

MoHURD Eco-City Implementation Guideline for Municipal Finance

Preamble. This Eco-City Implementation Guideline has been developed with the assistance of the Europe-Chine Eco-Cities Link Project (EC Link), and been submitted by the Chinese Society for Urban Studies (CSUS). It draws on the work done by the EC Link project in the development of sectoral toolboxes¹ which present European and Chinese best practices, urban development standards, indicators and methodologies for verification. Further, the development of this Guideline is informed by project work of MoHURD-affiliated pilot cities which are implementing eco-cities activities, and piloting innovative practices. EC Link has provided as inputs toolboxes for the following 9 sectors: compact urban development (CUD), clean energy (CE), green building (GB), green transport (GT), water management (water supply, waste water treatment and flood control) (WM), solid waste management (SWM), urban renewal and revitalization (URR), municipal finance (MF), and green industries (GI).

Objectives. The objectives of this Eco-City Implementation Guideline is to provide guidance, and to ensure compliance. The document is meant for all Chinese cities which are participating in the national MoHURD-supported eco-cities programme. Besides guidance, the document will help to ensure compliance of cities with the normative part proposed under this guideline.

Legal Basis. This Eco-City Implementation Guideline is complementary to the existing urban planning legislation of the People’s Republic of China (PRC), and other guidelines of the Ministry of Housing, and Urban-Rural Development (MoHURD), particularly those pertaining to eco-city development. China’s financial sector is experiencing rapid changes and innovation, with many new instruments of green financing emerging in the recent years. The sector is regulated by the following legal instruments:

- 1998. Securities Law (Latest Revision in 2013)
- 2003. Banking industry supervision and regulation law (Latest Revision in 2006)
- 1995. Commercial Banking Law (Latest Revision in 2015)
- 1995. People’s bank of China, Insurance Law (Latest Revision in 2015)
- 1995. Budget Law (Latest Revision in 2014)
- State Council. 2013. Guidance on the Promotion of Urban Infrastructure Construction
- State Council, 2014. Instruction on Encouraging Social Investment of Financing Mechanism in Key Areas
- MoF. 2015. Notice on Supporting the Construction of Sponge City Pilots.
- State Council. 2015. Guidance on Renovation of Shantytowns and Dilapidated Houses in Urban and Rural Areas and Construction of Supporting Infrastructure.
- NDRC. 2015. The Guideline for Issuing Green Bond.

¹ EC Link Toolbox. 2016. *Municipal Finance*. Beijing. Draft English version. www.eclink.org.

- The Supreme People's Court. 2016. Opinions on Giving Full Play to The Function of Trial and Safeguarding Services to Promote The Building Ecological Civilization and Green Development.
- State Council. 2015. The Guidance to Encourage Social Investment and to Innovate Financing Mechanism and Investment on Key Areas, The Key Areas of Investment and financing mechanism contains public services, resources and environment, ecological construction, infrastructure.
- MoF. 2016. The Notice to Comprehensively Promote Resources Taxation Reform.

This Eco-City Implementation Guideline is mandatory for all Chinese cities which are participating in the national MoHURD-supported eco-cities programme. Application of practices of green municipal finance will be monitored and reviewed by MoHURD. Successful application will be rewarded through special allocation of funding and technical implementation support.

Geographical Scope of guidelines. The geographical scope of this Eco-City Implementation Guideline are urban areas as defined by the existing legislation. The application of this Eco-City Implementation Guideline may be extended to Districts which are under the jurisdiction of a city (urban area), as applicable.

Substance of this guidelines. This Eco-City Implementation Guideline is dedicated to green municipal finance (MF). The implementation of eco-city development approaches concept makes it necessary to deal with green municipal financing. Green municipal finance need to be seen as complementary elements of a more sustainable urban development. To implement eco-cities, it will be necessary that cities are committed to the approach of green financing.

What is green finance. Green Finance stands for the responsibility of the financial sector in supporting the reduction of GHG emissions and creation of a climate resilient economy. It includes all parts of finance such as green banking, green stock markets, green financial ratings, green insurance companies and of course green municipal finance (GMF). GMF is crosscutting through a number of green finance topics such as green banking and financial instruments such as loans, but also when the issuance of green bonds is discussed. Financial instruments have an impact in ecological factors in the sense that what they finance should follow “green” standards and criteria. For GMF it is important to understand how financial instruments can stimulate growth and green behavior of citizens and enterprises.

Justification

The financing deficit. Research by McKinsey & Co. estimates that the financing of China's green economy could require up to US\$ 5.8 trillion by 2030. This would be equivalent to an annual investment of US\$263 billion annually until 2030, more than the share of the current stimulus plan that went to green infrastructure (US\$221 billion).² Public funds will continue to be the main source of funding China's transition to a low-carbon economy.

² WU, C. 2009. *China's Clean Revolution*, JP Morgan's Hands-On China Series, December 7, 2009, Beijing.

Decentralisation. Over the last 20 years, China like many other countries, has started to give more powers to local governments, decentralizing e.g. health, educational and infrastructure responsibilities to lower levels. However, worldwide revenues of municipalities have not kept pace with expenditure needs. Local governments rely on intergovernmental transfers while at the same time their own revenue source is not sufficient. Conventional funding sources for cities depend on local taxes (property taxes and others) and user fees, without being able to tap more lucrative taxes such as e.g. income tax. Some cities have been allowed to issue bonds in the local capital market, increasing their long-term indebtedness. In order to provide sustainable long-term finance for municipalities, a change of the institutional and regulatory framework is needed. The objective of this transformation process – independent of any “greening” aspects - must result in an increase in finance available to cities preferable from own sources in relation to the services offered.

Global importance of private sector financing. The mobilization of private sector investments is of paramount importance as can be seen by the world-wide structure of climate finance:

- According to the Climate Policy Initiative global climate finance reached USD 331 billion in 2013.³
- The private sector was the largest contributor to global climate finance with 58% equaling USD 193 billion, leaving the public sector (excluding domestic allocations) with USD 137 billion and 42%. Almost 3/4 of the total flows were invested in the country of origin. Especially private sector investments stayed in the home countries where national climate change frameworks are well established and understood.

Green Municipal Finance needed. Not only the urbanization process and the increasing impact of cities on the environment calls for action, but also the fact that the current financial base of most cities is insufficient. Green municipal finance (GMF) creates the opportunity to capture the need for an urgently required transformation process in municipal finance and link it to environmental necessities. It hooks on to governments’ overall climate and environmental policies linked to international climate targets and is part of the overall green finance family. Green Finance encompasses the entire financial sector including e.g. green banking, green capital markets, green rating systems etc. Usually the national level is the decisive force to bring Green Finance forward. This has a trickle-down effect to the local level in the manner municipalities can raise money, provide incentives and hand out penalties to encourage environmental behavior. There are two sides to GMF:

1. Revenues should come from environmentally friendly or green sources; and
2. Expenditures need to be channeled to low carbon and climate resilient investments.

³ Climate Policy Initiative (CPI). 2014. Landscape of Global Climate Finance: these numbers do not include domestic funding. The volume of total climate finance worldwide remains opaque. No official registry exists to which climate finance is reported, especially funds from the private sector, other development aid under a different heading than climate finance and flows from domestic climate actions are difficult to detect. Subsequently the international community is found to quote different figures.

Sources of green municipal finance. Green revenue sources include public sector finance (intergovernmental transfers and municipalities' own revenues), private sector finance and external finance (through climate finance, carbon markets and other sources).

The main sources of municipal revenues are intergovernmental transfers, taxes, fees and charges. The greening of municipal revenues requires a focus on the transformation process of conventional instruments. It needs to be understood that the revenue sources are paramount to hinder or to promote an environmentally friendly policy. If charges are based on a tariff system where the usage of water gets cheaper, the more water is used, it has to be concluded that this is counterproductive to the idea of a green resource efficient municipality. Another example that would lead to non-green revenues are subsidies that distort the price of natural resources and thus encourage irrational behavior by spending more natural resources (energy, water, petroleum) because they are cheap.

Positive examples for taxes, fees and charges which promote the green idea are property taxes that restrict urban sprawl, transportation fees that stimulates car traffic and user charges that reduce water consumption. The main sources of revenues originate from buildings, transport, water, waste collection, and other environmental fees. Income from transportation and buildings are highest representing transportation fees (e.g. parking fees) and property taxes. It highlights the power that certain revenues have to contribute to a green direction.

National agendas. The national political agenda sets the frame also for the greening of municipalities' actions. Therefore policies and actions need to point into the same direction in order not to lessen the effects. A good example is the use of thermal power. National governments may need to protect existing interests despite the fact that at the local level 100% green energy is promoted. The greening of municipalities in a "hostile" national framework is bound to fail. National policies related to green municipal finance include the ability of cities to take up debt, their independence to set tariffs, fees and charges as well as the basis for tax collections.

Relevance of private sector. In addition to public sector sources the private sector has to play a role. To attract the entrepreneurs to invest in municipal infrastructure conditions need to be in place that fosters the investment climate for the private sector. Prerequisite is that cities are in the position to design infrastructure in a manner that contain the major policy objectives of a green infrastructure and have the private sector to see a business case in an investments that a) allows profits and b) has limited risks.

Public-private partnerships. Conventional instruments such as public-private partnerships (PPPs) rely on concession contracts that are mostly targeted at the production of volumes and amounts such as cm³ of water, megawatts of energy, number of cars using a road, etc. The more the concessionaire produces, the higher the revenues will be. Subsequently the PPP contracts need to set the right incentives for environmentally conscious behavior. The structure needs to be changed to reflect a performance based income situation. A utility will be paid based on the amount of customers that can be convinced to switch to renewable energy sources. For instance, when water is supplied by private concessionaires, the contracts are either lease or concession based which link the revenues of the concessionaire to the amount of water consumed. Some cities are trying to change this by focusing on resource protection,

reduction of water consumption and reduction of water losses, however, these are long-term contracts and renegotiations proof to be difficult.

In addition to public and private sector finance (and the interlinkages through public private partnerships) external sources of finance have to be considered such as carbon finance and green bonds. In summary, while conventional municipal finance relies on an unspecified and uncoordinated system that maximizes income or reduces indebtedness in a general sense, green municipal revenues achieve the same amount (or more) of income but are based on a well-coordinated approach of environmentally relevant incentives and penalties.

Enabling framework. An enabling framework needs to be in place to bring together existing conventional financing resources. To “green” these conventional instruments a thorough analysis has to be made to understand their impacts and the mode of action of the incentive structure behind it.

Classifying green expenditures. The following reviews green expenditures and how they differ from conventional investments, classifies typical investments by type of likely funding source and provides for sector specific risks and rewards.

The three major differences in conventional expenditures versus green expenditures are:

- Climate change is a pressing need. Investments have to be done in a much shorter time span to avoid detrimental effects on the municipalities well-being
- Municipalities will invest in urbanization projects in urban expansion areas (“greenfield”), and urban renewal and revitalization (“brownfield”) projects as part of the urbanization process and at the same time have to renovate or modernize existing infrastructure to address ecological inefficiencies. This double-burden results in higher overall investment costs.
- The effects of green investments are the savings of long-term environmental costs. The current conventional financial instruments and mechanism do not capture the nature of this long-term benefits, because
- Positive social and environmental effects are difficult to quantify in monetary terms, any cost-benefit analysis could render conventional investments much cheaper.
- The effects of green investments are much longer than any conventional project and would need to be calculated to capture the long-term benefits.
- The risk of green investments may be higher due to changes in legislation, cost of carbon dioxide and energy costs. Pricing of new commodities such as carbon remain a threat for long-term calculations.

Large needs for green finance. Cities have almost limitless needs for investments in urban infrastructure to offer good services at reasonable prices in an environmentally friendly manner. The infrastructure measures can be divided by the nature of their greenness. There is a difference in terms of financing between an investment made to adapt to climate change, like environmental protection measures such as flooding of rivers and the greening of existing or new infrastructure such as transportation and water. Adaptation measures (“green projects”) are likely to have a national or transboundary reach, do not generate income and are therefore prone to be finance from intergovernmental transfers and external climate finance related sources. Mitigation

projects or “greenable projects”⁴ are environmentally friendly infrastructure projects, such as electro-mobility for transportation and reuse of water. Also the generate income and thus have a wide array of possible funding opportunities including the private sector, user fees, taxation and other.

Looking at the classical infrastructure measures municipalities have to fund, the abatement costs (amount of GHG emissions that can be decreased) compared to investment costs are not allocated equally through the various sectors. In some sectors such as transportation the upfront capital costs are high with low abatement costs once the investment is done. Other sectors such as power are less capital intense; however, abatement cost can be high over time. This is a bit of a paradox situation as municipalities shy away from transportation projects because of the high upfront costs and budgetary constraints, despite the high abatement potential. Subsequently next generations will have to deal with the emission problems in transportation resulting in much higher abatement cost.

Typical investments of cities. Municipalities invest typically in the following sectors. The below summarizes from a financial point of view the main risk and pitfalls of each of them and highlights where applicable revenue generating opportunities⁵. The objective is to maximize the finance available for projects and to minimize its costs.

Public Transport:

- Right of Way (ROW) risk and relocation risk requiring funds for acquisition and streamlined court processes for compulsory acquisition as well as mechanisms for relocation minimizing disruption of poor communities and providing housing options (often including finance);
- ridership projections notoriously wrong – real outcomes often being much lower than projections (roads and Mass Rapid Transit) and much higher (Bus Rapid Transit);
- replacement/incorporation of informal service providers requiring difficult negotiations on governance arrangements and bridging finance;
- potential for land-based finance in right of way (ROW).

Green Buildings:

- development of green building as energy-efficient buildings, following standards of national or international certification systems (LEED, BREEAM; DGNB, etc.); applying for prior and post-construction certification;
- retrofit of existing older buildings to follow standards of national or international certification systems (LEED, BREEAM; DGNB, etc.);
- application of smart technologies for energy generation through photovoltaic technologies, and water heating through solar water heaters;
- application of smart systems for management of heating, lighting, ventilation, water usage in buildings.

4 Source: OECD 2012, Financing green urban infrastructure

5 Source: Lindfield, M., Latay, V., Docta, V.M. Financing Sustainable Cities. in: Lindfield, M. and Steinberg, F. (eds.). 2012. Green Cities. Manila: Asian Development Bank. Urban Development Series. Manila. pp. 296-372. <http://www.adb.org/publications/green-cities>

Clean Energy:

- Heating or energy source for cooling cost and reliability are potential issues although good planning, utilizing cogeneration possibilities, for example, exist;
- Difficulty in getting collective agreement of owners in buildings to retrofit – particularly if this also includes insulation;
- Form and reliability of tariff levels and adjustment, availability payments and/or treatment fees.

Water supply/ Waste water:

- Rainwater harvesting and utilization for washing, flushing and cleaning purposes, or drinking after treatment;
- Raw water source cost and reliability, ROW for trunk supply mains and collectors;
- Water treatment, but particularly waste water treatment, sites NIMBY effect requiring action as above;
- replacement/incorporation of informal service providers requiring training and livelihood programs;
- form and reliability of tariff levels and adjustment, availability payments and/or treatment fees.

Drainage and flood control:

- Identifying a potential revenue stream is difficult for some projects, but often possible;
- Potential land-based financing on dykes, drainage ROWs and retention basins used as revenue earning open/ recreational/ concession space;
- Potential for levying local 'rates' (increments to property tax) to recover costs in exchange for increased amenity and flood avoidance benefits exists.

Solid waste management:

- Disposal on acceptable sites. Objection by citizens -- 'Not In My Back Yard' (NIMBY) – may cause additional costs, requiring additional disposal sites;
- Replacement or incorporation of informal service providers require training and livelihood programs which represent extra costs;
- Form and reliability of fee collection for waste dumping.

Urban renewal and revitalization:

- Urban renewal of existing assets through retrofitting and repair of buildings, their water, energy and heating or cooling systems;
- Difficulty in high density historical neighbourhoods to introduce modern service standards and new technologies (solar heating, photovoltaic technologies) or others;
- Absence of clear policy makes it difficult to define sectoral policy regarding protection of original, often poor, inhabitants and property owners;
- Increase of property values through urban renewal may lead to affordability issues for original residential population. Gentrification may lead to selling and resettlement of former property owners;
- Difficulty to retain character of urban renewal areas;

- Potential for levying local rates for increased amenity and other benefits exist, i.e. lowering heat island effects.

City greening:

- As with drainage, revenue streams for parks and other open spaces are sometimes limited;
- While parks and other open spaces are usually publically funded, costs of maintenance can be defrayed, and amenity often increased, by appropriate concessioning – charging providers of services for use of some land;
- Potential for levying local rates for increased amenity and other benefits exist, i.e. lowering heat island effects.

Urban Agriculture:

- Greening (and food production) on roof tops and/or facades.
- Some cities – e.g. Shanghai - already obtain a significant proportion of food from its immediate hinterland;
- Urban or vertical farming of more interest in the future – while currently highly energy intensive, research continues to increase its efficiency;
- If it achieves potential efficiencies, conventional commercial finance could be forthcoming.

Industry greening processes:

- Project formulation and development processes expensive (but often cost recoverable);
- Bridging funds required to finance upfront expenses;
- Dependent on energy tariffs and prices for recyclables and thus savings/ revenues are often uncertain.

Development Objectives

Policy Direction from the 13th Five-Year Plan. The Government’s pronouncement of the Five Year Plan objectives has stated three key objectives:

- Increased efficiency of energy resources development and utilization; effective control total aggregate of energy and water consumption, construction land, and carbon emissions. The total emissions of major pollutants shall be reduced significantly.
- City development shall be in accordance with the carrying capacity of resources and the cultural context. Green planning, design and construction standards shall be applied.
- Support reduced emission standards, and implement demonstration projects of “near-zero” carbon emission.

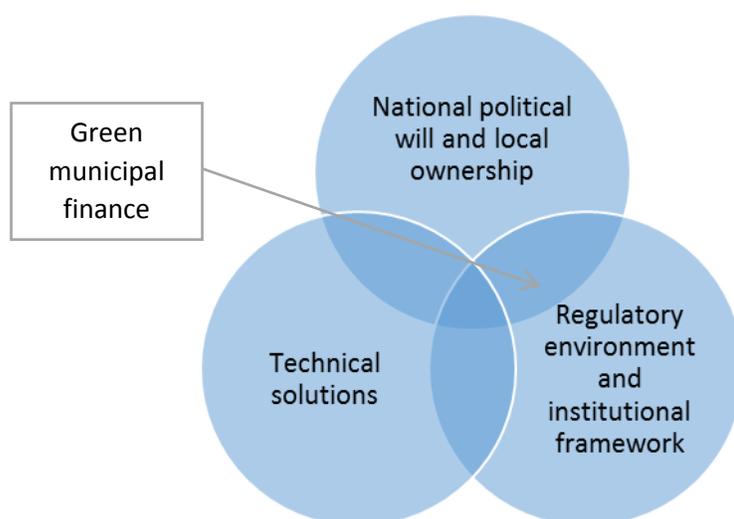
While no specific mention was made about municipal financing, it is assumed that green municipal financing will become a requirement if the above targets are to be achieved. Other pronouncements have pointed at the need for a national green development fund and green bonds.

Green Development Fund needed. A 2016 report from the China Council for International Cooperation on Environment and Development recommends that China

launch a national green development fund, develop long-term sources of finance by promoting green bonds and support the development of a green finance risk guarantee mechanism, including environmental liability insurance.⁶

Objective of green municipal finance. The overarching objective of green municipal finance (GMF) is to support the development of cities to provide necessary infrastructure in a socially and environmentally sustained and long-term manner. GMF is instrumental to the higher objectives of livable green cities in an overall country context. It is embedded in the larger picture of national policies, the regulatory environment and the institutional framework under which it works. These cornerstones enable local decision makers to pull the right strings when it comes to prioritizing municipalities green expenditures as well as design proper green revenue sources. The policy aspects will be discussed in more detail below.

GMF and the triangle of conflicting priorities



Source: EC Link

Guiding principles. Breaking the development objects of GMF down to the micro level of financial instruments and mechanism the following guiding principles apply:

- **Getting the incentives right** Sources tapped and mechanism or instruments used to finance green municipal infrastructure should avoid setting the wrong incentives. Investors and users should bear the full marginal social costs of their actions in regard to the environment. This means that green municipal finance mechanism and instruments need to include externalities (e.g. depletion of ground water

6 Bapna, M. 2016. Golden opportunity to embrace green growth. *China Daily*. 17 March 2016. http://www.chinadaily.com.cn/opinion/2016-03/16/content_23887655.htm

resources through extensive use of water needs to result in higher fees) as much as possible.

- **Maximizing own source revenues.** Municipalities' own revenue sources need to be maximized to cause changes in behavior of citizens and to increase the income base. Taxes, fees and user charges need to address directly the unwanted behavior. People need to understand how to save natural resources and what it costs if they don't. This allows local governments to stir their fiscal budget in a balanced and environmentally friendly manner.
- **Increase resilience of Green Municipal Finance.** Conventional instruments do not adequately reflect the needs of environmentally desired investments due to their static interpretation of risks and rewards. As discussed above this may impact the finance of new technologies, but the range is much broader when it comes e.g. to finance energy efficiency, where a rethinking process has to take place in banks because not an increase in production capacity is financed but the saving of energy and other resources. It needs to be understood that this leads to a reduction of operation costs from where the loan will be repaid and not an increase on cash-flow due to a higher turn-over.

It is at this micro level that green municipal revenues have to match green municipal expenditure to set the incentives right.

Own source revenues

From financing necessities to new opportunities. While most Chinese cities have financed a large part of their recent developments through land sales, and transfers of national subsidies, the future may hold many innovations through tax reforms. Property taxes, value capture tax, tax increment finance, fees and charges, development charges, municipal green bonds, private sector financing, and public-private partnerships will become indispensable new avenues for municipal finance.

Greening property tax.⁷ Property taxes are one of the major income sources of local governments. However, in China at this moment they are not yet practice. Property taxes should be analyzed to understand their impact on GMF. Property Taxes (PT) are usually levied on land and improvements, the latter meaning buildings, infrastructures and other. In the way a PT is levied it can influence the way land is used. A higher tax discourages and a lower tax encourages land use. This can have an effect on urban sprawl, depending on the manner the PT is structured. Usually PT is levied on residential, multi-residential, agricultural, commercial and industrial properties. If a PT covers land and improvements, lower-value improvements are favored as they result in a lower tax rate. This favors e.g. single-family homes versus multi-residential ones, which typically can be found in less densely populated areas thus leading to an expansion of cities. A low tax on single-family home gives the wrong incentive. It is also important to understand in terms of urban sprawl on what value the tax is based, how it is determined and what percentage of the value is actually taxable.

⁷ The following relies on: Brandt, N. 2014. *Greening the Property Tax*. OECD Working Papers on Fiscal Federalism, No. 17, OECD Publishing. <http://dx.doi.org/10.1787/5jz5pzw9mwzn-en>

PT has to be seen in connection with other instruments most importantly the land use planning policy, which determines the future use of land. PT as an individual tax has little impact if the land use system is pointing in a different direction. Another point is the impact of fuel taxes and toll road fees. If a city is spread-out and citizen need to commute to work they become an important determinant in the decision making process. Empirical evidence suggests that property tax in combination with other instruments has a positive impact on urban sprawl, especially when the tax on the building is lower than on land. An alternative to a PT would be a land value tax, which is based on the local rent that can be achieved. Because the owner has an interest to increase the rent the assumption is that investments are made in buildings and thus no taxation of improvements has to be maintained. The land value tax is only little used, because of the difficulty in assessing the tax base.

Currently the property tax regime does not reflect any externalities such as cost of environmental degradation or cost of extending public infrastructure services. Few governments have tried to internalize the externalities such as include infrastructure that needs to be built to connect to new developments or remote areas to public services and transportation. The US and Canada are in the forefront of testing different forms. In Toronto the city government taxes multi-residential buildings at the same rate as single-family homes to discourage a further spreading of the city. Another test is ongoing to reduce the PT for those who install certain energy efficient measures or renewable energy devices.

It has to be concluded that the current usage of PT has an impact on the spreading of cities. The multitude depends on the level of the tax rate, how the different land uses are taxed in comparison and how the value is assessed. However, PTs do not yet include a) the environmental cost nor b) the costs of connecting to public services. The question remains if these are costs that will be included in the PT or charged independently. It has also not been discussed if this “extra” should be a tax or a fee (development charge below).

Value Capture Tax (VCT). This tax is levied on businesses, the industry and private land owners who directly benefit from municipal improvements in infrastructure in their area of location. The logic behind it is if e.g. a new public transport hub is created surrounding shops and small services will participate due to the increased movement of people in their neighborhood. The same goes for industries or private home owners, who would generate windfall profits through cities’ infrastructure improvements.

VCT can capture the aspects of GMF very well because the measure is introduced by the local government to transfer to a low carbon and climate resilient city. They have all the leeway to decide which measure to take. Historically most of the projects where VCT (also called betterment tax) was introduced related to public transport. A good example is the urban metro system: “The Hong Kong metro system is the only underground mass transit railway in the world which earns unsubsidized fare revenue sufficient to cover all costs, including depreciation plus operating profit margin.”⁸

Tax Increment finance (TIP). TIP is a mechanism which will allow local authorities to borrow against locally raised future income. The cost of building infrastructure will be paid

⁸ http://www.ucl.ac.uk/qaser/pdf/publications/ernst_young

for through future extra taxes generated by the property development. Local governments would be enabled to take up finance (against this new source of income) generated by areas that need to be recovered or are brownfield developments. Cities designate a certain area as TIP district and earmark all future increases in property tax to pay for other infrastructure developments.

TIP is practiced in the US since 1953 and has shown mixed results as to their impact on greening municipal revenue sources. One of the main reason is that these developments have not been undertaken at places that would most need an (environmental) redevelopment but at places that generates the largest income. This has often been areas that are already well-off, because – as the experience in the US showed - they have a higher up-ward potential for investors than poorer and socially less developed areas.

Considering TIP as on mechanism for green municipal revenues municipalities need to be mindful of the fact that they depend very much on market forces. If the TIP area does not pick up as expected, no additional income will be raised, leaving the future budget in disarray.

Fees and Charges. Innovative fees and charges. In addition to taxes municipalities are allowed to collect fees and charges. As discussed above, detrimental effect on the environment should be avoided. Therefore in the following a selection of innovate charges and fees are introduced that safeguard natural resources and target at a change in human behaviour.

As in the process of green finance in general it is useful to operate with a holistic approach. This may have undesired results, because it usually sets a broader agenda, without leaving room for much fine-tuning to avoid harmful consequences. However, e.g. social detrimental actions can be balanced and rectified, once a holistic system is in place that sets the right direction. It is easier to provide exceptions from the rule, than to have individual policies that need to be aligned.

The instruments used must be well planned and provide the right incentives. That takes time and thorough planning. The measures may be very specific in what they address, but the main message must be that they are transparent and easy to handle. In Singapore e.g. the congestion charges is not a flat fee but vary by the time a car passes through a specific area, by the type of car, by the type of area the car passes etc. The price is highest where the action is least desirable. This level of detail is necessary to set the right agenda: don't drive alone in your car during rush-hour!

Examples for innovative charges are:

- User charges that cover the full cost of services, such as water and electricity, including the cost of providing the supply and of damages caused by usage, and the opportunity cost of taking the resource from other potential users, including the ecosystem
- Emission (effluent) charges based on quality or quantity of waste (usually wastewater)
- Product charges on products that pollute surface or groundwater during or after consumption, based on the actual value of damages caused by their use
- Tradable rights to use a quantity of a resource (usually water) and the establishment of a market for such rights
- Marketable permits entitling an entity to treat its waste and sell its permit, or to not treat its waste and purchase more permits

- Refund systems for commodities packaged in nonreturnable containers to ensure that these are returned for proper disposal or reuse.⁹

Development charges. Development charges (see also above property tax) are a one-time payment levied on developers to finance the cost of infrastructure provided by the municipality due to the growth impacts new and redevelopment areas have on the immediate surroundings. These costs would include the extension of roads, water and wastewater systems as well as the enhancement of schools and hospitals. In the past, the developer already paid for public on-site costs such as roads. The development charge should cover the cost of these new infrastructure measures. The idea behind it is that due to the new development surrounding areas need to adapt, which creates costs that should not be borne by the cities but by those who benefit from it. The ultimate beneficiary will be the new tenant. This at least is the argument of developers who shift the extra cost to the new owners.

Development charges can also be pinpointed at environmental costs that occur due to the new occupation of land. It would represent a target approach to internalize externalities. Also, the level of development charges can be used as a political instrument to manage urban sprawl, the higher the development charges the less financially attractive it becomes. In Canada, the Ministry of Community Services has issued a Best Practices Guide for development charges, based on feedback from local governments and the development community¹⁰. It provides a good insight up to which level the development charges can be differentiated to target the environmental purpose efficiently.

Green bonds. The issuance of bonds increases the level of indebtedness of municipalities and at the same time helps to leverage private finance. To make these “green” bonds, cities have to use the proceeds of the bond to finance green projects. Often it is a combination of various projects and undertaken ranging from greenfield developments to the renovation of existing infrastructure. Since the bond has to be repaid at end maturity most of the projects financed under a bond are income earning and thus fall under the mitigation categories. When national government support the bond issue (through tax exemptions or subsidies) adaptation projects are likely to be included.

The amount of green bonds to refinance municipalities remains small, but the World Bank has for example issued green bonds. 20% of the proceeds were invested into municipal infrastructure.¹¹ Municipal bond schemes enable qualified local government issuers to borrow money at attractive rates to fund energy conservation projects such as

- Reducing energy consumption in publically owned buildings
- Implementing green community programs (including loans, grants, or other repayment mechanisms) such as efficient street lighting replacements and loan programs for residential energy efficiency improvements
- Developing rural capacity, specifically involving the production of electricity from renewable energy resources

⁹ The list does not intend to be complete. It is amended from: Lindfield, M., Latay, V., Docta, V.M. Financing Sustainable Cities. in: Lindfield, M. and Steinberg, F. (eds.). 2012. *Green Cities*. Manila: Asian Development Bank. Urban Development Series. Manila. pp. 296-372. <http://www.adb.org/publications/green-cities>

¹⁰ See http://www.cscd.gov.bc.ca/lqd/intergov_relations/library/DCC_Best_Practice_Guide_2005.pdf

¹¹ For example, US \$100 million bonds were issued for the city of Wuhan, China to develop an integrated, safe, and environmentally-friendly urban transport system that supports coverage and quality services, and the safety of pedestrians and cyclists. The project will reduce 459,000 tons of CO₂eq. emissions annually.

http://treasury.worldbank.org/cmd/pdf/ProjectExampleinChina_WuhanSecondUrbanTransport.pdf

Green bonds usually require a close cooperation between local governments and the national level. One reason is the above discussed matter of contingent liabilities: what happens if the bond cannot be repaid by the city, will the national level take some sort of liability? The second point is that the rating of the national government is usually better than that of second or third tier cities and thus impacting the level of interest rate at which the bond is priced. It would be just more economical, if the national government raised the debt. Though green bonds are still in the minority as compared to the overall quantity of bond issues¹².

Leveraging private sector finance. For municipalities to attract private sector co-finance for infrastructure measures requires a number of things:

- The business case for the private sector needs to be convincing
- The return on equity needs to be clearly defined
- The risk for the private sector needs to be containable

Because the municipal market as compared to the national market is relatively small, municipalities are well advised to communicate their aspirations well. To create a win-win situation meaning that the advantages for the municipalities and the private sector are clearly defined, this process needs a long and thorough planning period. It must be analyzed for what reason the private sector is invited to participate. This will determine the sort of arrangement between the public and the private sector. Below the most common forms are introduced.

Public-Private Partnerships. In the past public-private partnerships (PPP) were the most prominent form of leveraging private sector finance.¹³ A PPP is a partnership between the public and the private sector in which the private party provides a public service and assumes substantial financial, technical and operational risk. The government or in this case the municipalities contribute often by providing the asset, the land or sometimes become equity partners. The benefit of such arrangements which often take place e.g. in municipal water or energy projects that the public sector does not need to make any financial investments and that the public service is provided with the efficiency of the private sector. Common risks are the quality and quantity of services the private sector produces and the payment for the services the private sector is providing which is often higher than the tariffs or fees the infrastructure project is producing.

Conventional PPPs are based on concession contracts such as BOTs (build-operate-transfer) or BOOTs (built-own-operate-transfer) and other forms determining the role of the private sector. As opposed to traditional public sector procurement, where the private sector simply executes as per public sector orders, in PPPs the private sector bids for a certain project and the role they play at different stages (design, construction, completion, operation etc.). For this the private sector receives a fee over the lifetime of the contract.

As mentioned above conventional PPPs rely on concession contracts where the private sector bears the demand risk. Therefore the interest of the concessionaire is to meet the demand and even outperform it. The more the concessionaire produces, the higher the revenues will be. Subsequently the conventional PPP contracts do not set the right

¹² See <http://www.kpmg.com/global/en/issuesandinsights/articlespublications/sustainable-insight/pages/gearing-up-for-green-bonds.aspx>

¹³ For the discussion on PPPs see also OECD 2012, Financing green urban infrastructure. http://www.oecd.org/gov/regional-policy/WP_Financing_Green_Urban_Infrastructure.pdf

incentives for environmentally conscious behavior. PPPs are worldwide used and the general experience is positive, if the pitfalls such as high transaction costs, length and inflexibility of contractual structure and the complexity of the project structure are managed well.

To green PPPs the objectives must change. A good example is for example to include energy efficiency obligations (EEOs) for utilities are set qualitative targets such as the amount of water that need to be reused. The PPP arrangement as such remains, but the objectives are formulated in a way that internalizes externalities. EEO is part of the so-called demand side management, whereby energy companies and utilities are obliged to fund measures that lead to energy or carbon reductions. A penalty will be levied on the company if energy savings targets are not met. In other words, utilities are made to make their clients save energy. For example energy companies give or finance advice to their customers how to save energy and install the relevant measures. These actions are measurable and can be verified. Subsidies may be provided initially for each kW/h saved.

The results of such actions are quantified in energy saving accreditations back to the energy company or so called White Certificates. They state how much energy has been saved and can also be produced by third parties such as energy service companies and other firms like insulation companies. In some countries these certificates can be traded, helping the energy company to meet the targets. White Certificates can be issued for electricity savings, gas savings and other fuel source savings depending on government objectives. Some forms of EEOs are also called on-bill finance because the utility takes the (high) upfront costs and the customer is repaying the investment with the energy bill.

To sustain EEOs, energy companies can be supported by local governments through subsidies to incentives the clients. Subsidies can range from 0-100% contingent for example on the necessity to cushion off social adverse effects. The customer has to pay at least a part of the EE investment to assure their continued interest in the measure and their active contribution to save energy. The results of EEOs have been promising, as can be seen in energy costs saved. An innovative form of PPPs is energy performance contracting (EPC). Specialized companies, so called energy service companies (ESCOs) enter into a contract with the local community to undertake energy upgrades that are funded from saved costs. The contracts may cover energy efficiency upgrades and the switch to renewable energy. The idea behind both is that either the saved operation costs or the sale of the newly produced renewable energy will finance the investment costs. The ESCO will only get paid once the energy savings is achieved. There are different contractual models - guaranteed savings and shared savings – which reflect the level of risk allocation between the two contracting parties. In addition to the contractual structure of a PPP and an EPC the before mentioned development charges, tax increment finance and value captured tax also count as forms of leveraging finance from the private sector.

Other revenue sources

Clean Development mechanism. Carbon finance under the United Nations Framework Convention on Climate Change (UNFCCC) provide under the Kyoto Protocol for two methods to offset GHG emissions, one being the Clean Development Mechanism (CDM).

China has been trading certified emission reductions (CERs) on international markets notably via the Clean Development Mechanism (CDM) for many years. China has been taxing these CER transactions and has established a CDM Fund of which the proceeds that can be used to reinvest in green infrastructure projects. Carbon finance increases the bankability of projects by adding an additional revenue stream via the selling of emission reductions. This hard currency revenue stream reduces the risks of commercial lending or grant finance for the development of infrastructure projects.

The Clean Development Mechanism in China. The CDM is a project-based mechanism defined by the Kyoto Protocol under the United Nations Framework Convention on Climate Change (UNFCCC) to achieve emission reduction targets in a cost-effective way. Under the CDM developed country parties to the Koto Protocol cooperate with developing parties in trading Certified Emission Reductions (CERs). Under a CDM project, a developed country party acquires CERs generated by the project that is implemented in a developing country party. Emission reductions from CDM projects must be real, measurable, and long-term, and they must be additional to any that would occur in the absence of the certified project activity. China is party to both the UNFCCC and the Kyoto Protocol. Over the past five years China has developed the most dynamic CDM market in the world. China is the leading country in the world in terms of registered CDM projects (3,924 in 2015¹⁴, or 55.9% of all CDM projects in Asia¹⁵). It is also the world champion in terms of volume of annual certified emission reduction (CER) certificates traded.¹⁶ The Government of China appointed several key administrative institutions to be in charge of supervising the CDM market. The National Leading Group on Climate Change (NLGCC) is responsible for formulating CDM policies and defining standards. It also coordinates the National CDM Board—the location of the Designated National Authority. The National CDM Board reviews and approves CDM projects, and supervises CDM implementation. CDM Centers were created and located throughout the country, and a National CDM Fund further contributes to the country's effective CDM institutional framework. CDM projects approved by the Designated National Authority have included projects supporting renewable energy, energy efficiency, and methane recovery and use. Each of these sectors is essential to support low carbon growth via providing energy security, supporting employment creation, reducing pollution and encouraging technology transfer. As stipulated in its 11th Five-Year Plan China has extended the range of its CDM interventions beyond the industrial processes that formed the larger share of initial deals; and increasingly, CDM transactions have served technology transfer in the energy sector. With payments received from CDM revenues via taxation on CERs traded, China has established a CDM Fund which will be soon operational. The CDM Fund will be in a position to select and fund its own transactions in China and has reached almost 1 billion US\$ in capitalization by 2010. Moving forward, the future of the CDM in China seems to be in encouraging more technology development notably by engaging in cooperation with the Ministry of Commerce and its investment promotion strategies in terms of green technology penetration in China. The green technologies licensed in China are themselves not always widely available in the more remote provinces, and the CDM Fund could play a key role in disseminating homegrown high tech solutions in the more isolated provinces. Such a

14 <http://cdmpipeline.org/cdm-projects-region.htm>

15 <http://cdmpipeline.org/cdm-projects-region.htm>

16 World Bank. 2010. *Clean Development Mechanism in China: Five Years of Experience (2004-09)*, World Bank, Washington D.C.

generalized domestic dissemination could result in massive emissions reductions while strengthening domestic consumption and economic growth. CDM resources could also be leveraged to co-finance government projects, policies, or programs in key green sector areas. This could be developed by systematically defining opportunities for CDM funding in large infrastructure projects, by cooperating with provincial energy conservation centers in the validation of projects, and by designing a national enterprise CDM program to reward enterprises that exceed energy-saving targets. Developing further market mechanisms to accelerate emission reduction and carbon trading would leverage these initial successes. China has already started developing domestic pilots for innovative domestic emission trading by setting up the Environmental Exchanges in Shanghai and in Beijing.

Municipal Environmental Exchanges. Environmental exchanges have been set-up as pilot schemes (in Beijing, Shanghai, and Tianjin) in order to explore on a pilot basis the feasibility of emissions trading. In August 2008 the China Beijing Equity Exchange (CBEEEX) was founded by the China National Offshore Oil Corporation, the China Guodian Corporation, and the China Everbright Investment management. The exchange was set-up with the approval of the Beijing Government and it recently released its first standard for a voluntary greenhouse gas offset. The standard (named *Panda Standard* version 1) was developed with Europe's largest carbon credits exchange (Blue Next), and aims to provide transparency and credibility in the nascent Chinese domestic voluntary carbon market. The Beijing municipal government has named Dongcheng district a low-carbon economic zone and calls for the further development of the CBEEEX.¹⁷

Subsidies for environmental performance. "The central government allocated more than 158.6 billion yuan (\$25.4 billion) in 2013, up from 2.3 billion yuan in 2001, to cover eight major areas such as forests, grasslands, rivers and seas... Eco-compensation seeks to compensate suppliers for resource consumption or pollution in the ecosystem, and to punish polluters through methods like fiscal transfer payments, direct government allocations, and environmental taxes and fees... Eco-compensation has promoted environmental protection in recent years, he said. More than 6.1 billion yuan has gone to forests in 2013, as China has witnessed a forestation increase of 2.49 million hectares, and the amount of land with water and soil erosion was reduced by 57,000 square kilometers. 'Eco-compensation has fueled the growth of environmental industries and improved people's livelihoods in some regions'...¹⁸

Innovative green pricing mechanism: Shanghai Green Electricity Scheme. In 2006 the World Bank supported the creation of an Energy Conservation Center in the city of Shanghai and looked at the possibility of developing a green electricity scheme there. The scheme was named —Jade Electricity by the Shanghai municipal government and allowed consumers to purchase, on a voluntary basis, part or all of their electricity from renewable energy sources. Participating customers paid a premium on their electric bills to cover the incremental cost of the additional renewable energy thus contributing to making the city's electricity portfolio more sustainable and to reducing local air pollution. The program initially supported only wind and photovoltaic energy as renewable-based sources. A

¹⁷ Asian Development Bank. 2010. *Peoples' Republic of China: Study on Beijing Green Finance Development Strategy*, Technical Assistance Report, ADB, September 2010, Manila.

¹⁸ Payouts are key move in going green, *China Daily*, 2015-06-27, http://www.chinadaily.com.cn/m/guizhou/2015-06/27/content_21119250.htm

municipal decree and implementation plan provided the legal framework for “green” electricity. This opens new ground for the future generalization in China of green electricity pricing schemes.

Green finance to develop low-carbon cities - The Urban Development Investment Companies. China’s urban transformation in the last few decades has been unprecedented. At the core of this transformation is China’s ability to invest in urban infrastructure ahead of demand. In future years, the challenge will be to invest in green infrastructure, and in many respects already, China is anticipating demand for low-carbon cities. Since the early 1990s the Urban Development Investment Corporations (UDICs) have played a key role in helping the local governments build high quality infrastructure at an unprecedented pace. The UDIC model offers the local governments a corporate structure under the Company Law of the Peoples’ Republic of China to marketize the financing, construction and operation of municipal infrastructure. Local governments have utilized the UDICs to build the municipal infrastructure over the last 10-15 years. The Shanghai Construction Investment Development Corporation (Shanghai Chengtou) has initiated an innovative green financing scheme by proposing to on-lend bank loans to finance green projects. This initiative appears to represent a key avenue for future green municipal financing.

Shanghai Pudong Development Bank Lending for Green Building. The Pudong Development Bank (with assistance from the Asian Development Bank [ADB]), has been providing CNY300 million in partial credit guarantees to Shanghai Pudong Development Bank (SPD Bank) to support private-sector financing of energy-efficient buildings across the People’s Republic of China (PRC). SPD Bank is the first Chinese partner in a program set up by ADB to encourage financial institutions to lend to companies seeking to retrofit old buildings so that they use less energy or to construct so-called green buildings which are designed, constructed, and maintained to optimize energy and water efficiency over the buildings’ lifespan. Retrofitting buildings typically leads to energy savings of 20%-40%. Under the CNY800 million Energy Efficiency Multi-project Financing Program, ADB is partnering with Johnson Controls, a private sector energy management company listed on the New York Stock Exchange. Johnson Controls identifies buildings with energy savings potential while ADB shares the project credit risks with the financial institutions. Given the PRC’s rapid urbanization, improving the energy efficiency of buildings will help significantly in cutting the gases that contribute to climate change. However, companies have found it hard to access the finance to do that given they can offer little collateral to back their loans, while banks themselves have little experience in project finance for energy-efficiency projects. By sharing credit risk with our partner bank under this program, we aim to ease the financing bottleneck and expand critical private sector investment in energy-saving green buildings in industry, commercial, and also social infrastructure, such as sectors schools and hospitals.¹⁹

The Beijing Green Finance Development Strategy. The Beijing municipal government has an ambitious strategy to position Beijing as an international financial center for green finance. The Beijing municipal government proposed the development of a Beijing pilot carbon finance district which will be a hub for carbon finance and green finance

¹⁹ ADB Press Release. Manila. 16 May 2011, cited in Lindfield, M. Steinberg, F. (eds.) 2012. *Green Cities*. Urban Development Series. Asian Development Bank. Manila. <http://www.adb.org/publications/green-cities>

transactions in China. The pilot carbon finance district is to be located in Beijing's Dongcheng district, which has been designated a low-carbon economic zone. The Beijing municipal government plan also calls for the expansion of the China Beijing Environment Exchange (CBEEEX) into a major exchange for carbon finance products. The creation of the pilot district and a major exchange will promote the growth of environmental finance business. Increased financial transactions and innovations, in turn, will finance activities that will lead to reduced greenhouse gas emissions.²⁰

The "new" municipal bond scheme. A new scheme was introduced in 2011 that allows ten wealthy localities in China— Shanghai, Zhejiang, Guangdong province, Shenzhen, Jiangsu, Shandong province, Beijing, Jiangxi, Ningxia, and Qingdao—to issue bonds directly (hereafter called "new scheme"). Previously, bonds had been issued by the Ministry of Finance (MoF) only, on behalf of provinces (mostly 3-to- 5-year bonds). Under the "new scheme" bonds can be issued directly by city governments and provinces (also 3-to-5 year bonds). Since 2011, four local governments (Guangdong, Shanghai, Shenzhen, and Zhejiang) have been allowed to issue their own bonds and two more provinces (Jiangsu and Shandong) entered the bond market in 2013. The market entry and volume of bond issuance has been carefully controlled by the MoF, and that has increased in 2013 to RMB 70 billion, up from RMB 28.9 billion in 2012. Since 2014 (stage 3), a new scheme is in place which allows issue of bonds directly by local government, and local government are responsible to repay the principals and interest rate. For investors, green bonds backed by the World Bank are an opportunity to invest in climate solutions through a triple-A rated fixed income product. The credit quality of the green bonds is the same as for any other World Bank bonds. Repayment of the bond is not linked to the credit or performance of the projects, and investors do not assume the specific project risk. Investors benefit from the AAA/Aaa credit of the World Bank, as well as from the due diligence process of the World Bank for its activities. World Bank green bonds can be seen as an experiment that demonstrates that the capital markets can be a source of funding for climate-related initiatives. But triple-A rated public credit that can be used to channel funds to mitigation and adaptation projects is scarce. To mobilize resources in the massive scale that is needed to tackle climate change, the next step must be to design fixed-income products that optimize the trade-off between volume and credit.

Green financial policies and regulations. Since 2007 China's Ministry of Environmental Protection (MEP) has initiated a series of green finance policies ushering-in a new way of addressing environmental degradation. Credit restrictions placed on environmentally adverse investments were introduced via the Green Credit policy of July 2007 regulating bank lending. Since then there has been sizeable progress in the development of green finance in China, including the creation of regulations, internal bank compliance mechanisms, and the introduction of initial public reporting requirements.²¹ The green finance policies launched in 2007 were part of a wider architecture of innovative environmental principles embodied in the 11th Five-Year Plan. These principles were designed to include environmental impacts in the finance sectors, to control pollution from specific high-risk industries, to curve energy consumption and to promote clean

²⁰ Asian Development Bank. 2010. *People's Republic of China: Study on Beijing Green Finance Development Strategy*. Technical Assistance Report. ADB. Manila.

²¹ Chan, M. and Matisoff, A. 2008. *The Green Evolution, Environmental Policies and Practice in China's Banking Sector*. Friends of the Earth. November 2008, Washington D.C.

technologies. A set of broad principles were coined to express these reforms. The —three simultaneities (三同时)— policy referred to the need to integrate the potential adverse environmental impacts of a project from its inception stage, instead of having to deal with consequences after the project is implemented. This environmental due diligence or safeguards has been requested by development Banks for the development of all their investment projects worldwide, and has been integrated in the policies of the MEP in China. Also, the MEP coined the term —*liang gao* (两高)— an expression now widely used in China to refer to a group of 14 particularly polluting and energy intensive industries. This group includes notably thermal power, steel and iron production, cement, aluminum, coal extraction etc. A third guiding principle which received wide resonance in nation wider was issued by the National Development and Reform Commission (NDRC) and is known as —Support the Larger, Restrict the Smaller— a policy introducing a practice of shutting down small thermal generation production units when and where larger units are installed. Larger plants are more energy efficient and their electricity is distributed to consumption centers via substations, thus preserving populations from living close to smaller generation units.

The green credits policy regulating bank lending. The Ministry of Environmental Protection (MEP), the China Banking Regulatory Commission (CBRC) and the People's Bank of China (the Chinese Central Bank) jointly issued the —green credit policy in July 2004. By signing an agreement to establish a corporate credit database, they established a —credit blacklist of companies that did not meet environmental standards established by the MEP.

The green insurance policy regulating insurance companies. In February 2008 the MEP and the China Insurance Regulatory Commission (CIRC) issued the green insurance policy. This policy places an obligation on all industries that have significant pollution risks to undertake insurance. Industries targeted by the policy were those with the handling or disposal of high-risk chemicals and dangerous waste products. Over 80% of China's large-scale heavy chemicals projects are located near dense urban centers or near environmentally protected areas. This is an important reform that is APPLIED nationwide since 2015.

The green securities policy regulating China's capital markets. The green securities policy was issued by the MEP and the China Securities Regulatory Commission (CSRC) in February 2008. The policy is designed to block polluting corporations to raise capital on the stock exchange by forcing them to disclose more information about their environmental record.²² This policy was reinforced by the introduction in June 2008 of a Green Initial Public Offering or —Green IPO— policy document, requiring companies from 13 sectors that fall within the —Liang Gao— framework to undergo an environmental review conducted by MEP prior to initiating an IPO or obtaining refinancing from banks. Under the Green IPO procedure, in addition to its own internal evaluation, the MEP initiates a ten-day pre- IPO period during which external consultations are held to gather public's opinions about the IPO applicant. The added pressure of civil society and non-governmental environmental organizations in the screening process seems an effective tool to make information public and the screening process more objective.

²² Reuters. 2008. *China Orders Listed Firms to be Greener*, Environmental News Network, 25 February 2008

Current developments in the Chinese banking sector supporting green finance development. The China Banking Regulatory Commission (CBRC) complemented the core three green finance policies described in the previous section by issuing a directive on strengthening the corporate social responsibility (CSR) of financial institutions. This directive or —opinion on Strengthening Banking Financial Institutions Corporate Responsibility -- introduces a number of social safeguards to protect clients of financial institutions but also environmental due diligence to —protect and improve the natural ecological environment. In addition, the CBRC has issued a much needed special instruction to protect Small and Medium-Sized Enterprises (SMEs) from falling victims to too harsh bank lending policies. SME-friendly flexible policies are essential in order for this innovative branch to not be unduly penalized by regulations and their administration, which places a disproportionate burden on them when compared to big State groups and their interests.

Lessons learnt. For green municipal financing to work for cities in China, there is a need for a system of various mechanism: low carbon subsidies from the national government; tax and other incentives to procure low carbon products which have undergone certification; and preferential credit mechanisms from financial institutions for green investments. The development of tailored financing modes supportive to green investments shall broaden financing options, these should include government awards for extending financial support to green investments through debt promotion in infrastructure and land-based investments. Cities shall explore the greening potential of financing vehicles like PPP and BOTs. Additionally, special funds and diversified instruments are needed for guarantees to secure private capital investments. For guarantee purposes, assistance through land allocation, licensing, and green certification shall be provided to ensure low-carbon design and low-carbon operations.

The challenge is clear. The foundations for green growth will lie primarily in the development of low-carbon cities, cities that combine integrated solutions for their energy provision, the development of transportation networks, for waste recycling, for energy efficient buildings. The financing requirements will be enormous and municipalities in China will require new financial instruments to respond to the challenge. Cities are challenged to explore new forms of green financing. The existing mechanism described above present a fruitful arena for such financing innovations. It can be expected that in the coming years, reforms of the municipal taxation systems, will empower cities to levy property taxes also, and, thus, become much more capable to reduce their dependence on central government transfers.

Expected impact. The application of smart green financing is expected to support the investments required for more urban efficiency, reduced energy consumption, and low-carbon development.

Proposed Municipal Finance KPIs ²³

Municipal Finance			
	Indicator Category	Indicators: indicative values	Current achievements / Time frame for accomplishment
1	Access to finance	National support __ (¥ bn) – as % of total investments. Own revenues __ (¥ bn) – as % of total investments.	
2	Green finance (special fund; green bonds) [1]	__ (¥ bn) – as % of total investments [1]	

Sources:

[1] MoHURD. 2015 and 2016 versions. *Appraisal Standards for Green Eco-City/District Planning (draft)*. Beijing [Unofficial Translation].

Responsibilities for Implementation. The responsibility for use and application of this Eco-City Implementation Guideline rests with the city administrations, the local MoHURD offices. MoHURD and CSUS will provide technical support and specific guidance where required. In its intention to pursue consistency of eco-city development, MoHURD is committed to verify the achievement of targets and to ensure improved performance on an annual basis.

Monitoring and review. MoHURD will monitor and review periodically (i.e. annually) the results of the application of this Eco-City Implementation Guideline. For monitoring and periodic review it will utilize indicators as provided above. The city administrations (and district administrations), supported by the local MoHURD offices, will make regular use of these indicators as a means to measure performance.

Date issued: 201█

²³ These key performance indicators were prepared and compiled by the EC-Link Project. See: EC-Link. 2016. *Sino-EU Key Performance Indicators for Eco-Cities*. Beijing (unpublished draft)

Annex 1 – Technical Annex

(still to be added, once work in EC-Link cities completed)