11 metres, so access to the central ports is limited. The oldest container facility at Shanghai named the **Jungonglu Container Terminal** is. It is located on the Huangpu River, rather close to the city centre. Ships must

steam upriver on the Huangpu for some five kilometres, before reaching Jungonglu. The terminal is operated as a joint venture between Shanghai Port Container Company and Hutchison Port Holding. SPCC actually run the everyday terminal business while Hutchison's involvement is only financial. Jungonglu terminal has 850 metres of quay with a guaranteed water depths of 10.5 metres. The quay with its five panamax gantries is commonly used to provide three berths for small and medium-sized ships. The container yard has a size of about 40 hectares and is served by a dozen rubber-tired gantry cranes. Jungonglu terminal provides easy access to Shanghai's highway network, as well as railway connections.



**The Jungonglu terminal on the banks of the Huangpu river, close to central Shanghai.  
Image by Google Earth**

Jungonglu was followed by the container terminal facilities of **Zhong Huabang**, like Jungonglu a 50-50 joint venture between SPCC and Hutchison Ports. This terminal is located some 1,5 kilometres downriver from the Jungonglu facilities on the eastern banks of the Huangpu. Ships bound for the terminal must sail some 3.5 kilometres on the Hunagpu river after leaving the mighty Yangtze. Three berths of 250 metres length each guarantee a water depth of 10.5 meters. Altogether, the quay is fitted with seven panamax ship-to-shore gantry cranes.

The container stacking yard's area covers some 40 hectares and it is served by 10 rubber-tired gantries. Just like the nearby Jungonglu, the terminal has good access to Shanghai's highway system, but no rail link.



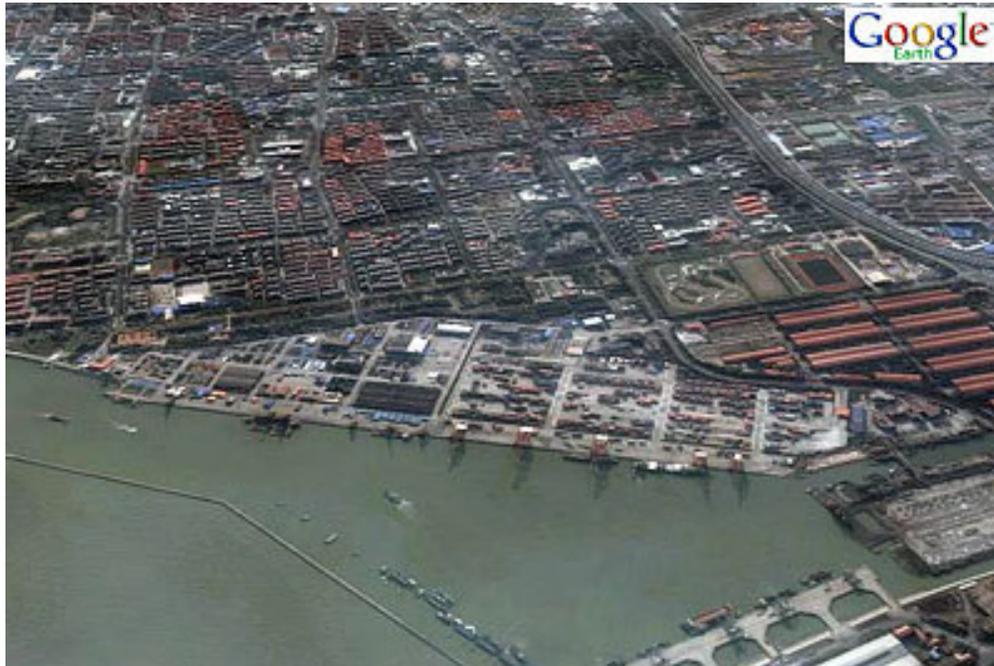
**The Zhong Huabang terminal on the banks of the Huangpu river.**

**Image by Google Earth**

### **Baoshan: On the Banks of the Yangtze**

Boashan was the third container terminal to be established at Shanghai. Opposed to its predecessors, the **Baoshan Terminal** is not located on the banks of the Hunagpu river, but instead further north on the Yangtze. It was constructed about four kilometres upriver from the Hunagpu's mouth, next to the giant steel mills of Baosteel. Right next to the container port, a general cargo terminal has been established. Occasionally this facility's conventional equipment is used to handle containers, too. Just like with the older terminals, business is shared by SPCC and Hutchison who cooperate in a joint venture. Baoshan only has a quay length of 600m and is equipped with five ship-to shore gantries. Two of these are standard post-panamax cranes, while the remaining three only have a 13-row panamax outreach. A total of 13 rubber-tired gantries serves the 44 hectare stacking yard. Baoshan provides adequate access to

the Shanghai highway system, but has no rail connection at all. Compared to the older terminals along the Huangpu river, the facility at Baoshan allowed vessels of a deeper draught to be handled. Yet the advantage is not very big and the guaranteed depth along the terminal's berths is still rather limited. Nevertheless, Baoshan did not really help to alleviate port congestion, since its cramped location between the local steel mill and the densely populated city did not allow for any significant extensions to be realised.



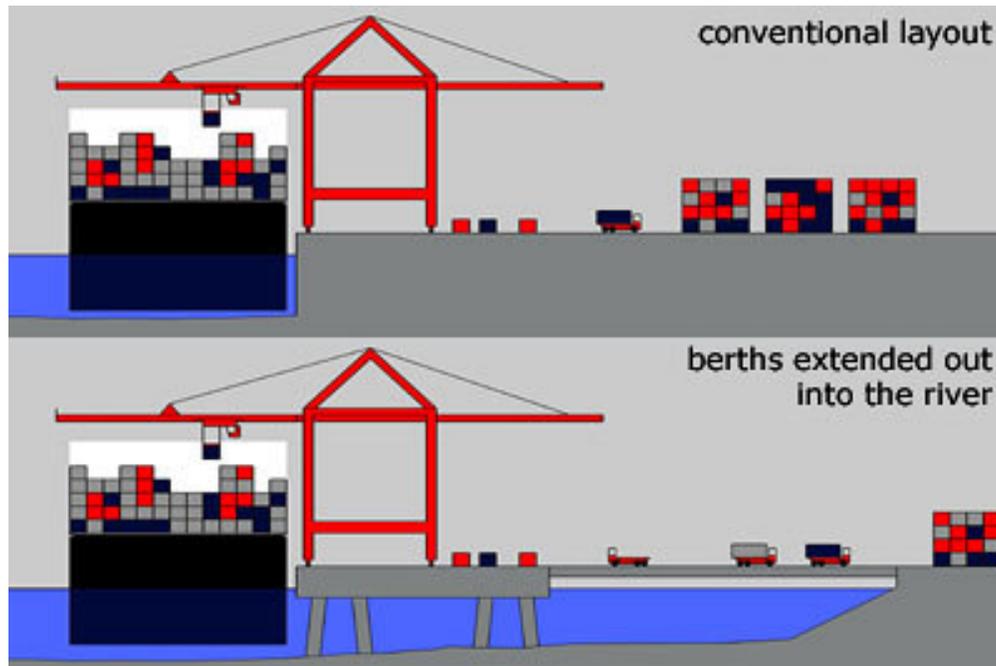
**The Baoshan container terminal is located next to the giant steel works complex of Baosteel.  
Image by Google Earth**

It was soon clear that, if new terminals were to be constructed at a grand scale, an all-new location had to be found. Therefore, it was soon decided to build Shanghai's new container terminals in the **Pudong district**, right next to the free trade zone of **Waigaoqiao**.

### **The Terminals of the Pudong District**

The first new terminal that was built at Waigaoqiao is known as the **Shanghai Pudong International Container Terminal (SPICT)**. It is managed by a joint venture of SPCC and Hutchison Ports. Quite often, this facility is also referred to as

**Waigaoqiao terminal phase one.** It is located in eastern part of the Waigaoqiao development area and consists of three containership berths. The total length of its quay is 900 metres. The guaranteed water depth is 12.8 metres, which is still rather limited for a large terminal.



**Exemplary drawing: Design principle of the Yangtze river container terminals in the Pudong District.**  
**Illustration: Jan Tiedemann**

In order to avoid aggradation of sand and to ease construction and maintenance of the berths, the terminal was built to a new concept: The ship's berths have been constructed some 250 metres out into the river, parallel to the river bank. They are connected to the terminal's stacking yard by means of bridges. As a side effect, this design allowed the installation of a 140-metre barge berth on the rear side of the deep sea vessel berths. SPICT has an annual capacity of some 1.8 million TEU. It is equipped with 16 post-panamax ship-to-shore gantries with a lifting capacity of 61 tons each. Six of the gantries can service 20 rows of containers, while the remaining ten units straddle 22 rows of boxes. The 30 hectare stacking yard is served by 36 rubber-tired gantries that can stack boxes four-high. A fleet of tractors and semitrailers is used to shuttle containers between the quay and the stacking yard.

Following the completion of SPICT, additional container handling capacity was created in shape of the Waigaoqiao terminals number two and three. These facilities follow more or less the design of terminal one and are basically a large scale eastward extension of SPICT. Both terminals are managed by the Shanghai Port Group. Terminal two was completed in 1997. It provides some 900 metres of quay, fitted with ten post-panamax gantries with an outreach of 20 rows (six cranes) and 22 rows (four cranes), respectively.



**Areal view of Shanghai's Waigaoqiao (foreground) and SPICT (background) terminals.  
Image by Google Earth**

Compared to SPICT that has the same quay length, terminal number two has a much larger 56 hectare container stacking yard, served by 36 rubber-tired gantries that straddle container lots of a height of four boxes and a width of six. Like SPICT, Waigaoqiao two uses tractor trailers to shuttle containers to and fro the ships. The construction of Waigaoqiao terminal three later extended the facilities of SPICT (terminal one) and terminal two further eastwards again by adding an additional 645 metres of quay and the corresponding container stacking yards. Since terminal two – in opposition to its predecessor SPICT – did not come equipped with a dedicated barge berth, a 400-metre-berth for barges and small container ships was later

added to the eastern end of Waigaoqiao terminal number three's quay. The terminal's berths for deep sea vessels are fitted out with nine gantries. They are similar in design to those used on terminal two and can be moved between both facilities. The barge and feeder berths are fitted with three ship-to-shore gantries of a lifting capacity of 45 tons and an outreach of 30 metres. Both terminals two and three have direct access to the new-build Highway that follows the banks of the Yangtze, but still lack a railway connection.

Terminals four and five of the Pudong district's Waigaoqiao development project were build about seven kilometres downstream from phases one to three and follow an identical design principle. Terminal number four which also carries the name **Shanghai East Container Terminal (SECT)** is the largest of the Waigaoqiao container facilities. It was inaugurated in 2002 and is operated as a joint venture of SIPG and Dutch APMT, the latter being a wholly-owned subsidiary of Danish A.P. Møller. SECT originally provided four berths with a total length of 1,250 metres and a guaranteed depth of 14.2 metres. Additionally, some 180 metres of berths for river barges have been fitted to the rear side of the cantilevered deep sea berth. The quay for deep sea vessels has later been extended to 1,480 metres. The rear part of this extension can be used to accommodate barges, too. SECT has a stacking yard of about 71 hectares, served by 48 rubber-tired gantries. This yard has a maximum capacity of some 87,000 TEU, thereof 1,560 slots are equipped with reefer plugs. A dedicated area accommodates 500 containers with hazardous cargos. At the Shanghai East Terminal, ships are served by twelve super-post-panamax gantries with a lifting capacity of 61 tons, and a 22-row outreach. Direct highway access is provided for, but a rail link is not available.

The latest addition to the Waigaoqiao terminals is phase five, the so-called **Shanghai Mingdong Container Terminal (SMCT)**. It has been established late in 2005 as a joint venture of SPCC and Hutchison Ports. Altogether, SMCT is rather similar in design to the Shanghai East Terminal. It has a 1,100-metre quay, equipped with twelve super post panamax ship-to-shore gantries. Theses cranes have a hoisting capacity of 80 tons and

straddle 23 rows of containers. The terminal guarantees a water depth of 14.2 metres. SMCT was the first Shanghai terminal to be equipped with gantries and spreaders designed to perform tandem lifts of two 40' boxes. Just like at terminal four, a dedicated barge berth has been added to the rear side of the deep sea vessel's berths. SMCT has an annual capacity of 3.2 million TEU.



**Shanghai Mingdong (rear) and Shanghai East (front) container terminals are located in the Pudong district. Image by Google Earth**

Mingdong's 97-hectare container stacking yard can accommodate 120,000 containers. Some 20 hectares of space are available for future extensions. The yard is served by 46 rubber-tired gantries and provides some 1,000 reefer plugs as well as space for 512 boxes of hazardous cargo. Like all of Waigaoqiao's port facilities, road access is good, but a rail connection is not provided for.

### **The Dragon's Wings: Taicang Terminal**

Terminals along the Yangtze are however, not only developed in the Pudong district, but also further upriver in the north of Shanghai. This is where Taicang port has been established in the Jiangsu province. In 2005 it handled close to a quarter of a

million TEU, but the local governments of Taicang city and the province announced plans to expand the port's annual throughput capacity to three million TEU by 2010. Taicang is located some one and a half hours of steaming upriver from the Pudong Terminals. The Jiangsu Province's Eastern municipalities – especially the town of Suzhou - are among the fastest growing economies in China. Industrial development zones such as Kunshan, Suzhou and Wuxi contribute to the rapid increase of container traffic in the province. In 2002 the **Taicang International Container Terminal Company** was established. Originally, 70 percent of its shares were held by Hong Kong's Modern Terminals, the remaining 30 percent by the city of Suzhou. Late in 2004, Cosco Pacific bought a part of the shares and now holds a 46 percent stake. (Modern Terminals now own 51 % and Suzhou 3 %). The Taicang terminal established at end of 2003 as a combined container and bulk cargo facility. It has a quay length of 930 metres, a water depth of 12 metres and is designed to handle 550,000 TEU and some 3.5 million tonnes of bulk cargo annually. The quay is equipped with five panamax ship-to-shore gantries and two conventional 25-tonne cranes. Like the Pudong terminals, Taicang uses a quay that has been build out into the Yangtze and is connected to the container yard by means of bridges. Presently, the terminal extension is well underway and a first berth has already been completed. Until 2008 1,100 metres of quay will be added to Taicang port: Four dedicated container berths for vessels of up to 50,000 tdw. The new part of the Taicang terminal will eventually be equipped with eight post-panamax gantry cranes with a hoist capacity of 60 tonnes and an outreach of 47m. The Taicang development plan is in line with the Chinese Central Government's policy of positioning Shanghai as the head, and Taicang and Ningbo as the wings of the Shanghai Maritime Centre – speaking in a typically Chinese dragon-metaphor. So far, the Taicang Container Terminal has been successful in attracting domestic intra-Chinese trade as well as container services to South Korea and Japan. Recently, Gold Star Line, a member of the ZIM Group, has established a service to Thailand and Vietnam that sails out of Taicang. Furthermore, the terminal is used to feeder cargo to Yang Shan, Shanghai's giant new deep water port.

## Yang Shan Deep Water Port

As soon as 1998, the Shanghai Port Authority realised that it would hardly be possible to provide sufficient container handling capacity in the long term by only extending and enlarging the terminals along the Yangtze. Even the modern Waigaoqiao terminals only guaranteed a water depth of 14.2 metres – just about sufficient for a fully laden present-day post-panamax ship.



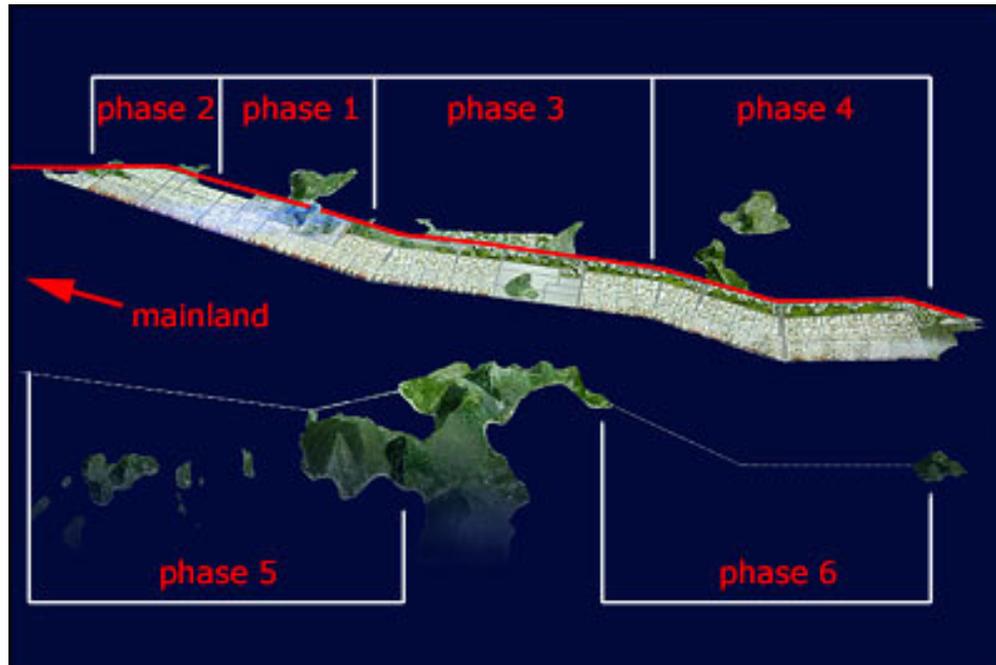
**The new Yang Shan container port is located 36 kilometres off the coast in the middle of Hangzhou Bay.  
Map: Jan Tiedemann.**

The Shanghai Port Authority was convinced that the Pudong river terminals would not suffice to satisfy the needs of the next generation of vessels. Furthermore, Shanghai's government wanted to turn the port into a major Asian container hub, since so far only about two percent of Shanghai's cargo volume was transhipped to other countries. It was therefore decided to build an entirely new deep water port in the Shanghai region. Numerous locations were considered and it was eventually decided to build the new port at Yang Shan, a group of 35 small islands located some 27 kilometres off the coast of Shanghai in middle of the Hangzhou Bay. Only a place that far off the coast – and thus far away from the flat and muddy Yangtze estuary -

could guarantee a sufficient water depth even for large and fully laden vessels. The islands were mostly uninhabited. Their hills will partially be bulldozed level and the excavation will be used to reclaim new land for the terminals. The fact that the new terminal would be located far from the mainland did not scare the Chinese: The world's longest bridge, the 31.5-kilometre Donghai Bridge, now connects Yang Shan to the mainland. Interestingly, this six-lane road bridge has not been built in a straight line, but in a wide s-shaped curve, since the route follows the shallowest areas of the Hangzhou Bay. The Donghai Bridge has one main span (a cable-stayed bridge) with a clearance of 40 metres and three smaller spans where ships can cross beneath it. Close to the place where the bridge connects to the mainland, an entire new city is under construction. Named Lingang, it will eventually be home to some 800,000 inhabitants. Located halfway between the new Yang Shan deep water port and the giant Shanghai Pudong airport, Lingang will be a city dedicated to transportation and logistics. Building Lingang city was a strategic step towards Shanghai's goal of building an international shipping centre. The new town is designed to be an equipment manufacturing base that will house automotive, ship, logistic, electronic and aerospace equipment, and will be a supporting stronghold for the emerging Yang Shan port. Among other logistic firms, companies like Maersk, UPS and DHL have already moved their Chinese regional headquarters from central Shanghai to Lingang. So far, more than USD 200 million of foreign money were invested into projects at Lingang. Parts of the new city have been added to the Shanghai's Minhang Economical and Technological Development Zone. Subsequently, the city enjoys all of the favourable policies that development zone has been granted, too.

Yang Shan Port itself will be constructed in six phases. Each of which can be operated as an individual terminal. Presently, phase one is in operation and phase two (scheduled to be opened early in 2007) is nearing completion. Land reclamation for terminal phase three is in progress. It is scheduled to be operational by 2010. Presently there is no exact schedule for the completion of the remaining three construction phases, but the entire Yang Shan project is expected to be completed

around 2020. The total cost for the deep water port's development is estimated at USD 12 billion.



**General Layout of Yang Shan deep water container port.  
Map: Jan Tiedemann.**

Construction work on Yang Shan's first phase was started in Mid-2002 by levelling one of the archipelago's rocky islets and filling up the surrounding waters. In front of these 153 hectares of reclaimed land, some 6,000 piles were rammed into the ground to carry the new terminal's 1,600-metre-quay. In 2005, a total of 15 super post-panamax gantries were installed. The cranes, delivered from nearby ZPMC, have an outreach of 23 rows and a lifting capacity of 80 tonnes. **Yang Shan terminal number one's** stacking yard has been fitted with 42 rubber-tired gantries that can straddle both five rows and five tiers of boxes. The terminal's berths and the ports approaches have been laid out for a vessel draught of up to 15.5 metres. Each of phase one's five berths is laid out to handle 440,000 TEU annually – a comparatively low figure. The first of the Yang Shan terminals is operated by SIPG, who also own the facility's superstructure. In order to give the project a good start, the Shanghai Port Authority decided that all European services to and from Shanghai should be shifted to Yangshan. The majority of service operators followed this rule, especially since SPA presently charges bargain port fees for calls at Yang Shan,

compared to that of the Waigaoqiao terminals. The deep water port's second terminal is scheduled to be operational in the first quarter of 2007. This construction stage will add 1,400 metres of quay wall to the port. It will be built as an eastward extension of the first module, towards the Donghai Bridge. **Yang Shan Terminal Number Two** will cover an area of 150 hectares and will be fitted with twelve gantries, identical to those used for phase one. Opposed to the all-Chinese phase one facility, a number of international port operators are involved in the construction of phase two: Møller's APM Terminals and Hutchison Ports each hold a 32-percent-stake. SIPG holds 16 percent and both Cosco Pacific and China Shipping hold ten. As soon as terminal two becomes operational, most of the involved shipping companies' transpacific services will be moved from Waigaoqiao to Yang Shan.

## **The Port of Ningbo**

The second most important port in the greater Shanghai region is Ningbo, a city some 100 kilometres south of the Yangtze estuary. Like Shanghai, Ningbo, a city of some 800,000 inhabitants, is a traditional port, too: It's name literally translates as 'the tranquil waves'. Unlike Shanghai, Ningbo does not have provincial status, but is a part of the highly industrialized Zhejiang province. To some degree, both cities' ports have always been competitors. Just like in case of the Taicang ports, the Chinese government today sees their roles as complimentary. Again, the dragon metaphor is stressed, and Ningbo is considered a Dragon's wing, too. Compared to the port of Taicang, however, Ningbo is a very large 'dragon wing' and it would probably make sense to speak of a double-headed dragon, since the decision makers at Ningbo clearly have ambitions of their own. One of Ningbo's selling points is its excellent seaward access. Unlike the low-lying flats of the Yangtze estuary, the Zhejiang province's coast is partly rugged and mountainous and has natural water depths of up to 30 metres. The city of Ningbo itself is located some 25 kilometres off the coast and only has a very small river port. Its sea port is actually located in the Beilun area on the Hangzhou Bay's southern shores. Both the city of Ningbo and the Zhejiang province have invested heavily in infrastructure projects like

highways and rail links. Today, most of the islands in the coastal waters of the Hangzhou Bay are connected to the mainland by new bridges. The region's largest and most important infrastructure project is the construction of the Hangzhou Bay Bridge. After its completion in 2007, this new road link will shorten the driving distance from Shanghai to Ningbo from today's 350 kilometres (via Hangzhou) to only 150 kilometres. At 36 kilometres in length, the new crossing will even surpass Yang Shan's new Donghai Bridge.

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## **Ningbo Beilun Terminals**

The first container terminals in the abovementioned Beilun district were opened in 1992 as **Ningbo Beilun International Container Terminal**. The facility provided a 900 meter quay and guaranteed a water depth of 15 meters – considerably more than comparable terminals at Shanghai at the time. The three berths are fitted with eight standard post-panamax ship-to-shore gantries. These cranes have a lifting capacity of 50 tonnes and can straddle 18 rows of containers. The terminals of Beilun are built to the same design that is described earlier in this report: The quays are not directly attached to the stacking yard, but rather built out into the water and connected to the land by means of bridges. The terminal's 33-hectare stacking yard is served by 20 rubber tired gantries. A fleet of flat rack chassis and tractor trucks is used to shuttle containers between the quayside and the yard. Ningbo Beilun International is managed by Hutchison Ports. The port's first construction phase has an annual capacity of one million TEU. Since turnover volumes in the Zhejiang province kept soaring, this capacity soon proved insufficient. Consequently it was soon decided to

enlarge the container terminal and create additional capacity. So a **westward extension** of some 1,200 metres was built. It was equipped with twelve gantries. Since ships kept growing ever larger, the new facility was fitted with super-post-panamax cranes which are able to lift loads of up to 60 tonnes and which can serve 22 rows of deck containers. The extension follows the same design as the original terminal. It adds 40 hectares of stacking yard space, served by 24 yard gantries. This terminal, which is also managed by Hutchison, can turn over 1.2 million boxes a year.



**Container Terminals and major bridges in the Hangzhou Bay Area (Ningbo, Beilun, Zhoushan and Yang Shan)**  
Map: Jan Tiedemann

### Expansion to the East

With the inauguration of Evergreen's and OOCL's joint **Ningbo Terminal** earlier this year, the city's port eventually expanded beyond the Beilun Area. The new terminal is located further out to the sea, west of the Daxie Island development zone. The Ningbo Terminal has a quay of 1,150 metres, equipped with super post-panamax gantries that span 23 rows of containers. Another 700m of quay can be added to the terminal if necessary. The 85-hectare stacking yard is designed like most

of its Far-Eastern counterparts and is served by tractor trailers and gantry cranes on rubber tires.



**Ningbo Terminal (foreground) and the Daxie Island development zone (background).  
Image by Google Earth**

Both Evergreen and OOCL dispose of dedicated berths for their vessels at the Ningbo Terminal. The next step was to turn the northern tip of the Daxie Dao development zone into a container terminal. This facility is called the **China Merchants International Container Terminal** or simply **Ningbo Daxie Terminal**. The terminal's first two berths were opened earlier this year. Recently, a road bridge has been built that now connects Daxie Dao island to the mainland's Beilun area. Until Early 2007, a total of some USD 400 million will have been invested into the Ningbo Daxie Terminal. The new facility will eventually provide four deepwater container berths. Hong Kong-based China Merchants Holding International will manage all terminal operations. The company holds a 45-percent-stake in the project. Daxie Dao's first 360-metre-berth and a 350,000 TEU stacking area were completed in May 2005. A second 450-metre-berth has been opened earlier this year. The remaining two berths are scheduled to be operational before the end of 2006. The entire engineering and construction work will be completed in mid-2007. Eventually, the terminal will have an

annual throughput capacity of 2.4 million TEU. It will provide 1,500 metres of quay with a water depth of 17 metres, served by 16 large ship-to-shore gantries. The stacking yard capacity will be close to 120,000 TEU. A total of 48 rubber-tired gantries will operate on the yard and a fleet of 77 tractors and chassis shuttle containers between the yard and the quay.

### **A Return to Beilun: The Westward Extension**

The eastward extension of Ningbo's port beyond the Beilun area was not even completed, when the local port authority realised that even more container handling capacity would be needed in the future. Therefore it was decided to add another terminal to the port of Beilun. Since the coastal flats adjacent to the existing container facilities had been used to build a large coal-fired power plant as well as a bulk berth, a location more to the east was chosen for the next container terminal. A new joint-venture company was set up to build and operate the terminal. It consists of the State-owned Ningbo Port Group (50%), Cosco Pacific (20%), OOCL (20%) and SDIC Communications (10%). The new company planned to build a three-berth terminal with dedicated berths for both OOCL and Cosco. Construction started in 2001, but the original plans were modified when the Mediterranean Shipping Company joined the group. Another two large berths were added to the development plan. These will be used exclusively by MSC who intend to make the terminal their regional hub for the Greater Shanghai area. The first two berths of Beilun's third container terminal were inaugurated in mid-2004 and another two followed early in 2005. The remaining single berth will be ready at the end of this year. Altogether, Ningbo Beilun's container terminal number three provides five state of the art berths and a total of 1,700 meters of quay with a clearance of 17 meters. Thus, it is ready to accept the latest generation of container vessels. Once finished, the terminal's annual capacity will be four million TEU. From a design point of view, it follows the same layout as the earlier facilities at Beilun. The berths are built out into the Bay and they are connected to the stacking yard by means of bridges. Until the end of this year, 20 super post panamax ship-to-shore gantry cranes will have been installed. Unlike many terminals along the Yangtze, Beilun offers not only road

access, but is also connected to the railway. Once the new Hangzhou Bay Bridge will be completed, Beilun will be located quite conveniently near to Shanghai. The new fixed link will reduce driving time to about two hours.

## **Jintang Island Deep Water Terminal Project**

The opening of Shanghai's Yang Shan deep water port has prompted activity at surrounding ports, because of fears the mega-project will have a negative impact on their profits. When Yang Shan port's first phase opened late in 2005, the Ningbo and Zhoushan port authorities announced plans to become a single entity. This merger was recently completed. The two ports have now been re-branded as Ningbo-Zhoushan Port. The joint venture is managed by a single committee and port operations will be integrated in the next few years. The Zhejiang provincial government's goal (in terms of containers) is to achieve a throughput of ten million TEU by 2010. By 2020, the joint entity's ports shall handle 22 million TEU annually.



**Location of the new Zhoushan Island Bridges and the proposed Jintang Island Deep water port.**

**Map: Jan Tiedemann**

The new joint port of Ningbo and Zhoushan will seek cooperation with Shanghai's Yang Shan port. According to the

Ningbo Port Authority, the joint venture was not set up to compete with Yang Shan port, but to cooperate and complement each other. However, one might doubt this, since both ports partially target the same trade lanes and manufacturing hinterlands. Meanwhile, Ningbo Port plans to invest USD 1.25 billion to build twelve container berths at Jintang Island in the Zhoushan province – a move that is clearly aimed at competing with Yang Shan, rather than supplementing it. The first phase of this deep water port project at Dapukou, on Jintang Island's Southwest shores, will eventually produce five container berths. Construction is scheduled to start in 2008. The second phase will add another seven berths: Interestingly, this extension will be completed on the opposite side of Jintang Island. Hong Kong's OOCL and Shanghai-based CSCL are expected to be joint venture partners in the Jintang project. The new deep water terminal will be located 65 kilometres south of Yang Shan. It is linked to the mainland via the Zhoushan Island Bridges. As soon as 2008, an additional 27-kilometre fixed link will connect Jintang Island to the mainland. The USD 846 million bridge will allow road traffic to and from the new deep water port to bypass the congested Beilun region. This link will save an estimated two hours of driving between Jintang and the Eastern Hangzhou Bay area. Jintang's first terminal will be operated by a joint venture the of Ningbo Port Group Co. (who will hold 45% of the shares), Ning Xing Holdings (25%), Cosco Pacific (20%) and Zhoushan Yongzhou Container Terminal Limited (10%). Its five berths will add to a quay length of some 2,000 metres with a guaranteed depths of 15 metres. The 172-hectare terminal will be fitted with 18 super post panamax gantries and will provide for an annual capacity of 3.5 million TEU.

## **Conclusion**

Together, the ports of Shanghai and Ningbo have developed into China's most important international trade hub. Their success is backed by a rapid terminal development, as well as the tremendously fast growth of the Yangtze River region's economy. Both ports enjoyed double digit growth rates over the last couple of years. Only last year, Shanghai overtook Rotterdam and Singapore in terms of cargo volume and now

claims the title of the world's busiest port. A total of 443 million tons of all kinds of cargo was handled in 2005. After Singapore and Hong Kong, Shanghai now ranks third among the world container ports. Some 18 million TEU were loaded and unloaded last year and the figure will probably add up to 21 million by the end of 2006. Including the terminals on the southern shores of the Hangzhou Bay, this figure will even rise to 30 million TEU. Speaking in 'regions' rather than individual ports, the Yangtze River Delta and Hangzhou Bay only rank second to the Pearl river Delta that includes Hong Kong, Yantian, Chiwan and Shekou.

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### **google earth guided tour: download instructions**

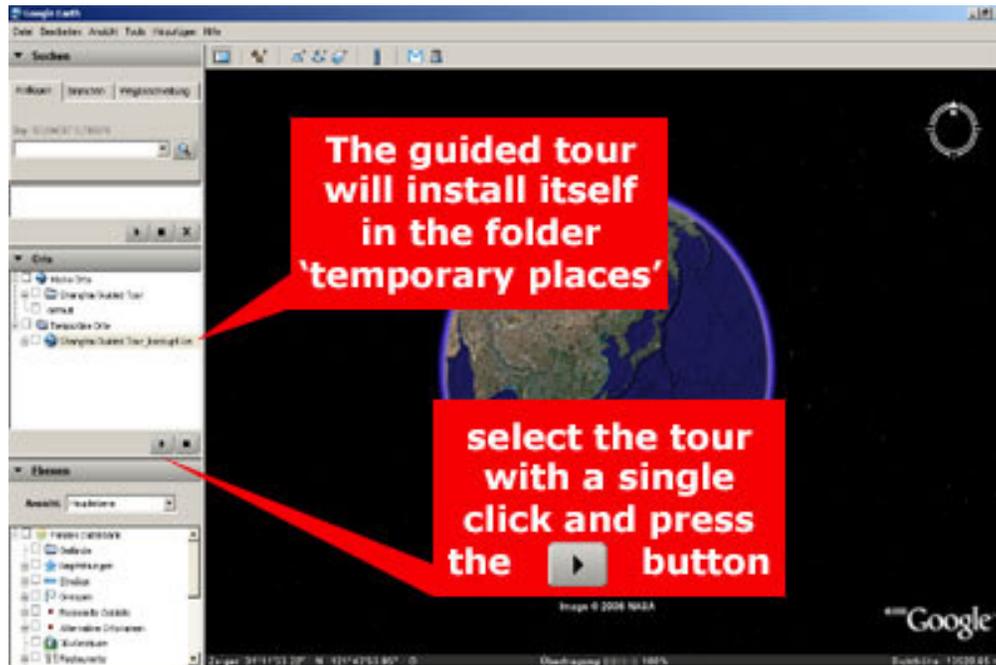
**Along with this pdf-file, containership-info provides a guided 'google earth' tour of the container terminals in the Shanghai region. In order to view this tour**

- the free 'google earth' software must be installed on your computer. If google earth is not already installed on your computer, you can download your copy from [www.earth.google.com](http://www.earth.google.com).
- your computer must be connected to the internet (preferably a DSL-connection) while the tour is playing in order to access the image data server.
- you must download and open the KMZ-placemark-file, provided by containership info. The placemark can be downloaded from the 'miscellaneous' section of the containership-info website (click the download icon with the flag symbol that indicates a placemark file). The file name is 'misc\_publ\_shanghaiplacemark.kmz'.

### **How to run the guided tour**

- Opening the file 'misc\_shanghai\_tour.kmz' will automatically launch the google earth player.
- Select the tour with a single click, if necessary, and press the 'play' button under the 'places' window.

After launching the tour, your google earth player will look like in the screen shot below:



## Troubleshooting

**problem:** The tour does not play.

**possible cause and solution:** Please consider that the google earth player does not include image data. All satellite and aerial pictures are stored on google earth's dedicated servers – Thus make sure your computer is connected to the internet.

**possible cause and solution:** The tour is not selected. Select the tour in the left menu with a single click before you press the play button.

**problem:** The images seem blurred.

**Possible cause and solution:** Your internet connection may be too slow to load the images from the google earths servers in real-time. The images are not completely loaded before the tour automatically advances to the next placemark. Let the complete tour play once or twice without watching it. The required image data will be pre-loaded and stored in google earth's temporary memory.

**problem:** All the orange placemarks logos and tags are visible and obstruct viewing the images.

**Possible cause and solution:** Placemarks are selected. Click [+] in front of the tour's title in the left menu in order to expand the tour folder. Unselect the individual placemarks by un-ticking the boxes next to the placemarks.

**problem:** The tour plays slow.

**Possible cause and solution:** Your computer's memory and processor performance might be insufficient. Close all software applications except google earth and / or unselect unnecessary layers (like the community, borders, terrain, etc.) in the lower left layers menu.

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