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Forming a cluster

Building better integration between cities is the way forward for urbanization

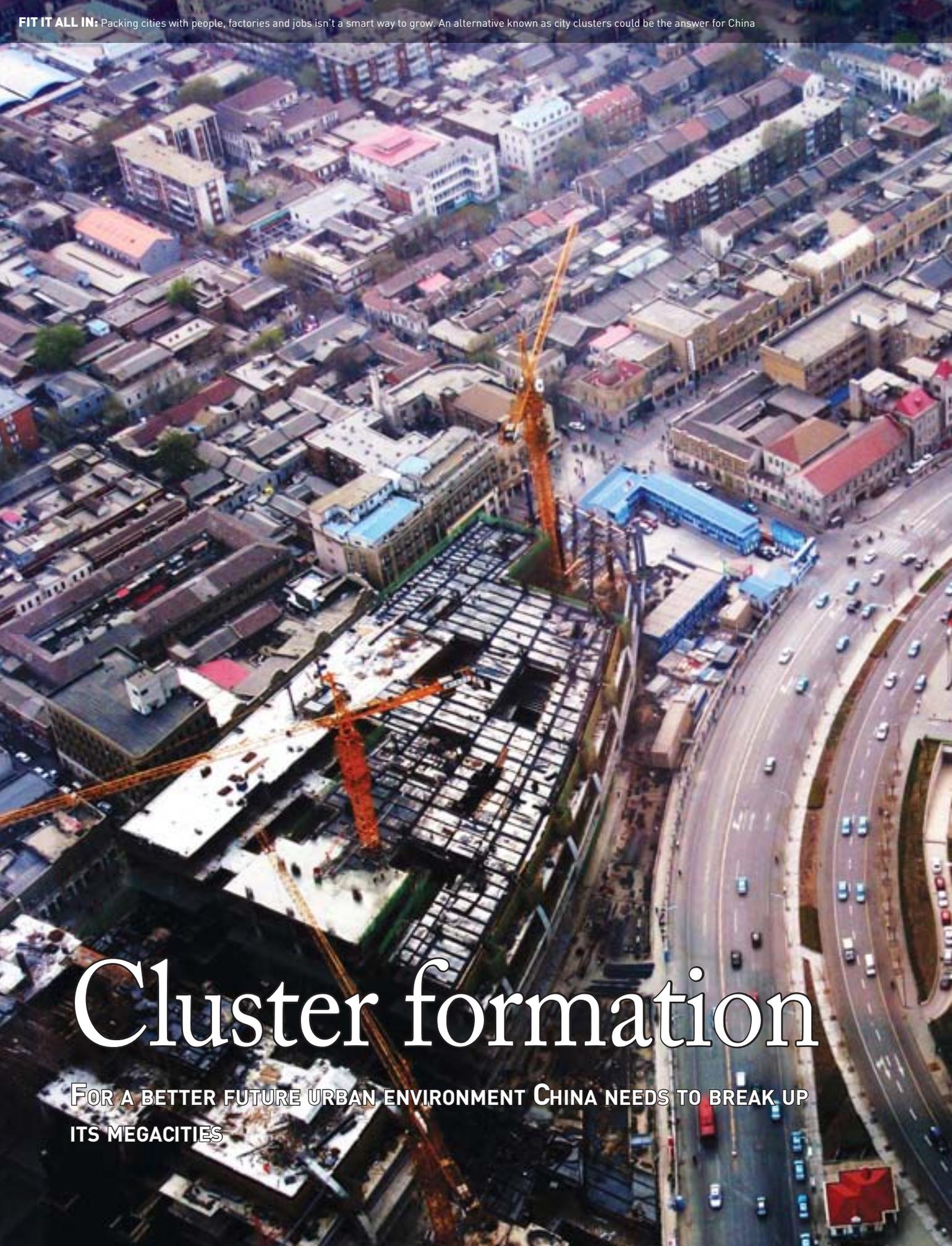
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中经评论：多屏互动时代

FIT IT ALL IN: Packing cities with people, factories and jobs isn't a smart way to grow. An alternative known as city clusters could be the answer for China



Cluster formation

FOR A BETTER FUTURE URBAN ENVIRONMENT CHINA NEEDS TO BREAK UP ITS MEGACITIES



Credit: Imaginechina

Barely two decades ago China was known as the “Kingdom of Bicycles” and cars were a rare sight on the streets. Now there is hardly any room to park. The likes of Shanghai and Guangzhou have morphed into giant urban centers as millions of new arrivals flooded in to pursue economic opportunities. They are widely touted as examples of the new Asian megacity.

As China reaches the limits of its current export and investment-based growth model, its biggest cities have also begun to reach a developmental limit. The megacity no longer appears to be a sustainable path forward. Changing track will not be easy, but plans are already underfoot to break existing megacities up into clusters with a central hub surrounded by smaller cities.

Across the country, in Shanghai and Suzhou, in Beijing and Tianjin, and in the Pearl River Delta around Guangdong and Shenzhen, cities are linking up, clustering together into urban units of a truly grand scale – approaching and potentially exceeding 100 million people. By building stronger physical and economic links with their surrounding areas big cities can relocate industry, jobs and people, making them less dense and more efficient. The formation of these clusters is not simply the future of the urban landscape, but the future of China’s development.

Megacity vs. cluster

The sheer scale of this phenomenon is dizzying, to be sure, and not a little bit confusing. The terms megacity and cluster cities are often used interchangeably to describe what is going on, but in fact each has a distinctive meaning. Those differences are crucial to China’s development.

“Megacity” is a hefty term. Written in proper, that big capital “M” imparts a swagger commen- >>



Credit: Imaginechina

DROP THE EGO: Cities should be built for the people who live in them and not subjected to the sometimes irrational whims of planners officials and overzealous developers and their showy projects

>> surate with the cities themselves. It conjures up an image of towering skyscrapers by the dozens, hundreds of kilometers of subway track, people and cars filling the streets. Big money, big opportunity... big smog, too. But like most buzzwords, it's a bit more fanciful than descriptive.

The United Nations officially defines a megacity as any municipality with over 10 million residents – an arbitrary but convenient benchmark. However, even this doesn't account for how municipal boundaries are drawn. For example, it's easy to be wowed by Shanghai's 24 million people versus the eight million in New York City. But it is often omitted that Shanghai covers an area five times that of the Big Apple that includes large swathes of farmland. The broader New York Metropolitan Statistical Area, essentially greater New York, has a population of 19.9 million. Yet nobody considers New York as fitting into the megacity category.

“Everybody has a different definition” of a megacity, says Jonathan Woetzel, co-chair of the Urban China Initiative and director at consultancy McKinsey. “I think 10 million on up is reasonably accepted as a megacity, but we may end up changing that definition over time.” Particularly, he added, if the population of cities in the average continues to push higher.

According to the China Urban Sustainability Index, an annual research project carried out by UCI and the McKinsey Global Institute, known as cluster cities might be more appropriate for China. “In the first report, we contrasted two versions of urbanization: Concentrated megacities and clusters,” said Woetzel. “We concluded that the cluster form made a bit more sense ... and that has been borne out [by the data].”

Clusters, as he refers to them, form with at least one very large city as a central hub, surrounded by many

other smaller cities as its spokes. The model allows for more diversity as each city remains an individual player, and can bring its complementary strengths to bear regionally through smart integration. This geographical huddling has major implications. “We think of clusters as the most sustainable form of urbanization,” said Woetzel. “In all ways.”

Best laid plans

Cities across China are a curious mix of careful planning, thoughtful consideration and a whole lot of happenstance in between. The vast urban regions of today are the result of planners forging ahead with their ideas and then reacting to change.

Most of the big urban centers we see in China now are the direct result of the opening up of the country in the 1970s and the productive tumult that followed. The Pearl River Delta manufacturing hub is a prime example. Before 1949, a huge portion of Chinese goods were sent through Guangzhou and on to Hong Kong for export. Once that route closed the need for a new one became apparent, setting in motion the birth of the port city and factory hub of Shenzhen.

“15 years ago, there was no Shenzhen,” said Ma Xiangming, chief planner at the Urban and Rural Planning and Design Institute. “When Deng Xiaoping opened up policy in Shenzhen... it meant that things could only be sent to Shenzhen. For ten years things concentrated in Shenzhen.”

Money flowed, factories were built, more people followed. Soon enough the city was expanding. In 1990, the highway system in the region was very underdeveloped, so Shenzhen took it upon itself to begin correcting that. “The city itself planned its own road system, and then the central government connected it and formed the regional highway system,” Ma said. “So it comes two ways: Bottom-up, and top-down.”

Shenzhen is not something that occurred naturally. It was created, and then it grew. The newly built highways encouraged it further and

the population exploded. Guangdong grew. Dongguan, the third big city, became the place to go as a young migrant worker fresh from the countryside. The region became what we know it as: China's engine, the world's factory. "If there is no new China, there is no Shenzhen," Ma said. It would seem the same is true vice versa.

The current planning situation is both proactive and reactive – bottom-up and top-down. China's urban population surpassed 50% a few years ago and now it is the explicit goal of the central government to keep the trend going. By 2020, 60% of the population will be in urban areas, rising to 70% by 2030, according to a new urbanization blueprint released by Beijing in May. As Ma conceded, there is no way to block the fire hose of migration, whether you plan for it or not. The question now is figuring out the best way to turn villagers into urbanites.

Rethinking the economic model

Huge cities tend to conjure mostly negative images of sprawl, density, overpopulation, crime, social inequality and all the other downsides of modern urban living. These cities might be economic centers, but they are tough and rank poorly in terms of sustainable living.

That doesn't always have to be the case. The China Urban Stability Index 2013 shows that most Chinese cities have in fact improved their level of sustainability in recent years, and that the top 10 best performing are located mostly in the coastal or eastern regions. Sustainability is positively correlated with increased population size, density, migration and foreign investment.

As urban conurbations grow public services and utilities scale up quickly, in effect reducing the negative footprints of inhabitants. Water and heating are provided in tight networks over shorter distances while waste collection is more focused and therefore efficient. While some Chinese urban dwellers continue to dispose of their rubbish in public streets, armies of cleaners are there to remove

it quickly; nobody burns refuse in open pits or lights crop fires that pollute the skies.

Still, cities can only be green and clean up to a certain point. "There is a limit to how far one can go without rethinking the economic model," said Woetzel. According to the CUSI report, the "turning point" where big cities outgrow their efficiency comes when the population tops 4.5 million, density reaches over 8,000 people per square kilometer and migrants make up over 30% of residents. Places like Shanghai and Tianjin went past that point long ago.

Over the next 15 years or so more cities will join the ranks of giant urban areas. In order for them to be workable and successful, planners will need to improve how they are put together.

The cluster cities paradigm is, at its heart, a way of rethinking the economic model. Many of the other factors generally considered necessary for sustainability are more or less related to that central principle. In this model a big city acts as the main hub for administrative functions, capital and talent with a few core industries such as services. Meanwhile smaller outer-lying cities develop their own economic fields such as high-tech or industrial production. This allows for industry, services, jobs and people to be spread out but still easily connected. A traditional megacity, by contrast, typically encompasses all functions within itself.

In our April issue, CHINA ECONOMIC REVIEW argued that Shanghai cannot hope to be both a service center rooted in finance while at the same time maintain its industrial base if it ever wants to get rid of its pollution problem and enjoy a healthier growth.

Suzhou, a small city to the west of Shanghai that has for all intents and purposes become a distant suburb, is attempting to create its own specialism while also drawing on its proximity to China's economic hub. "You have to leverage the resources in this region. I wouldn't say [Suzhou is] trying to be different, but trying to be

different in very specific segments," said Joe Zhou, head of research for East China at real estate services firm JLL.

Suzhou is still carving out its economic identity, but Zhou says it's already good at semiconductors and pharmaceuticals. The aim is to keep on attracting high-tech industry as low value-added industries such as textiles move away.

The planned direct linkage of Shanghai and Suzhou's municipal subway systems will help to do the actual leveraging by making travel between the two even more convenient. The goal, Zhou says, is to use Suzhou's cheaper land and rent prices along with the more livable environment to lure businesses and residents away from Shanghai. As part of a bid to create that more livable environment, Suzhou created the Suzhou Industrial Park, which helped it claim the Lee Kuan Yew World City Prize, an award that recognizes leadership in sustainable development. Because of the pending connection, the move is all that more attractive for people and businesses. Zhou notes that several financial services firms have opened offices in the SIP in the past year.

"We use the words 'Greater Shanghai' like 'Greater London' to describe this coming together of the two cities, said Zhou.

The Pearl River Delta Into One project, which is integrating Guangzhou, Shenzhen, Dongguan and six other satellite cities, essentially has the same aim. As Ma explained, a family could live in one of smaller cities and work where they can find the best jobs. Theoretically speaking, a husband could commute to Dongguan, the wife to Guangzhou, and both return at night back to their home in the middle. They would also be shopping mostly where they live, and consuming social services there as well – the burden on different systems, such as medical care and education, will be more thinly spread throughout the region. Indeed, part of the "turning point" problem lies in that the central megacities have been overwhelmed with increasing >>

>> populations faster than public such as hospitals and schools can keep up.

In the north of China, the Bohai Economic Rim Project is integrating Beijing, Tianjin, several surrounding cities and Hebei province – well over 100 million people. Beijing is taking an aggressive stance when comes to tackling the “turning points” and endemic pollution. Not only are the authorities looking to push out industrial production from the nation’s capital but also to send up to five million residents into nearby areas to de-clutter a congested city. For a city that’s seen its population grow by two-thirds since the turn of the millennium, that would be a huge trend reversal.

Clusters drive innovation

Bringing lesser-tier cities into the game has some unique advantages. Not least among them is the time and space for more sensible urban planning, and even a little experimentation – they are often where the biggest improvements can be made.

One such example is Urumqi, the capital of Xinjiang and the largest city in western China. The region has been earmarked for major investment by Beijing to exploit its abundant natural resources and strategic location on the old Silk Road. The authorities in that region have been working with the “Future Megacities” scheme established by the German government in 2004 to fund research in emerging giant cities around the globe in the hope they might influence sustainable urban design.

Urumqi has a population of around 3.2 million and 10 million square meters of construction is currently taking place, equal to half of the new construction in Germany at this time, according to Bernd Franke, an environmental planning and assessment expert, who worked on the Urumqi project for the German government. Franke says the project had several successes.

He his team found a willing ear and collaborator in the local government, and a city of the right size to affect change. They contributed to the local government’s decision



OVERCROWDED: China’s urban areas may well need to be dense to pack in the millions of people who live within them but they can be built in clusters instead of on top of one another

to recently convert the entire city’s heating system from coal to natural gas – a feat accomplished in just nine months – and the decision earlier this year to increase new housing efficiency standards by 25%.

In term of new ideas, Franke says that sustainable housing has been the most promising. With extreme winters as cold as minus 30 degrees centigrade a huge amount of energy is required for heating. The construction boom created the opportunity for the “Passive House,” which Franke says utilizes modern design and materials to achieve better insulation.

“Passive housing can be done in a very demanding climate, in a very poor area and be done quickly,” Franke said, crediting that proof-of-concept with the landing of their next passive house project in Tianjin. That spreading of innovation is crucial.

Urumqi is on track to become another major city in China. The fact that it is implementing policies

focused on sustainability early on in its development could set it on a good path for the future. Nevertheless its rise also points to the problems other emerging centers will face.

Competing ambitions

Planning and building China’s future urban environment is no easy task. Regardless of the research into and awareness of urbanization, sustainability and other related issues, there is a lack of a unified national vision for how to move forward and many competing priorities.

Back in Xinjiang, Franke and his team came across a PVC plant that used coal as feedstock. Franke says that switching to petroleum-based fuels would cost a bit more but curb carbon emissions significantly. “I said [to the CEO], what if the government banned PVC production from coal?” recalls Franke. “He said, ‘Then I would have to find something else to do with my coal.’” Many industries



Credit: Imagimechina

are vertically integrated in this way and not easily changed.

Perhaps more important is the issue of communication and coordinated planning between the central government and the many local governments. Right now, Urumqi is the proposed location of a new coal gasification plant that will generate cleaner natural gas to be piped to Beijing. Coal gasification is enormously dirty, so much so that its central location in Urumqi would effectively cancel out the gains brought by more efficient housing standards and the conversion of city heating to natural gas. In this sense, the project seems to make little sense. Nevertheless, the powers that be are pushing for it very hard to boost the economy.

Communication and disputes are also a problem at lower levels. In the Pearl River Delta, all the constituent cities and the provincial government recognize that integrated rail connections are the future of the region.

What they cannot agree on is who exactly will build what. According to Ma, every city wants its own subway system while the provincial government prefers a broader, integrated network. Space is already extremely constricted so there's simply no room to build both, and even if there was doubling-over construction would be a waste of resources. The Pearl River Delta already has four international airports all within 50 kilometers of each other.

Beijing's more radical plan has an entirely different set of problems. The first is challenging nearby local governments to fall in line with its plan for fairer regional tax systems and social infrastructure. The second is moving all those factories and their migrant workers away, which is a bit more intractable. In the short term, it would lessen pressure on Beijing's infrastructure and alleviate some of the nasty pollution for which it has become infamous. In the longer term, that's less of a solution to pollution than simply moving the problem elsewhere.

Crucially, not every city is a growing metropolis or located close enough to other emerging cities to form the big clusters that would give the best returns on integration. Despite its strategic location, Urumqi sits many kilometers from any other big urban area – one of the reasons planners in Beijing are content to send coal gasification and other dirty industry its way.

These cities could very well turn out to be the big losers in the game. “The reality is that we will have a portfolio of outcomes,” said Woetzel. “If you have an isolated city, you have a failure. The risk is blowing a hole in the balance sheet of cities.” With the mounting indebtedness of local governments a major risk for China's financial stability, that could spell disaster.

A blueprint based on clusters

Challenges notwithstanding, the integration of cities into clusters is clearly the way forward. The future of China as a dynamic country now hinges on moving to higher value-

added industries, solving pollution problems and creating space for the comfortable and growing middle classes to build a consumption-based economy. Bunching cities together is integral to this process.

“Clusters work because they capture economies of scale,” Woetzel said, adding that, “a cluster city is very specific. It goes to one specific product and dominates.” In other words: Specialize, divide and conquer. That's what Suzhou is trying to do by leaning on the resources and global connectedness of nearby Shanghai. That's what the cities in the Pearl River Delta can all do, while sharing skilled workers in a big, connected regional pool.

Another aspect is the ease of experimenting at reduced risk, and then sharing what works. “Regardless of where it is derived, what matters is dissemination... and that starts with the cluster,” said Woetzel. “If Xintiandi [an upscale shopping district] works in Shanghai, then we see it in other cities. It goes to other cities in the cluster and then beyond.”

Similarly, if a city tries something and falls flat on its face, it isn't out there all alone. Part of the point of linking up with the big city is that the big city can step in if there is a problem. There are resources to fall back on.

All of the above are more than what would traditionally be considered a megacity can handle as a single entity. There is no space left, local resources and infrastructure are overwhelmed, and living standards are sacrificed. The cluster lets the largest city act as a center of gravity for a diverse system of satellite areas that divide urban tasks. To make a rough analogy: Ten families in ten different houses is resource inefficient; ten families in one giant room is chaos; ten families living in an apartment complex pool group needs and preserves individuality – that's what the cluster does on a grand scale.

Ultimately, the cluster enables people to keep doing what they've been doing for the past 30 years: Envisioning a richer future. China should embrace this model. ♦