

The history and geography of the eco city indicator system in China: How did the eco-city assessment framework evolve in China and how is it used in a variety of eco-city projects around the nation?

Workshop at Tsinghua Tongheng Urban Planning & Design Institute

Beijing, 19 April 2015

SYNTHESIS REPORT

This workshop was jointly organized by Delft University of Technology (TU-Delft) and the Tsinghua Tongheng Urban Planning & Design Institute in Beijing, China, as part of the Leverhulme International research network *Tomorrow's City Today*.

This session was the third and last of three sessions on eco city indicators in China. It focussed on the development of the eco city indicator system over from its origin until now, its spread across various locations and projects within China and its possible refining and improvement into the future. The workshop was held in the building of the Tsinghua Tongheng Urban Planning & design Institute, E1625, 16th floor, Building Jia 1, East Qinghe Jiayuan, Middle Qinghe Street, Haidian district, Beijing. It consisted of two parts: one with presentations and Q&A in the morning, and a second part after the lunch break with a round table discussion from approximately 1.30pm until 3.30pm. Both parts were chaired by Martin de Jong.

While the purpose of the first workshop in Shenzhen had been to explore whether there are eco city indicators in place and of the second to explore how these indicators are actually used in policy-making and planning processes, this third and final session aimed at tracking down the evolution of indicator systems over time and their differential spread across different projects and locations and what future prospects might look like.

As in the second session, most essential key partners from the first two sessions were re-invited, this consolidating the Community of Practice established. Recordings of the talks and discussion were made by Tsinghua Tongheng and this workshop report is based on the salient points thus recorded.

Participants and programme

Invited speakers were Tao Zou (Tsinghua Tongheng Urban Planning & Design Institute), Shanfeng Dong (Bluepath City), Ronald Wennersten (Jinan University and KTH Stockholm) and Li Yu (Cardiff University). Both the morning session and the afternoon roundtable were

introduced and facilitated by Martin de Jong (TU-Delft/Fudan University). Other people attending were Tom Wolters (UN Habitat and freelance consultant), Zhenshan Zhang (UN Habitat), Li Fen (IBR), Yan Qian (IBR), Peter Ho (TU-Delft), Alvin Chia (British Innovation and TU-Delft), Simon Goess (GIZ, German Development Agency), Chang Yu (Beijing Forestry University), Davy Pieters (Theatre Productions Amsterdam), Changjie Zhan (TU-Delft), Haiyan Lu (TU-Delft), Xiyue Cheng (THTH), Xiaoming Sun (THTH), Jiexin Cheng (THTH), Mingyi Li (THTH), Yongzhi Wang (THTH), Miao Feng (THTH) and Li Liu (THTH).

Main topics of discussion during the presentations and discussion

Topics under discussion

Each of the speakers was asked to address some or all of the following questions in their talk and in the roundtable discussion, depending on their specific expertise and experience:

1. What was the origin of the eco city indicator system in China? Which people/organizations introduced it, when, how and why? What did it look like?
2. How did the eco city indicator system in China evolve over time? Which international, national, local people/organizations made changes to it, when, how and why? What elements were taken out, added and/or altered? Is it possible to make a time-line?
3. Can we identify different versions of the eco city indicator system in China? If so, which different variations are there and in which cities are they used?
4. How are these various eco city indicator systems applied in reality in these various cities? What are the experiences? Are the effects truly monitored and corrective measures taken?
5. During the application of these eco city indicator systems, what drivers and barriers are experienced in implementing eco and low carbon cities? What is the current experience and what are options for improvement?
6. What mix of additional policy instruments (legal rules, financial resources, different type of information, staffing etc.) are required to come to 'true eco cities'?

Tao Zou's input and discussion around it

After Martin de Jong's welcome to the workshop, he gave a brief introduction to the topic amounting to the questions listed above. He raised the question why China had an indicator system in place, while South Korea did not, Why was this the case, who are involved in this process and how did it happen? Moreover, it seemed intriguing that different projects (Tianjin-Binhai, Tangshan-Caofeidian, Shenzhen-Longgang) appeared to have different indicator systems in place. Moreover, he wondered what was really done with these systems and whether any actual monitoring and corrective action were in place, thus opening the session with a number of burning questions. And finally, he suggested that perhaps various drivers and barriers in eco city development may be found in the (un)supportive role played by the deployment of policy instruments (Nodality, Authority, Treasure and Organizations) and the mixes and packages in which this is done. Tao Zou then

took the floor first. He began explaining that the origin of the Chinese eco city indicator system should be traced back to the Yichun eco city project in Jiangxi province in the early 1980s. This mainly revolved around an agricultural community that needed to be greened and which became a model for later initiatives. Experts from the Chinese Academy of Sciences (CAS) were actively involved in the development of a model where eco city indicators were derived from sustainable development thinking (with social, economic and ecological aspects of sustainability in the list of indicators). It was the Ministry of Environmental Protection (MEP) that officially adopted this indicator system. By the late 1990s not only MEP, but also Ministry of Housing and Urban Development (MOHURD) and National Development and Reform Committee (NDRC) also had their systems in place which were markedly different from that of MEP. While that of MEP had a stronger focus on eco cities and industrial parks, MOHURD's tended to emphasize the garden city aspects more, since it was in charge of the national garden city and national eco garden city programmes which were more spatial in orientation, although some environmental, social and economic elements had been added. By 2003, the national eco city indicator system established for Yangzhou City had become so sophisticated, advanced and complicated that only very few people could still follow it. As a counter reaction, in 2008 a simplification of the system was promoted, including relatively more environmental and less social and economic indicators. Over time, MEP and MOHURD learn from each other and competed to acquire a leading position in this field. Meanwhile, different ministries promoted their own sustainable urban development programmes under different names and since many new towns emerged, there was ample room for promoting such policies and adopting promising cities willing to apply for the position of demonstration city in any of these national programmes.

Interestingly, the mother of all eco city projects in China, Shanghai-Dongtan which was eventually aborted (at least under this name) never used an indicator system, but other quantitative analytical methods. For Tangshan-Caofeidian, the Symbio City concept, originally developed for Stockholm's Hammarby Sjostad, was introduced by Swedish experts. It was comprised of a very sophisticated eco city indicator system covering 141 indicators divided across 8 categories (urban form & space, landscape, water & waste water, environmental protection & emissions, energy, building, waste and transport) and conceived by Sweco's Ulf Andersson. The local government is trying hard to turn them into practice, but it is proving far from easy. Sino-Singaporean Tianjin-Binhai eco city on the other hand utilizes 26 indicators which are all about environmental matters, which are not very ambitious but relatively systematically monitored because of the professional bi-national supervision structures. Most recently, Hainan province has come to adopt a system with a mixture of spatial, social, environmental and economic aspects. In short, emulation and copying from each other seem to be the prevalent practice, with each of the contenders aiming to be 'winner' in the eco city rat-race. In the recent MOHURD campaign for national demonstration projects, 17 eco demonstration areas were approved. Its current indicator structure is a combination of Tianjin-Binhai and Tangshan-Caofeidian. Although the models are not yet the same, both MEP's and MOHURD's eco city indicator frameworks are growing increasingly similar and tend to focus more on smaller-scale towns and focus more on ecological concerns with only some indicators left for social and economic concerns. There is a certain tendency towards standardization and it may be expected that one national standard might evolve in the future. On the other hand, various cities and town around the country in different geographic areas and economic positions will continue to require

different approaches, so a completely uniform system would not do justice to this variety nor be workable in practice. It appears that NDRC's Low Carbon City programme is not working very well, but in the discussion it did not become obvious why. Still, different ministries develop their own words and names to create their own policy niches and NDRC as a state organ continues to be more influential than MEP and MOHURD.

In response to Zou's presentation, Ronald Wennersten mentioned that frameworks are clearly value-based. Who decides on them also determines which indicators are chosen and how they are weighed against each other. Alvin Chia wondered to what extent these projects could be called a success. It appears that some eco cities such as Tianjin-Binhai are more successful in economic and social terms than they are in environmental ones. Zou speculated that the indicators systems might even go down, because in the end they are only a part of a wider local context. They may get routinized in work practices and gradually become less important, at least as explicit standards. De Jong raised the issue of multiple accountability to various stakeholders. Doing well in the eyes of the investors is a necessity, and a growing GDP is a prerequisite is quintessential for local government. Does this mean that doing well ecologically is actually a bit of a luxury. Zou thought this was indeed a bit true and saw this confirmed in Tianjin, which is doing well socially and economically but ecologically unimpressive, for instance in terms of public transport access. He added that indicators that indicators must be quantified, because otherwise they cannot be managed.

At that point, the topic of a government restructuring necessary to make policies more rational and integrated emerged. Currently, local government is adapting to fragmented national silos for their own reporting duties and this national fragmentation has a lot of (negative) impact at the lower tiers of government. Ho asked whether it was the partial overlap in the system developed by MOHURD, MEP and Ministry of land Use and Resources (MLU) that caused the eco city development failure.

Zou responded that eco city development failures were specific to each of the projects. Dongtan failed to obtain the required land, making performance problematical (amongst other things). Dongtan appeared to be more story-telling than reality. In the case of Caofeidian the new industrial park was planned in the harbour which was dominated by a steel company. Later, Caofeidian eco city was cut off from the harbour area. Sweco, the Swedish consultancy firm, was not paid properly and the harbour started its own new town development. In addition, the officials initially responsible for the eco city policy were shifted to other posts, making the support unstable. Consequently, Caofeidian but also a great many other project o the kind suffer from high levels of uncertainty. On the other hand, in Tianjin, the people involved show a remarkably high level of stability. Most middle managers have not changed, which is impressive compared to other projects. It should be added that they really accomplished something in terms of social and demographic aspects (population growth, good educational and health facilities and confidence and satisfaction among the new inhabitants).

Li Yu added in response to the topic of China having indicator systems in place while South Korea does not that China's political and planning systems lead to this situation. The top down planning and reporting system was adopted from the Soviet Union with each sector having its own responsibilities and engaging in its own policies and requiring its sectoral counterparts at other tiers of government to adapt to its own reporting criteria. Different

ministries prepare their own systems and standards to report their own successes in top-down fashion. Similar to general policy-making patterns, urban plans drafted by local government must also incorporate all these features (norms and standards), else they will not be approved. Moreover, China has a vast number of ministries, which smaller Korea does not have. This is why China works with all these indicators and why policy-makers are so fact-sheet oriented. They are used to evaluate/assess the achievements of local governments and want to monitor top-down what is going on at the lower levels to see if the policies they adopted are working well. This is also the reason why awards are so important. Local governments are not forced to strive for obtaining them, but are happy to do it anyhow because it enhances their attractiveness to the outside world (investors, talented workforce etc.). being an eco-city or eco province is a kind of self-advertising. It is not only top-down imposing of norms and/or bottom-up reporting of scores, but also a sectoral carving up of reporting schemes that do not connect well.

According to Zou, the most problematical indicator in Tianjin is that for public transport. But it is also not completely fair to blame this on the city or the district or the supervision committee, because transport infrastructure facilities are not really under their control. We can thus conclude that indicator systems and basing assessment of officials on them has an element of unfairness: policy-makers can be punished for bad performance on a topic they have no real control over.

Shanfeng Dong's input and discussion around it

Also according to Dong, ministry recognition is key to project success. The adoption of the so-called eco civilization policy in 2002 made the use of eco city indicators as KPIs for decision-makers more important. This was considered more scientific and therefore adopted as a national strategy. Before that time, the academic playing around with eco city indicators had been more playful and on a voluntary basis. In 2012, when the national strategy for eco city indicators was even officially approved, those indicators even became an indispensable tool. In spite of that, economic growth remained absolutely imperative, because without that eco cities would never be attractive in the first place.

Nonetheless, it is important not to conclude too quickly that eco city development projects are a failure. Patience is due. Cities take decades to grow. In fact, even in Dongtan on Chongming island something is now being built: farms, parks, international conference centres, tourist facilities and houses. In Caofeidian the development process has been halted for now due to financial problems, but the building activities may well be started up again by other developers in due course. In Tianjin, a new theme is made up every year to keep focus and dynamics, and last year the total development area was increased from 31km² to 143km² to indicate its growing importance. Perhaps one may only conclude failure if nothing happens for a period of more than 5 years, but it is quite conceivable that the for some projects at a given moment in time, their plans do not fit national policies (yet or anymore) or the market situation is temporarily unfavourable, but that after even 10 years this may turn around.

It is also interesting to look at Sino-German Qingdao eco city, which was initiated in 2011. In the past few years little was heard of it, leading the public opinion to believe that perhaps it

had run aground. But in reality, the territory for the international economic cooperation zone has been increased from 10km² to 17km² and the project has been lifted from a district to (Shandong) provincial level project, indicating its growing credibility and importance. Something similar has happened to Beijing's future science park, which applied to become a national eco zone. Once economically successful, projects can move ahead. If not, one is lost and any environmental gain is futile. The contrast between Qingdao eco city's public disappearance and hidden growth can be explained by the media's tendency to exaggerate things and hunger for novelties rather than stable existing development. Dongtan and Qingdao are examples of opposite sides of the coin. It may well be wise for eco-parks to protect themselves by not being exposed too much to public and media pressure. Turbulence can disturb and Rome was not built overnight wither. Although the term Dongtan is no longer used, much of its original layout is in fact still in place and goes on under a different name

According to Dong, the trend that eco city indicators should be reflected in land use plans is growing stronger an evidence of their enhanced importance: developers can no longer afford not to take them into account any more. Beijing future science park also has 10 such indicators in place. Once a policy becomes an official national strategy, all policy actors will follow this trend. This is exactly what is happening with eco city indicator systems these days. Perhaps developments begin with a general vision, after which the indicators to measure its realization will follow. The third step might be the adoption of incentives/rules in the policies aimed to support it. Fourth and finally, rules may be set and governments may count on the self-organizing capacities of society to complete the implementation. Consultants such as Shanfeng Dong can only advise, the government can set game rules and technical parameters, but only companies really know HOW to do it. For instance, in Qingdao, a target is set of collecting 50% of the waste for recycling, and 100% of the companies to be located in the park should be clean product companies. But in the end, the indicators can only help monitor, they do not work automatically or by themselves. The good news, however, is that before it seemed that only GDP growth mattered, whereas now new (green) indicators have been added to evaluation, making the story more nuanced.

In response to Dong's presentation, Li Yu described eco city development not as a product but as a process. Rome indeed was not built overnight. Nonetheless, not all successful development is good eco city development. According to Yu, Dongtan was in fact built on a greenfield site and thus a net ecological loss. Dong disagreed claiming it was partly brownfield because the area was already somewhat polluted and mixed in nature before. Since sensitive areas were protected and waste was already produced, Dongtan aims to be also a net ecological gain. To which Yu retorted that Dongtan had been designated an ecological area and therefore any building there went against nature preservation policies. De Jong reacted by questioning how useful an apparently useful distinction in green field and brownfield sites really is. How green were the green areas in Dongtan? How far were the ecological marshlands away from the building site of the eco city? According Dong about 10km, and only a visit to the area can give a clear perspective of actual developments there.

According to Dong, an additional positive aspect of Dongtan, being the world's 1st eco city was its contribution to the knowledge pool on eco city development. Something similar can be said about Abu Dhabi and Masdar, although Wennersten immediately added that with SUVs and high resource use in the desert, little could be further from sustainable production

and consumption than those two Arab initiatives. He called this the development of ever more sophisticated framework to show that we are really going in the wrong direction.

Ronald Wennersten's input and discussion around it

According to Wennersten, Symbio City grew out of local initiatives in Sweden and emerged in a bottom-up fashion. Sweden then tried to sell it to China, but it contained too many indicators and was too complicated to handle. It probably simply does not fit the Chinese context either, but was attractive as a technocratic status symbol.

Eco city development should much more be seen as conflict resolution; it is not optimization of 100 indicators, but making choices and requires participation of a variety of actors. When asking the question whether eco cities really contribute to ecological metabolism, the answer is not easy to give, Wennersten's experience in Nanjing demonstrated. There for instance many barriers to interpreting the concepts: is nature really more natural than eco cities, as De Jong suggested? Perhaps this is not certain for Chinese people and experts, but for Swedish people this will be obvious. Moreover when talking about urban metabolism, where should the system boundaries be drawn? He involved himself in a cross-sectoral analysis with 8 sectors. Then he developed indicators for each sector, and participants were allowed to choose from among these indicators which ones they found the most useful and significant ones. But then the question among representatives of each sector inevitably came: "Why should we work together with them?"

An intriguing balance is the one between short and long term orientation. Eco city planning may take up to 15 years to become successful, but mayors are elected for just 4-5 years. Hence the need for indicators that can already show provisional and gradual results. They need to show results. Most actors think ahead for 5 years, but showing intermediate results is sometimes hard. A solution can be to define short-term, mid-term and long-term goals and measure accordingly.

Another funny misunderstanding is that people believe that technologies clean up the air, but that in reality 99% of the air is cleaned by nature itself. Still, in the current state of things, it may well be that ecological modernization will not be enough to 'save the planet'; more fundamental change is required, but planners had, have and will have a hard time going beyond it because they are squeezed between government regulations and initiatives on the one hand and market players on the other who want profit and care little for the eco city. The risk of the growing popularity of the term 'smart city' is that it draws the attention away from ecological matters. ICT is not per se clean. Moreover, smart cities with smart infrastructures require smart citizens to operate well. The hard physical side of urban development will not suffice.

In sum: the roundtable discussion

After the lunch break, martin de Jong gave a short introduction of his work with Simon Joss and others on the 12 different city categories, how their use has evolved over time and how they are conceptually related to each other. In reaction, Tom Wolters added that meanings sometimes really depend on individual cases. Amsterdam's Smart City is in fact close to a green city, but those in China are more 'control-room oriented'. Good news is still that

'putting people first' has even entered the debate more in China (walkable, bikeable, compact, liveable city etc.) The question remains of course what a liveable exactly is. Can this be measured with indicators or should respondent react after viewing MC questions with photos of various locations? Liveability is hard to catch in indicators. Zhenshan Zhang added that experts have to decide what liveability exactly is, because normal citizens cannot, but not all agreed with this more expert-oriented approach.

Shanfeng reminded all of the elephant story. Some see the ear and think it is a bat, some notice the tail and believe it is a snake, while yet other observe the leg and claim it is a pillar. It works the same way with liveable cities and smart cities. They are all of the above and names are primarily used for branding and evolve over time depending on fashions. Fen Li added that local governments react to national programmes and simply change their names. One could call this the national dimension in the administrative context. Experts then react enthusiastically to the new concepts and start developing them further. Wennersten agreed and mentioned these concepts cannot really be defined, but act as platforms for discussion. Dong added that interestingly, Tianjin has achieved something that was not really covered so much in the indicators: social liveability. This happened as a result of evolution in the interaction among the stakeholders rather than anything else.

De Jong then wondered what had happened to a project that had not been really that successful: Beijing Mentougou eco city, initiated by the Finnish eco city engineer Eero Paloheimo. According Dong, it had really completely stopped by now, because Paloheimo was dissatisfied with the fact that in the design his vision would not (even nearly) be realized. Local government and developers thought it had been unrealistic and therefore gave up. Zou had seen that before shifting the ideas to Mentougou, they had been proposed for the Tianjin Eco City project before and the idea was to reserve some space there to try them out, but Tsinghua University experts had criticized them there as being 'too dreamy', which led Paloheimo and the developers to promote them for Beijing-Mentougou afterwards (eventually also in vain). The question is whether this is actually the end: the ideas might live on under a different name, or Mentougou will develop still with some of the initial ideas included. One local leader is still excited about new future technological and blow new life into (a version of) the project. Ideas die hard; they keep floating from project to project. People and their positions change all the time (except for Tianjin) and take their ideas with them.

According to Wennersten, failures in international collaboration are rarely publicized. Although Wuxi in Jiangsu province is still Sino-Swedish in name, and he remembers provincial officials telling him that Swedish companies simply sold equipment and then left without engaging in 'real collaboration'. Little else happened. The picture is the same for Qingdao and Shenzhen: local governments want technology and ideas at low or free rates, while foreign governments want to promote their companies. This uncomfortable quasi-collaboration can sometimes last several years. In fact. Companies cannot really earn money out of Symbio City itself (consultancy), but only from selling equipment. This explain why such situations arise.

Responding to the question asked by Simon Goess whether it would be a good idea to merge the several plans and their indicator systems, Zou answered that this is often discussed but proves hard to realize. MOHURD could draw everything in the direction of

urban planning, but NDRC would likely step up against this and it is still very powerful. Different ministries try to control the merging process, but will be in charge? MEP, MOHURD, NDRC and MLU will not trust each other. Moreover, even the National Statistics Bureau is now adjusting its system to include low carbon aspects, so the importance of the topic is growing year by year. Local governments often claim they have an indicator system in place, but in reality they only want to develop it or are working on it. Additional complication is that indicators are not 'done' in daily practice. Daily practice is different and works with other measures. So indicators must be fleshed out in departmental manuals (design guides to make them come to life for policy-makers and planners.

According to Dong, local governments normally try to find something they are good at and submit a proposal on that to a ministry. Guiyang, for instance, has now developed an eco civilization indicator system, and can credibly present itself as an eco-city simply because it is located in a green and hilly environment. Although it does not have the reputation of being wealthy, it does have a natural wealth that help it promote itself. The eco-city success is thus hardly achieved through hard and effective policy work, but just a natural asset.

Finally, Simon Goess looked into the future and asked about the prospects for 3th and 4th tier to become eco cities as well, possibly with international cooperation. That would really imply that the policy is mainstreamed across China. But would they be taken seriously and be able to make it or be left unnoticed about the Beijings, Shanghai and Shenzhens of this world? According to both Dong and Zou, if they do well, the provinces in which they are located will recognise it and promote them further. Reporting in the future will definitely be more than GDP alone, and on this aspect real estate developers are not in charge. Recognition awarded by higher governments is the key to success. Real estate consideration only follow after that, at a later stage. Who knows if this advantage of the strong state will eventually help for the creation of sustainable cities, even amidst the problematical status quo. China's sustainable urbanization is much touted by authorities and indeed underway, but still has a long, long way to go.

Martin de Jong, Delft University of Technology & Fudan University, 19 April 2015

To find about more about the 'Tomorrow's City Today' research project, and other related projects and publications, please visit our website:

www.westminster.ac.uk/ecocities