THE CONSEQUENCES FOR CHINA'S MEGA CITIES OF THE GLOBAL ECONOMIC RECESSION

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ABSTRACT: Economic growth in China has declined between 2008 and 2009 from almost 11 percent per year to just 6 percent. Exports decreased even more rapidly and millions of workers have lost their jobs in Chinese cities and were advised to go back to the rural areas. However, November 2008 the Chinese government announced its first economic stimulus program and currently the effects are noticed (Financial Times, 18-6-2009). A lot of funds for infrastructure development were made available and cities and provinces were also invited to make a contribution. Although exports keep declining, local consumption has taken up and in fact sales of cars increased 23 percent in May 2009, which contributed to the increase of the oil price in June.

In the paper an analysis will be made of the repercussions of the financial crisis for different mega cities in China. A distinction will be made between short en medium term effects and the expected rebound of the economy:

Short term

1. Higher unemployment and the need to support unemployed workers
2. Problems with social services for migrant labour: schooling, health, housing, etc.
3. Reversal in migration flows
4. More political unrest

Medium term

5. The impact of the one child policy
6. Growth of intermediate towns
7. Decline of Chinese export-oriented development model

Rebound

8. Urban spending has increased
9. Shortage of skilled labour
10. A different kind of urban development

A change has taken place, where economic power has moved from the Western countries to the Far East. The emphasis in China on increasing local consumption has contributed to more consumption and the development of new infrastructure, which could make Chinese cities in fact more competitive than in the past. We will also deal with the issue, what this new urban growth means for the environment. Examples of some Chinese eco cities will be given to show how China deals with urban environmental issues.

KEYWORDS: mega cities China, economic recession environmental consequences

INTRODUCTION

Economic growth in China has declined between 2008 and 2009 from almost 11 percent per year to predictions of just 6 percent growth per year. Exports decreased even more rapidly and millions of workers have lost their jobs in Chinese cities and were advised to go back to the rural areas. However, November 2008 the Chinese government announced its first economic stimulus program and currently the effects are noticed (Financial Times, 18-6-2009). A lot of funds for infrastructure development were made available and

cities and provinces were also invited to make a contribution. Although exports keep declining, local consumption has increased. Sales of cars increased for example 23 percent in May 2009, which contributed to the increase of the oil price in June.

Urban planning in China has resulted in "dissatisfying urban sprawls featuring inadequate services and inconvenient settings, which are particularly unfavourable to the low-income families" (China Daily, 5-11-2008). The opposite way of planning would lead to a harmonious society, "narrowing the expanding gap between different social groups and getting every member of society to benefit from economic growth".

In this paper an analysis will be made of the repercussions of the financial crisis for different mega cities in China. The emphasis in China on increasing local consumption has contributed to infrastructural development, which could make Chinese cities more competitive than in the past. We will also analyze what this new urban growth means for the urban environment. Examples of some Chinese eco cities will be presented to show how China deals with urban environmental issues. The question will be asked whether China is just going for more ecological cities or for introducing a very different and more integrated approach to a number of related environmental issues.

RECENT ECONOMIC DEVELOPMENTS IN CHINA

China seems to be recovering rapidly from the international financial crisis and the world wide recession that resulted. A number of indicators show these developments, but there are also some more fundamental trends suggesting that the high economic growth of the past can not be sustained in the future. In the first place foreign investments are declining in China, while China itself invests more and more abroad. Secondly, the increase of the internal consumption in China does not go as fast as expected, while there is still a big gap between China and the western countries as far as the level of social services is concerned. This would require more government expenditure, but also a different kind of expenditure than the current expenditure which focuses on providing infrastructure. Finally the US and China seem to hold each other, because of the huge trade deficit between the US and China, resulting in a dollar surplus in China. These dollars then need to be used to buy US T-bonds to allow the US to continue to import Chinese goods.

Consumers in China still delay certain investments while private entrepreneurs try to lower wages instead of firing employees. The problems of China are largely concentrated in the export-oriented coastal regions (in particular the exports from the Pearl and Jiangtze River Deltas declined). Many migrants coming from provinces in the interior have been fired. (China Daily, 8-11-2008). As alternative reasons, besides the credit crisis, the Olympic Games, the heavy snows storms early 2009 and the earth quake in Sichuan in May 2008 are mentioned. In total 23 million Chinese would have lost their job (Financial Times 25-8-2009) and many have to return to the rural areas.[i] That would mean some 15 percent of the estimated 130 million workers who left the rural areas during the last decade would have to return. Usually these people are not counted in the statistics, but just expected to go back to the rural areas. The official registered urban unemployment has increased to 4.3 percent in the second quarter of 2009 (China Daily, 25-7-2009). However, in particular the 6.1 million graduates hitting the market in 2009 will find it difficult to find jobs (Financial Times 25-8-2009). They are also not included in the official urban unemployment figure, although the Chinese authorities are particularly concerned that these young people will cause unrest (Wall Street Journal, 23-12-2008).

Chinese entrepreneurs sometimes react in a surprising way. In China wages in the private sector were sometimes decreased instead of firing people. Often local governments in cities in East China had to support these unemployed workers because no severance payments were made and no system of unemployment benefits exists in China (China Daily, 7-11-2008). Cities react by also investing more in infrastructure (China Daily, 7-11-2008). November 2008 a program to stimulate the economy was presented of 500 billion dollar (table 1) and an ambitious plan to safe the Chinese economy was presented (Volkskrant, 11-11-2008). A second program was announced by the prime minister early 2009 (Financial Times, 2-2-2009).

Table 1Distribution of the expenditures of the stimulus program

Category of expenditure	**Percentage** (%)
Infrastructure: rail roads, high ways, airports and an electricity grid	45
Repair activities after the earth quack in Sichuan province	25
Rural development and infrastructure projects	9,25
Ecological and environmental activities	8,75
Housing	7
Innovation activities	4
Health care, culture and education activities	1

Source: Wall Street Journal (28-11-2008)

The table shows that most of the money is spent on infrastructure and only a small part on services, such as housing or health care. Critical questions have been asked whether all this money is additional (new) money, or whether planned investments have just been moved forward. In total about US$ 409 billion has been made available in the form of loans (Financial Times, 25-8-2009). Some of these expenditures had to be financed by the provinces or cities themselves. The stimulus program is meant to be temporary. The question is what is going to stimulate the economy once these expenditures are exhausted. The result is certainly going to be a huge government debt which needs to be served and could lead to crowding out of private investments by dynamic small enterprises in China. Usually these smaller companies create the jobs that China needs desperately.

The money has been used partially for consumption and partially for speculative purposes. This can be derived from the increased value of the stock market in Shanghai (where about 20 percent of the loans ended up; Financial Times, 25-8-2009), but also from a spectacular increase in the number of new cars sold (because of the incentive given for buying amore recent car with a more fuel effective technology). Because of a premium on new cars, the number of cars sold in China increased to 12 million (South China Morning Post, 31-7-2009) and because of all the loans available the real estate prices also increased substantially (absorbing 30 percent of the loans provided). This implies that only a part of the stimulus money was invested in the real economy. Recently the government reacted to these monetary developments by making lending more difficult (International Herald Tribune, IHT, 31-7-2009), which may have a negative effect on the Chinese economy. If capital is less available, investments will be more expensive and the private sector does not create the jobs!

In the end the consumers started to spend a bit more. Revenues of the urban population increased 8.9 percent in the first half of 2009, one percent more than the economy itself. This may have aprtially compensated the falling export demand. The government also offers all kinds of products cheaper in particular in the rural areas to boost consumption. Finally the purchasing power has increased in the first half of 2009, since prices were still declining. This process of deflation started to turn into low inflation in July 2009 (China Daily, 28-7-2009). Other measures to increase the consumption in China concerned an increase in pensions and more support to low income people. In some cities vouchers were distributed to allow people to buy luxury prducts (China Daily, 28-7-2009).

The most recent figures of the Chinese government are 7.9 percent growth, which for China is closer to normal. (21st Century, 22-7-2009). This result is largely the influenced by the ambitious stimulation program that will be discussed. 75 percent of the growth would be the result of this program (NRC, 8-8-2009).

THE REPERCUSSIONS OF THE CURRENT CRISIS FOR CHINESE CITIES

Cities have reacted to the crisis by investing more in infrastructure (China Daily, 7-11-2008). Gradually the Chinese population has also started to consume more and hence compensated for the declining exports. The government is providing a number of products at a lower price and purchasing power has also increased since prices were falling (deflation) in China during the first half of 2009. July 2009 prices started

to increase again (China Daily, 28-7-2008). Other policies resulting in an increase of the consumption were an increase in government pensions, increased support for low income earners and the distribution of vouchers in some cities (China Daily, 28-7-2008). Ten repercussions for Chinese cities were identified and will be discussed now. A distinction will be made between short en medium term effects and the expected rebound of the economy:

Box 1 Repercussions of the financial crisis for Chinese cities

Short term
1. Higher unemployment and the need to support unemployed workers
2. Problems with social services for migrant labour: schooling, health, housing, etc.
3. Reversal in migration flows
4. More political unrest

Medium term
5. The impact of the one child policy
6. Growth of intermediate towns
7. Decline of Chinese export-oriented development model

Rebound
8. Urban spending has increased
9. Shortage of skilled labour
10. A different kind of urban development

1. Higher unemployment and the need to support unemployed workers

During the first half of 2008 60.000 small and medium enterprises in China stopped working. In the second half of the year another 80.000 enterprises gave up. These figures only concern the power house of China, the Pearl River Delta. However, during the last three month of 2008 103.000 new enterprises were created in this region. These are mainly high tech companies creating limited employment for the 20 plus million unemployed of the current crisis. Other indicators of a recession in China are that government budgets of different levels of government do not increase automatically with 5 percent per year any more. Given there is no payment system for unemployed workers in China the cities on the east coast had to support unemployed workers when the crisis started in 2008. They helped the workers to survive and gave them money to get back to their villages.

2. Problems with social services for migrant labour: schooling, health, housing, etc.

The problem with 130 million Chinese who have left home in search for work in the last decade is that an estimated 58 million children have been left behind in the rural areas (Financial Times, 3-9-2009). Roughly half of those have been separated from both parents and are living with grandparents or other relatives or friends. 'Informal' schools have been set up in the big cities to cater for the needs of children of migrants staying 'informally' in the cities on the east coast. The official term for these schools are Minban, or people-run schools. In the famous Dongguan district there are about 200 such people-run schools where an estimated 7 to 10 million 'new Dongguan people' (the official name for migrants) get their education (Financial Times, 3-9-2009), for which the parents have to pay, contrary to the common practice in the 'local' schools. The same source indicates an expected lower enrolment of 5 percent is expected for the school year 2009-10, due to the crisis. The idea is that migrants are more likely to settle if their children can come and follow education. It is a challenge for China to eventually do away with this dual educational structure.

3. A reversal in migration flows

130 million people have migrated, however an estimated 20 million have returned to their villages jobless before the Chinese New year holiday in late January 2009 (Financial Times, 3-9-2009). However, in the Guangdong province it is observed that by the end of February more than 90 percent had come back to this province. This would mean three things. First it shows a determination among many migrant workers to

move permanently to the coast. Secondly, it would mean an increase in the level of urban unemployment, although these people may not be included in the official statistics. Finally, it means that the level of demand for urban services (such as houses, health, food etc), would currently be slightly lower, giving the smaller number of people and their lower income. The increase in purchasing power because of wage increases in the public sector and the decrease in purchasing power because of unemployment could compensate each other.

If there is no complete reversal of the migration flows, it could very well be that the future flow will slow down. It was expected that in the following ten years another 200 million would migrate to the Chinese cities (Van Dijk, 2007). This may not happen at the expected speed. Meaning the cities will have a lower rate of population growth and the
rural urban income distribution will remain skewed forcing the government to spend more in the rural areas. Partially people may opt to go abroad (Van Dijk, ed., 2009).

4. Political unrest

Although the number of registered political unrests is no longer published, there are indications that the number of protests against the government has increased. Newspapers reported demonstrations by unemplyed people indifferent cities. Also cases of citizens who protested against the destruction of their houses have been reported (IHT, 31-7-2009). Even workers killing a manager who announced their dismissal has been reported in the local press (China Daily, 27-7-2009). Even more clear is the violent reaction of the government against events that are considered to be a risk for stability, such as the demonstrations in Tibet in 2008 and in Xinjiang in 2009 (Financial Times, 13-8-2009). It seems Chinese citizens have become more vocal and even dare to incriminate the government and these cases are reported in the official press: "Government taken to court over pollution". A recent positive example is the closure of a number of factories processing led after complaints form parents about the consequences of the pollution for their children (Financial Times, 22-8-2009). However, there is no free press in China, the population does not have unlimited access to internet en and there are all kinds of restrictions on travelling. In particular the better educated part of the population is quite annoyed about all these restrictions.

5. The impact of the one child policy

It is known for some time that the one child policy has saved China another 300 million inhabitants since it was introduced at the end of the 1970s. However, it also leads to a skewed distribution of the population as far as age is concerned. China will have more aged population. Currently the percentage of the population in the 0-14 year range is only 21 percent (even 14 for Hong Kong), which is comparable only with the US, Japan and the EU (World Bank, 2009). Already certain cities have started to liberalize the rule. In Shanghai a large number of categories of citizens are now for example allowed to have a second child. However, before such a policy will have an impact the problem of an aging population may well present itself.

6. Growth of intermediate towns

Cities make an important contribution to development. Good policies, high investments and an export orientation help to explain the competitiveness of cities. The differences between mega and big cities suggest however that there may be a maximum size for city, beyond which coordination problems, the environment and traffic become problems that are hard to solve. We found that there is a great potential in what we called the in-between cities, good for about 70 percent of GDP in China and for 54 percent in India with the potential to increase their contribution to GDP from the present two to 2.5 times the average to three times the average, just like the mega-cities in China and India!
Van Dijk (2007)

7. The decline of Chinese export-oriented development model

Van Dijk (2008a) argues that the end of the Chinese economic model based on export could be expected for a number of reasons. Guo en N'Diaye (2009) argue that no growth of export markets is possible through lowering prices, given this would go at the expense of the already low profit margins, or would require even higher subsidies. The alternative would be increasing the productivity of the Chinese economy, increasing the value added or a change in the composition of

China's export, which are all not very likely. Hence China has to stimulate domestic expenditures to grow out of the crisis by increasing local wages. The alternative would be to continue to rely on exports, but to markets outside the current major regions: the US, Europe and South East Asia. In these regions purchasing power is lower and hence the Chinese export model is not sustainable according to these researchers. The major argument provided is that China has become such an important producer that it can not continue to expand production capacity in certain sectors.

Other factors which could lead to a decrease of the future growth are the increased pollution and the lack of social security for workers, unemployed, and retired people. One of the reasons for the high current saving rate (up to 40 percent) is that people consider they have to take care themselves for a number of things other countries have solved collectively (pensions, education, health etc.). Finally, not all the positive figures published by the Chinese authorities are accepted by the experts (Financial Times, 25-8-2009). The real growth of the internal consumption could be lower and not enough to compensate for the decline in exports. If structural factors in the labor and capital market continue this could lead to a next crisis (Financial Times 25-8-2009). The rebound could be temporarily and never lead to the same levels of growth China was used to in the 1980s and 1990s. Also China's recovery could not be V, but rather W shaped.

8. Urban spending has increased

Because of an increase in available wages in the urban areas and because of the economic stimulus program urban spending has increased, but the question is to what extent this is sustainable in the future.

9. Shortage of skilled labour

In Guangzhou, the capital of the Guangdong province there exist a shortage of skilled labor. In this dynamic province it has been suggested by the party chief to use the current crisis to become a modern country. He argues in favor of a more capital intensive way of producing and points to the number of new startups in his province and the shortages of skilled labor. (South China Morning Post, 31-7-2009).

10. A different kind of urban development

The results of all these development would be a different type of urban development It is hoped that such a different type of development would spend more attention to urban environmental issues, which can be tackled in a labor intensive way and hence would help to create urban employment, more local purchasing power and local economic development.

IMPLICATIONS FOR THE ENVIRONMENT

What does this new urban growth means for the environment? We would like to use some environmental indicators to measure a positive effect on sustainability (see Van Dijk and Mingshun, 2006). However, there is not one definition of ecological or for short eco cities that is generally accepted. Different authors have very different views of what makes a city an ecological city (Van Dijk, 2009). My definition would be: environmentally friendly cities are liveable and energy saving, promote integrated water and sanitation, better urban waste collection and processing, more gardens and trees, bio diversity and better public transportation and deal with climate change. On the negative side one could mention: do away with air, water and soil pollution, congestion, flooding and the lack of green areas.

Ten dimensions for sustainable city development in the Third world were developed by Kenworthy (2006, pp. 67-86) see box 2 . Ecological initiatives can be taken at three levels. In the first place at the level of the city, and new towns or neighbourhoods would be an example. We will point to all kinds of ecological districts or neighbourhoods appearing. Secondly at the level of buildings one notes ecological villas or block of houses/apartment towers with common heating/cooling systems or a common grey water re-use facility. Finally individual initiatives can be noted at the household level, spontaneously or triggered by incentives or price increases. There are a number of Chinese eco-city initiatives. We will now give some examples of how Chinese cities have tried to become 'eco-cities". In particular we will give examples for Beijing, Shenzhen, Shanghai and Wuhan.

Box 2 A sustainable city is according to Kenworthy (2006) characterized by:

1. A compact, mixed urban form that protects the natural environment, biodiversity and food-producing areas
2. The natural environment permeates the city's spaces and embraces the city, while the city and its hinterland provide a major proportion of its food needs
3. Freeway and road infrastructure is deemphasized in favour of transit, walking and cycling infrastructure, with a special emphasis on rail. Car and motorcycle use are minimized
4. There is extensive use of environmental technologies for water, energy and waste management—the city's life support systems become closed loop systems
5. The central city and sub-centres within the city are human centres that emphasize access and circulation by modes of transport other than the automobile, and absorb a high proportion of employment and residential growth
6. The city has a high quality public culture, community, equity and good governance. The public realm includes the entire transit system and all the environments associated with it
7. The physical structure and urban design of the city, especially its public environments are highly legible, permeable, robust, varied, rich, visually appropriate and personalized for human needs
8. The economic performance of the city and employment creation is maximized through innovation, creativity and uniqueness of the local environment, culture and history, as well as the high environmental and social quality of the city's public environments.
9. Planning for the future of the city is a visionary debate and decision process, not a predict and provide computer-driven process
10. All decision making is sustainability-based, integrating social, economic, environmental and cultural considerations as well as compact, transit-oriented urban form principles. Such decision making processes are democratic, inclusive, empowering and engendering of hope

1. Examples of some Chinese eco cities

Examples of some Chinese cities will be presented to show how China deals with urban environmental issues. In Beijing there are thousands of ecological initiatives and other Chinese cities are also trying their best. The question is, whether this is enough to counter a looming environmental crisis. Praising sustainable development is a beginning, but not enough. The development of rain water harvesting and urban agriculture in Beijing has a very specific background and the question is, which elements can be repeated elsewhere and to what extent. All such projects are examples of eco sanitation (re-using urine and compost for urban agriculture) and could be elements of a more ecological city. The six principles for a more ecological approach (see box 3) mentioned above could also include the promotion of urban agriculture.

Box 3 Six principles for a more ecological approach

1. Integrated water resources management: closing the water cycle
2. Energy management, reducing greenhouse gases
3. Waste minimization and integrated waste management
4. Integrated transport policies
5. Objectives concerning justice, for example promoting an equal distribution of the benefits
6. Integration in the framework of urban management, while also managing urban risks

Source: Van Dijk (2007b)

Private developers in China are looking for new ideas, but they are mainly interested in cost savings and attractive alternative options for their projects. Given a number of the problems are related to water governance, an institutional analysis is required to identify the different bottlenecks. Constructed wetlands, which help to clean the water, was not used in Beijing as this approach required too much land use. Riverbank infiltration projects may be an alternative, for constructed wetlands, which require much space, while river banks are available for this purpose. The model of Singapore, closing the urban water cycle completely, may also be an appropriate option and could help to economize the expenditures for this kind of projects. The example of Beijing shows how difficult it is to be an ecological city. Shenzhen is another example of a major Chinese city trying to become an ecological city

There are a number of eco-city initiatives in China, ranging from simple water and sanitation technologies for the western part of the country (through a project financed by the Netherlands) to sophisticated ecological projects in the framework of the 2008 Olympic Games in Beijing. The Chinese authorities exhibit a preference for large modern high tech solutions; even if they know they cannot always manage the technology properly. They are less willing to pay for management support, training or software; while given the high energy use per unit of Gross Domestic Product (GDP) and the huge water consumption in per capita terms, there is scope for improvement on the efficiency of the system through better management. Box 4 summarizes an initiative in Shanghai to create an environmental neighbourhood.

Box 4 Shanghai's an environmental neighbourhood

Shanghai plans to build on an island at the mouth of the Yangtze River the city of the future (Economist 23-9-2006; Trouw 9-11-2007; Financial Times 15-9-2006). The idea is that the city will be self-sufficient in energy and water and will generate almost no carbon emissions. Petrol and diesel vehicles will be banned in favour of solar-powered boats and fuel-cell-driven buses, according to the *Economist*. The city should number around 500,000 inhabitants in 2040 and will house an agro park of 27 km^2 to grow food in a sustainable way (Trouw, 9-11-2007). Finally the *Financial Times* describes energy conservation at the level of the house and shows the use of water conservation (rain water harvesting). The houses will use only one third of the energy consumed by a normal house, while the energy will be renewable, for example through windmills. The project received attention and press coverage, but the question is what happens to diminish pollution in neighbouring Shanghai city, with 20 million inhabitants and many polluting industries.

Another example is Shenzhen is another example of a major Chinese city trying to become an ecological city (see box 5).

Box 5 Is Shenzhen already an ecological city?

In 2002, the State Environmental Protection Administration (SEPA) and the Ministry of Construction jointly formulated a series of standards and rules on the construction and recognition of ecological cities, which are related to economic development, environmental protection and social progress. All detailed standards are published on the website of SEPA www.sepa.gov.cn. SEPA is the decision-maker to approve or disapprove cities' applications. On June 2nd, 2006, SEPA for the first time awarded the title of the ecological city to the following cities: ZhangJiaGang City, ChangShu City, Kunshan City and JiangYin City of Jiangsu Province.

The city has set this target for the year 2010. Shenzhen's urban greening ratio has reached 51.1%, with 16.01 m^2 of green area per person, ranking top among other cities of the country.

With 218 parks and 5,000 hectares of ecological scenic forests, Shenzhen takes the lead in both the area and quantity of greening compared to other cities. The City has been awarded titles including “China’s Best 10 Cities for Greening”, “National Garden City”, “Nations in Bloom”, “National Greening Pioneer”. At present, Shenzhen has been on her way of thriving development with the aim of building Shenzhen into an “ecological city with high tastes”. Above-mentioned information is quoted from the website of the Shenzhen Bureau of Trade and Industry.

Wuhan, one of the largest cities in China, with total area of 8,494 km^2 and a population of 8.3 million.[ii] Unlike Beijing, Wuhan has much richer water resources, ranking first among the largest Chinese cities. Called *water city* in China, Wuhan is located about halfway along the several thousand kilometres reach of the Yangtze River and has nearly 200 lakes of various sizes. The water area makes up 25.8 per cent of Wuhan’s entire territory. Although Wuhan has abundant water resources, the Yangtze River and many lakes suffer from serious pollution. In 2000 Wuhan's wastewater discharge totalled about 2 million cubic meters per day with domestic sewage and about 25 per cent of that was industrial wastewater. Water quality in Wuhan has significantly decreased over the last 15 years, making the concern for sustainable urban water management in these cities greater than in other cities.

It is our impression that these projects just continue, despite the economic crisis. Even Chinese provinces want to get the label eco-province and take initiatives to achieve this. In China this usually means that competition is created and a prize may be given to the most ecologically friendly province or city. The Jiangsu province is an example a province that is implementing a policy for sustainability. It will implement the Jiangsu Eco Province plan with the Nanjing Eco city project as a major component.

Initiatives at the level of buildings

Although many initiatives are taken at the level of the city, the real promotion of ecological innovations comes from the national level through policies and subsidies. For example a 30 per cent subsidy of the construction cost is possible in the case of an ecological housing project. An interesting case of an ecological neighbourhood can be found in Wuhan and concerns a project of about ten buildings with seven or eight floors per building. The project would receive a 30 per cent subsidy for using energy saving techniques, but one of the conditions was that the project would also recycle their grey water.[iii] Energy savings is based on double-glazing and the use of ground source heat pumps. The geothermal heat pump uses a system of pipes absorbing latent heat from the ground and transferring it to the home’s heating and hot water systems.

Initiatives at the household level

Finally individual initiatives can be noted, spontaneously or triggered by incentives. Environmental awareness may not yet be very developed in China and more time and policies that raise the consciousness of the people may be needed to achieve more activities at this level. However, people may save energy and tend to use less water than in developed countries, but this is partly due to the level of development, availability and price. Individual households usually install water heaters on the roofs of houses. In certain cities this is becoming a trend; the question is whether the systems are efficient enough to be recommended to large numbers of people and to have a substantial impact.

2. Is China going for an integrated approach to environmental issues

The question will be asked whether China is just going for more ecological cities or introducing a very different and more integrated approach to a number of related environmental issues. What can we learn from these different experiences to build the ecological city of the future? There is currently no definition of what an ecological city would really be, so we need to agree on what we consider the important criteria for sustainability and I would go for stakeholder planning to assure that all partners will work together for the common future of the city. Stating that it requires an integrated approach is not enough, because this could mean integrating the analyses of the issue (look at them in relation to each other). But also an integrated approach to deal with the issues can be chosen and finally the activities undertaken to solve the problems can be integrated.

Ecological cities are more than ecologically managed closed urban water systems. Sustainable urban water management is just the beginning. Changes in the behaviour of consumers will be required, just like a combination of better water management, collection and treatment of solid waste and striving toward integration (Van Dijk and Oduro-Kwarteng 2007). Water demand management may be a good start at the household level, just like separation at source and composting at home is a good start for ecologically friendly solid waste management.

CONCLUSIONS

Because of the financial crisis economic power has moved from the Western countries to the Far East. Chinese cities have become important players in the world economy and have borne the brunt of the crisis. They had to deal with a number of serious repercussions and the full consequences are not yet clear. For the environment all these developments may be positive since there is a stronger incentive to go for more ecological cities.

In China ecological initiatives have been undertaken at three distinct levels, but there is no real integrated approach at the provincial (Fujian province for example, China Daily, 27-8-2002), or at city level. The institutional framework of provinces taking the initiative, provincial capitals trying to do something and a state level Ministry of Construction to approve projects are in place, while the state level Environmental Protection Agency that does the regulation, does not function properly at the moment.

Consultancy firms claim that sustainable urban development starts with integrated design (DHV 2007). However what's important is convincing people that it is essential to do something to improve one's environment. As the Dutch government claimed in a media campaign: The environment starts at home. More is necessary than consultancy reports. Good research showing what works and why would help to come up with realistic suggestions for ecological cities of the future.

Urban development in this decade means forging new partnerships between parties that have not often worked together: government officials, non-governmental organizations (NGOs) and private sector businessmen. This requires 'organizing capacity' (Van den Berg et al. 1996) and the ability to develop an integrated approach to the key issues facing the city. This is the job of an urban manager. This perspective is very much stressed in the Urban Masters Course of the Institute of Housing and urban development Studies (IHS) of Erasmus University. Ideas change over time and this affects the design of policies and projects to help the poor and to improve the urban environment in which they live. We assume they will change again, once the consensus thinking of the 1990s will start to fall apart because we will start to realize that countries, cities and wards differ from one part of the world to another, as anthropologists, non-western sociologists and geographers keep telling us. Pollution, solid waste and wastewater problems, all aggravated by climate change require a different urban management approach to build the ecological city of the future!

The China Daily of November 5 2008 published an article in its 'China Forum" claiming that it is time to rethink ideas on urban planning. Urban planning in China was characterized as a celebration of the present at the expense of historical heritage and future generations' well-being. This pattern of unsustainable development has been challenged time and again and should be replaced by "integrated approaches to the planning of cities, metropolitan areas and regions". Planning then becomes a tool for healthy urban development and environmental management. The Chinese ideal is than expressed in terms of steering toward harmonious settlements: "putting places in harmony with nature and between people

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Notes

[i] A much higher figure of 40 million unemployed is circulated in a report of the Chinese Academy of Social Sciences. (Financial Times, 11-9-2009)

[ii] The case study has been undertaken in Wuhan in November 2007 with a doctoral student, Mrs. Xiao Liang.

[iii] Grey water is wastewater generated in households, excluding water containing human excreta or urine, but including water from kitchens, bathrooms and laundry rooms.