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### Foreign aid, urbanization and green cities

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#### Abstract

Rapid urbanization, and particularly the associated problems of urban poverty, unsustainable development and environmental degradation, pose an enormous challenge to many developing countries. In the last decade more foreign aid has been diverted to urbanization and green city development. This paper studies aid's implementation strategies and effectiveness by investigating 'what works in foreign aid on urbanization and green cities', 'what could work', and 'what is scalable and transferable in foreign aid on urbanization and green cities'. Three case studies are carried out: Tianjin City which was constructed according to a newly designed eco-city plan, Wenchuan and Beichuan which needed to be rebuilt after an earthquake, and Curitiba which rose from an existing city. The paper shows that a transferable and scalable aid framework which combines concerns related to poverty, environment and governance both at policy and implementation level is needed in order for aid to succeed in supporting developing countries' urbanization and green city development.

Keywords: developing countries, sustainability, aid effectiveness, scalable, transferable, framework

JEL: O1, Q1, R1, Z1

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## Acronyms

|       |  |
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| CDS   | city development strategies                            |
| DAC   | Development Assistance Committee (of the OECD)         |
| GEF   | Global Environment Facility                            |
| IDB   | Inter-American Development Bank                        |
| IFC   | International Financial Corporation                    |
| MDGs  | Millennium Development Goals                           |
| NGOs  | non-governmental organizations                         |
| ODA   | official development assistance                        |
| OECD  | Organisation for Economic Co-operation and Development |
| RCTs  | randomized controlled trials                           |
| UMP   | the Urban Management Programme                         |
| USAID | Agency for International Development                   |
| WCED  | World Commission on Environment and Development        |

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## **1 Introduction**

A ‘green city’ or a sustainable city is one that has been designed with due consideration of its environmental impact, and is inhabited by people dedicated to minimizing necessary inputs and waste outputs. More specifically, it means creating the smallest possible ecological footprint, producing the lowest quantity of pollution, using land and materials efficiently, encouraging biodiversity by preserving natural habitats and so on. Green cities function in the spirit of self-reliance and self-sufficiency, and offer their residents an excellent quality of life.

It is estimated that over 50 per cent of the world’s population now live in cities and urban areas and this is set to rise to 60 per cent within the next few decades. These large communities provide both challenges and opportunities for achieving the goals of green city development. This is particularly the case within developing countries<sup>1</sup> and may produce dramatic economic and environmental effects on these cities.

Foreign aid plays a vital role in improving the lives of people across the developing world. In the last decade as the environment concern has become prominent, more foreign aid has been diverted to the sustainable development of certain localities (e.g., cities) in the developing world. For example, with the help of foreign technologies, management and capital, cities in China and Brazil have recently been working towards building sustainable city models for the benefit of the whole country. However, while the world encourages sustainable development and supports it through financial means or aid, there are suggestions that assistance has not made a regular and predictable contribution to overall development. Implementation strategies and their effectiveness are the subject of increasing debate. Furthermore, there are no comprehensive studies at present in the literature on foreign aid and green cities, which could report the types of schemes, implementation methods or the amounts of foreign aid that contribute directly to green city development.

## **2 Literature review**

### **2.1 Introduction of foreign aid**

Foreign aid (also known as international aid, overseas aid, or aid) is the international transfer of capital, goods, or services from a country or an international organization for the benefit of a recipient country or its population. Aid can be economic, military, or emergency humanitarian (e.g., aid given in the aftermath of a natural disaster) (Encyclopædia 2012). Aid may be given by individuals, private organizations, or governments. In general, it can be classified into two major types: humanitarian aid and development assistance. Humanitarian or emergency aid is speedy assistance given to people in immediate distress, while development aid is given to support development in general, which can be either economic or social development in developing countries (Wikipedia 2012a).

Foreign aid in its modern form dates back from the early 1940s, when it intensified after the Second World War as Europe faced a critical shortage of capital and the need for reconstruction. After success in Europe, aid in the 1950s and 1960s focused on the

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<sup>1</sup> For example, it is estimated that 93 per cent of urban growth will occur in the developing nations in the next few decades.

developing countries, as it was widely believed that economic growth was the key objective of aid. It was assumed that, based on capital investment and increasing savings through a ‘big push’, long-run economic performance would launch countries onto self-sustaining growth or ‘take off’, resulting in the elimination of poverty and inequality. In the 1970s there was an increased interest on employment, income distribution and poverty alleviation through multilateral channels such as the UN and World Bank. In the 1980s, as developing countries faced setbacks from high oil prices, internal macroeconomic imbalances and slower external global growth, financial programme aid and adjustment loans became fashionable instruments for achieving external and internal macroeconomic balance. International financial institution policymakers advocated the necessity in developing countries of a better economic policy environment for capital accumulation and technological progress. In parallel, poverty alleviation slipped out of view in the mainstream agenda, although continuing to remain at the centre of unorthodox thinking. In the 1990s, aid was directed more towards development assistance. Public finance analyses suggested that funds should go to activities that generated positive externalities, advocated sustainability and promoted projects that required only start-up funding after which they would survive without external support. This, however, was not always true for some projects such as disease control (Kremer and Miguel 2008). In the new millennium, development related to environmental issues has become the most prominent purpose of aid-giving in many countries. In practice, there was an agreement to side-line growth as the basic measure of aid effectiveness, to be replaced with a stronger focus on the principles of recipient ownership, alignment, harmonization, managing for results, and mutual accountability. Multiple goals were laid out. For example, United Nations’ Millennium Development focuses on poverty alleviation and environmental quality as well as literacy, health and women’s right.

Aid can be classified as official aid and private aid or non-governmental aid, which reaches recipients through bilateral or multilateral delivery systems. Bilateral aid refers to government-to-government transfers through agencies, such as US Agency for International Development (USAID) while multilateral institutions, such as the World Bank or UNICEF, pool aid from many sources and disperse it to numerous recipients. Private aid includes help from charities, philanthropic organizations or businesses to recipient countries or programmes within recipient counties (Wikipedia 2012a). There are dozens of bilateral and multilateral agencies and hundreds of non-governmental organizations (NGOs). Over the past ten years (2000-09), members of Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD) have continued to dominate governmental aid. The governments include, notably, the United States, European institutions and the United Kingdom, etc. (GHA 2012). Non-DAC countries such as China, India and Saudi Arabia are increasingly engaged in strategic ‘south-south’ aid programmes. Private foundations and non-governmental agencies are another significant addition to ODA. Multilateral aid is mainly used to support development programmes of the UN agencies, the European Union, the World Bank and regional development banks. Bilateral aid is disbursed largely through grants to government ministries or through national and international development NGOs (OneWorld 2012).

Today, as many as 180 countries or territories receive foreign aid. Over the past decade (2000–09), main recipients include Africa<sup>2</sup> (a large proportion has gone to sub-Saharan countries) and Asia, accounting for 46 per cent and 24 per cent of total assistance,

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<sup>2</sup> Sudan, Ethiopia and the Democratic Republic of Congo (DRC) have been among the largest recipients for humanitarian aid.

respectively. The next two major recipients are the Middle East and Latin America (GHA 2012). In Asia and Middle East, Afghanistan, Pakistan, Indonesia, Palestine/OPT and Iraq dominate the aid scene, largely due to conflict and natural disasters.

Foreign aid has been justified in public policy pronouncements in widely differing ways, ranging from pure altruism to the shared benefits of economic development in poor countries, political ideology, or support of the foreign policy and commercial interests of donor countries (Tarp 2010). It is also true that aid is rarely given for purely altruistic reasons. For example, ‘only about one-fifth of US aid goes to countries classified by the OECD as “least developed” ’ (Singer 2009). The motives are multifaceted assistance, ranging from the selfish to the generous. In principle, aid programmes are inspired by four broad motives (OneWorld 2012), although these vary between donors and are influenced by the global political and economic climate. The first is poverty alleviation. Historically, humanitarian aid has attracted a relatively high level of assistance allocated during various stages from emergency relief to recovery. Now, food and emergency relief still remains an important form of aid. The second motive is the donor country’s pursuit of strategic political and economic interests such as strategic self-interest and development of markets. The third motive stems from tackling terrorism within so-call fragile states, whose vulnerability to poverty is believed to be a causality of cyclic violence and terrorism. The fourth motive is rooted in the recognition of a country’s interdependence in the context of economic, environmental and security issues. Economic development and growth, poverty and healthcare are major concerns in aid-receiving countries.

Foreign aid may involve transfers of financial resources (e.g., loans or cash), commodities (e.g., food) and technology and training. Resources can take the form of grants or concessional credits (e.g., export credits). Grants and loans with at least a 25 per cent grant element are defined as official development assistance (ODA), which is the most common type of foreign aid (Encyclopædia 2012). A proportion of aid goes to international research, such as experimental development conducted within the green revolution or many vaccines.

## **2.2 Foreign aid, environment and development**

Many people in developing countries are living in ecologically fragile environments, and the concern for the protection or improvement of the environment came increasingly to the fore during the second part of the 1980s and the early 1990s. Its origins can be traced back to the publication of *Limits to Growth* (Meadows et al. 1972) in the early 1970s and the United Nations Conference on Human Environment in Stockholm. But the issue was not a priority theme nor was it linked to development assistance until the publication of the report *Our Common Future* by the World Commission on Environment and Development (WCED 1987). The World Conference on Development and Environment in 1992 further developed the link through the mechanism of Global Environment Facility (GEF). Following the mandate of its 2011 ministerial council meeting, the OECD forged an ambitious, institution-wide development strategy to help countries achieve sustainable growth by helping them to mobilize their own resources, put in place sustainable solutions and become the authors of their own development. The OECD Report 2011 called for new targets, highlighting concerns and global challenges such as transport, energy and climate change; and redefining the Millennium Development Goals (MDGs) to include elements of global public goods. Even though ecology has a broader scope, aid agencies perceive poverty to constitute a major threat to the environment (Stokke 1996).

Environmental sustainability is essential for strong economic development. Many environmentalists deplore the sacrifice of the environment to promote development, and some critics call for aid to be invested in sustainable projects that include built-in measures to protect the environment (Purvis 2003). Emerging countries like China, Brazil and India are undergoing vast industrialization and urbanization processes similar to what happened early in the last century within the developed world, and the transformation process needs external support. But protection of the environment is often opposed as the developing countries fear they cannot compete in world markets. Several foreign aid projects in environment and development are emerging to promote integration of environment and climate change into all aspects of development cooperation. For example, Green Growth Strategy by OECD endeavours to provide policy advice to developing countries with respect to economic growth, job creation, environmental improvement and social equality. In addition, a series of 'good practice guidance notes' on the role of donor agencies in assisting developing countries in green growth transition has been generated by the DAC team. These notes highlight innovation and green technology adoption, governance, policy coherence for development and welfare generation from natural capital (OECD n.d.). The programme suggested that policy and measurement focus worked.

Natural disasters caused by climate change affect poor people and poor countries particularly hard. A key challenge for the development community is to ensure that climate change mitigation and adaptation are integrated at all levels of development decisionmaking. The Cancun Agreement promises to mobilize financial resources for developing countries. The Green Climate Fund was established later as a channel dedicated to climate finance. But as no reporting standards exist to determine whether aid projects embody climate mitigation or adaptation components, there is potential for double-counting conventional assistance as aid for climate change (OneWorld 2012). Thus, critics argue that the primary problem to climate change adaptation is not foreign aid but rather institutional reform (Raymond/IHC 2009).

### **2.3 The pros and cons of foreign aid, and the lessons learned**

Foreign aid and its effectiveness in tackling poverty and health issues, or promoting growth and development in the emerging countries have triggered intense controversy. Proponents pressing for enhanced foreign aid commitments are convinced that aid does work. Examples from recent studies point to success in many poor countries in public health (Demombynes and Trommlerova 2012; Murray, Rosenfeld and Lim 2012), emergency food supplies and security, and access to safe drinking water, etc. According to Arndt, Jones and Tarp (2010), aid has a positive and statistically significant causal effect on growth over the long run, and remains a key tool for enhancing the development prospects of poor countries. Reviews by UNDP (2007) and UN Millennium Project (2005) observe that poverty in the poorest countries can be dramatically reduced through international aid. However, some analyses (Boone 2006; Burnside and Dollar 2000) find both positive and negative outcomes for aid. For instance, countries that received large aid flows between 1970 and 1993 fared no better in terms of growth or measures of extreme poverty than countries with small aid flows. Moreover, critics argue that the public successes in these countries are unsustainable without effective governance and that the right economic and social policies need to be in place. The MDGs are cited by critics as indicative that long-term development aid is not working, when in fact they prove the opposite (Sachs 2005; UN Millennium Project 2005). Furthermore, critics, namely Anderson (2007) and Sachs (2005) also point out that the donor community has failed to meet the established ODA international target of 0.7 per cent of national income.

The evidence from the failures—as well as successes—suggests that improvement is needed. On the donor side, these include coherent strategies and objectives, accountability, alignment (i.e., linking donor programmes with the goals, objectives and strategies of the beneficiary country, and avoiding conflict of interests), and sustainability of aid. On the recipient side, improvements in the effective implementation of aid objectives, good governance, accountability, respect for human rights and other norms, and reduction of aid dependency are major concerns. Furthermore, capacity building of recipients, harmonization within donors and coordination among donors and recipients are essential if aid is to succeed.

To make aid work, Boone (2006) and his research team suggest that aid needs to be focused on the specific domains that work. They believe one of the failures of aid projects is the lack of post-project assessment by donors, but targeting aid to the right projects is also important. Easterly (2008) suggests that historically the ‘search’ approach of exploring for solutions through ‘trial and error’ performed better than centrally planned methods, which work according to predetermined goals and large-scale choices. On the other hand, Easterly notes that all human activity, including foreign aid projects based on the ‘search’ approach, involves some degree of planning. Banerjee and He (2008) lament about the lack of evaluation as one of the key weaknesses of aid agencies. Recently the World Bank (n.d.) and its Impact Evaluation group endorsed the idea of randomized controlled trials (RCTs) on a limited scale. Sachs (2005) considers aid to be ineffective, and according to him, coherent strategies and objectives from donors, good governance within recipient countries, and alignment between donors and recipients through top-down board-based methodology are the key factors for a successful aid project. Collier and Dollar (2002) show that good policies and efficient aid allocation play a primary role in aid effectiveness. Aid is often tied to conditions with respect to its allocation, and as academic research has shown, aid is often tied because of political motives (e.g., human rights) rather than concerns over proper policy implementation (Wikipedia 2012a). Some critics (Oxfam 2002; Santiso 2001) argue that conditionality is detrimental to developing countries, or has no chance of success (Moss, Pettersson and Van de Walle 2008). Graham and O’Hanlon (1997) also note that studies in the 1990s found no positive relationship between tied financial aid and economic growth. Santiso believes that a more appropriate approach to strengthen good governance and democracy is to cede control to the recipient country but only within a framework of agreed-upon objectives. Hoffman (2008) considers defects of the aid system to originate from the inability to assume an entrepreneurial outlook. Consequently, he suggests that donor accountability to recipients should resemble a business to include risk assessment, awareness of targets and the knowledge how to meet these at lowest costs possible. A recent pilot experiment (ibid.) tested the theory and the objective is now to scale it up substantially.

Buss and Gardner (2008) suggest that assistance, other than for short-term crisis programmes, should be undertaken only if it is sustainable. However, as Graham and O’Hanlon (1997) point out, the benefit of certain sustainable projects, such as those supporting sustained economic growth, may become visible only in a long term, which could be an unpopular option politically for recipients. Subedi (2005) also indicates that this principle could lead in the long term to an unfair distribution of benefits. Graham and O’Hanlon call for greater selectivity in aid allocation and a sustainable framework with well-designed strategies and objectives to help country compliance. Subedi, on the other hand, advocates capacity building and the engagement of local people. Moreover, research also suggests that the lack of a framework to harmonize aid programmes (CIDA 2004) and coordinate donor-recipient efforts (ECOSOC 1999) may cause failures. According to Burnell (1997), both donors and recipient are to blame because donors shun coordination efforts which could significantly

reduce freedom to pursue their own policies and objectives while recipients feel constrained. Dialogue and communication between donors and recipients to produce guidelines for donors and to share donor experiences have been suggested, but the lack of leadership is a challenging issue.

The criticism of aid has been a source of longstanding anxiety amongst the international donor community. Against this background, principles for aid effectiveness were created in the 2005 Paris Declaration and Accra Forum. In particular, the Declaration required action on donor-recipient alignment, harmonization among donors, establishment of reporting standards and improvement of accountability (OneWorld 2012; Atlantic-Community 2012; OECD 2005, 2008). All the lessons learnt from various practices need to be given greater consideration so that successful experiences can be transferred, incorporated and scaled-up in future aid strategies and approaches.

## **2.4 Foreign aid, urbanization and green cities**

Urbanization is a process that shifts society from a rural environment to an urban one, and it involves increasing numbers of people and the physical growth of urban settlements. The process is largely driven by market forces and government policies, which result in changes in land use, health and natural resources management including water, soil and forests. Sustainable development—embracing social, environmental and economic dimensions—is defined as development that meets the needs of the present generation without compromising future generations (UN 1987). A green city, or sustainable city, is one designed with attention to its environmental impact, and its inhabitants are dedicated to minimizing needed inputs and waste outputs. It is an ecologically healthy human settlement modelled on a self-sustaining resilient structure and functioning of natural ecosystems and living organisms (Ecocity Builders 2012). Rapid urbanization—and in particular the associated problems of urban poverty, unsustainable development and environmental degradation—pose a formidable challenge to many developing countries. For example, issues related to farm lands and watersheds conversion, pollution and rubbish disposal have a major impact on the quality of urban life. Green cities could potentially offer a solution to rapid urbanization and global climate change. The development of green cities, as a new target of foreign aid, has strong implications for poverty reduction, tackling climate change and pollution, economic growth and sustainable development, and social equality, and promoting green cities as a sustainable development process integrates political, social, economic and environmental domains. This requires a better understanding of whether, where, and what works with foreign aid—or could work—in the developing countries, what types of foreign aid practices have delivered successful outcomes and what could be scaled up further and transferred across regions and countries.

### *How foreign aid works on urbanization and green cities?*

According to Stren (2012), experiences of the international assistance regime in supporting city development in sub-Saharan Africa (SSA) and elsewhere are positive albeit modest. From his study on the development of SSA cities since the 1970s, Stren suggests that delivery of essential services, capacity-building at the local level with the help of aid agencies, harmonization between donors, and coordination of donors and recipients with a demand-driven approach seem to have had a positive effect on urbanization. Similarly, Adelman and Eberstadt (2008) recommend the application of a demand-driven business model based on the recipients' own contribution commitment to aid projects. The Urban Management Programme (UMP) introduced the so-called city development strategies (CDS) in certain



cities, Kisumu in Kenya being one. The overall purpose was to enable municipal authorities achieve sustainable urbanization with a long-term citywide strategy. The ongoing experience suggests that poverty reduction, good governance, local-driven participation of stakeholders in decisionmaking, a well-designed action plan with reliance mainly on local resources, and early feedback of results are the keys for a successful urban city project. The UMP city consultation programme seems (UN-HABITAT n.d.) to have shared these principles.

In a specific scenario, the CDS for Lake Victoria City (UN-HABITAT 2008) reviewed strategies for improving the urban environment, preserving biodiversity and reducing urban poverty in the cities around Lake Victoria. The study highlights the success of *in situ* conservation measures, including public awareness and environmental education, and the requirement of further planning and linkages between local and global levels. But the scope of CDS is limited in terms of supporting green city development, as it views the enabling conditions for sustainable urban development to constitute only good urban governance and fiscal balances. Moreover, the CDS focuses mainly on policies targeted to sustainable city development. Although the CDS encompasses an economic aspect to urban development, there is no clear guidance to link foreign aid to sustainable urban finances to support a city's urbanization and development process. Foreign aid could be the vehicle to help developing countries achieve sustainable city development. But as an ongoing programme, the UMP achievements and lessons need to be evaluated further. This experience shows that the efforts to build both capacity and a forum between donors and aid-related institutions have worked, but that performance evaluation as well as sustainability of finances have been weak throughout the programme (UN-HABITAT 2005).

Environmental concerns have been integrated within the aid programmes of some donors, in which targets need to pass environmental standards. Furthermore, protection of the environment has been established as a goal in its own right (Stokke 1996). However, as Arvin, Dabir-Alai and Lew 2006) point out, there is a noticeable gap in research in explaining how aid flows are linked to the environment in developing economies. Their later work notes that aid projects and pollution are linked, although only in certain countries. Based on this, these authors suggest that there is need to promote policies which could facilitate income and employment generation through environmental/natural resource management. As aid at present focuses on poverty and related development and environment, not much money has been allocated to the full spectrum of green city building in developing countries. Many recent research reports (Raymond/IHC 2009) urge for greater attention and resources to be targeted to urban issues. The Cities Alliance (2012), which concentrates primarily on urban dwelling improvement and urban development policies, was set up as a global partnership between various stakeholders (e.g., governments, NGOs and slum dwellers) to promote the vision of 'sustainable cities without slums'. Its country programme highlights the importance of a framework to enhance cooperation between urban stakeholders, and public and private investments in urban communities. This concerns, in particular, secondary cities where early, decisive action provides the best opportunity for managing rapid urbanization and for ensuring a better urban future for all. The Cities Alliance keeps abreast of new practices through project repositories and review of past experiences. Although urban poverty and economic growth are still priority issues, urban environment and environmental health are also a major concern, as for example, in Sudan where litter and polluted waterways plague most of the country's urban centres. UNEP has investigated issues such as rapid urbanization, urban planning, water and sewage, waste management, air pollution and transport, urban energy, sustainable construction, and governance, etc., and concludes that the main obstacle to improvement in these areas is the lack of investment. However, other problems, such as

widespread lack of adequate urban planning, also play a role (UNEP 2007). The lessons suggest that planning, governance and the often ignored social sustainability are essential for the success of a green city.

Climate change adds a new dimension to the concept of foreign aid and urbanization. Climate change is rooted in the cities; they are responsible for 70 per cent of carbon dioxide emissions. Surveys suggest that because of recently intensifying natural disasters and rapid urbanization, aid agencies will invest more in disaster prevention for urban areas (Nguyen and Rowling 2012). However, despite the fact that international negotiators have repeatedly pointed to the transfer of technical and financial aid as a possible remedy for global and local environmental problems, little systematic research exists on whether donor commitments have been honoured (Timmons Roberts et al. 2009). For example, the Green Climate Fund was to deliver financial and technical assistance for climate change activities in the developing world through bilateral and multilateral programmes. Its goal has not been met. But earlier research suggests that a policy framework, accountability, assessment and sustainability of projects, as well as stakeholder involvement constitute key measures for programme implementation (Pittock and Hartmann 2011; Kerkhoff 2011; Pittock 2010; Hallegatte 2009). A two-country model developed by Hatzipanayotou, Lahiri and Michael (2002) reveals that with performance-driven aid transferred from a developed to a developing country, the impact on cross-border pollution from production activities in the recipient country can lead to reductions in total emissions over the medium and longer term. Critics, however, argue that such transfers could lead to unsustainable development, and eventually to environmental and ecological degradation. A contrary view by Asafu-Adjaye (1999) suggests that these transfers may not only reduce poverty, but could also encourage greater care of natural resources by poorer nations.

In view of the problems faced by developing countries with regard to environmental and resource protection, research suggests that priority in city planning should be given to measures which support ecologically sustainable development in specific fields such as drinking water supply, wastes disposal (solid and liquid) and transportation. Timmons Roberts et al.'s (2009) research based on the PLAID database emphasizes accountability for both donors and recipients. Micro-level measures should be linked with those on the macro-level, for example, by elaborating and implementing a sustainable environmental policy (Kausch 1996). Since some countries lack sufficient technical and financial means, there is an urgent need for the provision of this support. Aid through central governments is constrained by bureaucracy and corruption, etc., thus direct funding transfers to local community organizations to improve their access to basic social and economic infrastructure and income-generating activities is an alternative solution. Researchers and practitioners generally agree (Collier and Dollar 2004) that aid allocated along political lines has less chance of leading to positive development outcomes than aid allocated according to need or with government commitment to good policy.

Timmons Roberts et al. (2009) find the overall influence of most eco-functional variables on environmental aid to be small compared to the more traditional determinants of foreign aid allocation such as political, commercial, and various historical factors. An UNEP (2007) assessment of the environmental impact of various aid programmes (including humanitarian, recovery, development, and environmental aid) on post-conflict communities in Sudan was considered to have been fairly negative. Two core problems were identified. First, the impacts of good individual projects and efforts were greatly weakened by the lack of integration with the core government and international aid programmes. Second, management

of the environment and natural resources sector was burdened by the paucity of funds and continuity of funding. This shows again that the common factors—donor commitment, harmonization, cooperation and alignment and sustainability of foreign aid—are essential components for the success of an aid project.

*What could work in foreign aid on urbanization and green cities?*

Harris (1989) notes that the main problems of urbanization fall into two interrelated areas: various constraints on urban productivity growth, and poverty. He argues that aid should become technical assistance-led within a policy framework or development plan rather than capital-led. Hoffman (2008) suggests adapting a business-like approach which perceives donor accountability to recipients similarly to a business relationship that includes risk assessment, acknowledged targets and ability to meet these at the lowest possible cost. Based on experiences from China, Qiu (2011) suggests that development of a sustainable city should focus on forming an alliance of nature and traditional cultures, developing sustainable-city qualifications, urban planning, international cooperation system and establishing an evaluative and inspection system. He concludes that fundamental prerequisites should include compact and mixed land-use regulations with certain population densities, high proportion of green buildings, biodiversity, green transportation and environmental thresholds for industries. Green-city researchers believe that the development of sustainable cities is currently driven by climate-change challenges and rapid urbanization in tandem with growing business interests and advances in technological innovation. Based on some scenario studies, Joss (2011) considers the presence of governance to be a central and defining feature. He adds that development should be based on technical innovation within each city's particular context (geographical, political and economic) and interaction among multiple stakeholders. As the eco-city concept<sup>3</sup> is still new, implementation process of green city is problematic (ECMM 2011). In several instances (as in Dandong, China), projects have had to be scaled back or postponed due to financial and political problems. Questions also arise over the issue of transferability: it is yet to be seen how green city principles and approaches can be applied to other urban centres.

Whitfield (2009) offers a different angle for simplifying and reorienting aid and aid practices. In order to reorient donor staff and expertise, and to introduce specialization within their areas of assistance, Whitfield advocates reducing the intensity of donor engagement, areas of donor intervention, the number of donors and projects in a country and the size of donor organizations. Some other new ideas for effective aid also exist in this area; some researchers have advocated creating an aid 'market', where donors pay only for outcomes that have actually been achieved, while other aid agencies have echoed the need for a performance-based approach. These ideas, however, have not been implemented nor tested in detail so their feasibility is not known.

*What is scalable in foreign aid on urbanization and green cities?*

'Scalability' is defined as the capability of being easily upgraded or expanded, as needed (MW 2012). Based on a study of aid in urban hazard mitigation, Vincent (2011) believes codes and standards are an essential component of scalability, and in order for an effort to be scalable, a flexible but systematic process must be in place. He suggests the following approach with regard, for example, to city construction: analyse the current state first; next, identify and initiate steps to correct deficiencies in regulation (e.g., replacing or modifying

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<sup>3</sup> The large majority of eco-city proposals are still at the planning stages, with no commonly defined standards.

unsuitable regulations); and third, integrate efforts across related sectors. Victor concludes that in order for urban improvement to be scalable, it must take into account economic, social, and political issues.

The ‘Millennium Villages’ project in Ghana (UN-MV n.d.) targets poverty in parallel with a focus on health, education, agriculture, rural infrastructure and economic development. The aim is to create one coordinated aid programme instead of several different aid agencies tackling these issues separately. The project implements an evidence-based approach and emphasizes sustainability and scalability through major policies to secure the involvement of local government, implementation by the communities themselves, guiding communities towards self-sustainment and rigorous evaluations with an exit strategy. It recommends action plans based on ‘human needs’ (EICU n.d.), and follows the Millennium Project framework (UN-MP n.d.). Although the outcome is mixed, the Millennium Village project and aid in Ghana as a whole have made huge progress in meeting the MDGs on poverty and hunger, and boosting the country’s economic growth (Mulholland 2012).

In designing sustainable solutions, Isaac (2012) suggests working with local entrepreneurs or local governmental institutes because these continually consider such factors as scalability and expense. A recent pilot experiment tested the concept of aid adopting a business-like approach that included risk assessment and targets (Hoffman 2008), and the objective is now to scale it up substantially.

Research (Easterly 2008; Sachs 2005; CIDA 2004; Graham and O’Hanlon 1997) suggests that a scalable framework or top-level action plan that includes capacity building, assessment and sustainable funding and technology support is important for any aid agency working in a new field, in our case, urbanization and green city development. For developing countries, poverty alleviation, environment protection and economic growth are intertwined problems. The essential services generated by urbanization and green city development (related to farm lands and watershed conversion, water supply, rubbish disposal, transportation and pollution reduction) while concurrently being aware of the need for poverty reduction and social equality have to be up-scaling on the basis of experiments.

But there is no straightforward design for up-scaling a project. The green-city concept is new and implementation itself can face difficulties (ECMM 2011) due to financial and political problems, as was mentioned previously. Rogerson (2011) describes the up-scaling process as helping ‘countries pilot changes carefully for themselves, evaluate pilots rigorously, debate and learn lessons inclusively and finally scale up a few proven and popular experiments’. After examining aid cases related to education in Africa, Gillies (2010) proposes that instead of looking for a formula and rushing to scale up, policymakers should acknowledge the human process of developing ownership, strengthening new behaviour, or that changing to a system is a case-by-case endeavour. To scale a successful aid project up or down, one needs to be able to foresee potential changes that could originate from pilot project documentation or through negative effects such as destruction of local initiative (Samoff et al. 2001, 2011).

#### *What is transferable in foreign aid on urbanization and green cities?*

The ‘transferability’ of aid programmes is closely linked to the scalability of pilot projects. The previous discussion has indicated that a transferable framework with a focus on planning, accountability, alignment, aid sustainability, governance, capacity building, donor harmonization and donor-recipient coordination is essential if foreign aid through various international agencies is to succeed. Some characteristics are shared by successful aid

projects, as Adelman and Eberstadt (2008) note. These include the focus on local ownership and initiative, partnerships, flexibility and anticipation of funding allocations, peer-to-peer approaches, technology adaptation and adoption, and continuous information feedback. Harris (1989) suggests that aid should become technical assistance-led rather than capital-led. An urban strategy in the form of a policy framework or a development plan is one of instrument of assistance that is easily transferred.

Based on aid's educational experiences, Riddell (2012) believes that the contextualization of a recipient country, its capacity development, local ownership and leadership and stakeholders' involvement are keys features in considering transferability. On the one hand, transferability is derived from what has worked in aid, particularly aid targeted to urbanization and green cities. On the other hand, transferability is closely linked to a local political, social, environmental and economic context. In the implementation of a framework, aid projects should look for a demand-led approach based on local needs and self-evaluation of development. But it must be realized that in supporting advanced green city development, efforts to promote technological transfers and staff capacity building of both the aid agency and the recipient country are as important as funding transfers, if not even more so. The lessons learnt from past experiences of what have worked and what have not, are transferable. As urbanization and green city development are a new domain for foreign aid, pilot projects on transferability should encompass both traditional aid targets (such as poverty eradication and health issues), and newly acquired domains (such as transportation and pollution reduction). Again, this means collaboration among various aid agencies, and between aid agencies, local government and entrepreneurs. As green city development embodies multiple fields of expertise, identifying the key areas that can be quickly transferred and scaled up to other developing cities is vital if foreign aid is to become more effective.

As the green city is still a novel idea in foreign aid, questions regarding their implementation affect the issue of transferability, and it is yet to be seen how these principles and approaches can be applied to other cities (ECMM 2011). Moreover, the changing nature and capabilities of the developing as well as the developed worlds, as well as the emergence of new aid sources and approaches point to the dynamism of transferable strategies and experience. Whitfield (2009) is a proponent of change and emphasizes that not all donor agencies have to follow the same aid practices. Experiences of transferability is evidence-based, and the success of one will be copied by others.

In conclusion, aid allocated to urbanization and eco-city development is an unexplored domain, although the pros and cons of individual experiments have been examined either through research or practical application. But the link between foreign aid, urbanization and the green city is not well established. Thus, successful foreign aid outcomes in other areas have to be acknowledged, duplicated and applied. It has been demonstrated that positive experiences can duplicated and transferred to plan green cities and urbanization in the developing countries but a comprehensive scenario analysis on foreign aid, urbanization and green cities with more specific policy and implementation focuses is essential as a starting point.

### **3 Case studies and analysis**

China is experiencing an urbanization process that is rapid, large scale and long term. China's central government recognized that sustainable development was vital for creating a

harmonious society and has worked towards that goal. In response, local authorities have promoted an eco-city development strategy. Two examples are given here: the Sino-Singapore Tianjin Eco-City, built in a location comprising mainly of saltpans, barren land and polluted waterways, and the Wenchuan and Beichuan areas, built in a region devastated by a massive earthquake. In addition, Brazil, another major developing country, shares some experiences with China. Curitiba in Brazil is heralded as one of the first eco-cities in the world, and was awarded the Globe Sustainable City Award in 2010. The case studies introduce interesting contrasts: Tianjin, Wenchuan and Beichuan areas in China were all built largely on barren land while Curitiba rose from an existing city. The restoration of Tianjin and Curitiba started with well-designed plans, while recovery efforts for Wenchuan and Beichuan had to be rushed after a devastating disaster.

### 3.1 Tianjin City, northern China

Urbanization in China is projected to rise to about 64 per cent by 2025, which translates to over 350 million additional people living in urban areas. China has recognized that economic progress has to be based on 'green growth', and thus national and local level programmes have been established to define climate change targets and promote the construction of eco-cities, although with a variety of experimental approaches and standards.

China is currently constructing an eco-city in the coastal district of Tianjin to serve as a practical, replicable and scalable model for sustainable development. Originally, two criteria guided the selection of the eco-city site, i.e., the location was to be on non-arable land and faced with a water shortage, two urgent issues confronting northern China. The Tianjin site fitted the bill with the extra advantage of having sound infrastructure, easy accessibility and commercial viability. The project started in 2007, when China's rapid urbanization and increased global awareness of the importance of sustainable development gained momentum. With investment and technology supplied by the government of Singapore, the 'thriving city, which is socially harmonious, environmentally-friendly and resource-efficient' (Wikipedia 2012b) was to be constructed in several stage for completion around 2020.

#### Box 1: Tianjin City

Tianjin City is located in one of the fastest developing districts in China in the Bohai Bay region which, after the Pearl River delta and Yangtze River delta, is the country's largest growth engine. As the site was comprised mainly of saltpans, barren land and polluted waterways, the necessary technology and expertise were provided by Singapore, based on previous experiences with respect to the Suzhou Industrial Park. According to a master plan, the district is initially to derive energy from a waste incinerator plant as well several other options for clean fuel, renewable and geothermal energy. A light-rail transit system, supplemented by a secondary network of trams and buses is to be the main mode of transportation, covering 90 per cent of public transport needs (Joss, Tomozeiu and Cowley 2011). All buildings are to conform to stringent energy efficiency standards that include advanced water-saving and waste management systems with particular emphasis on the reduction, reuse and recycling of waste. As Tianjin City is located in low rainfall area, the eco-city is to draw a significant part of its water supply from non-traditional sources. The existing wetlands around the city are to be protected to enhance biodiversity. The city layout is based on an integrated mixed land-use system to create variety in the landscaped 'eco-neighbourhoods' with green 'eco-valley' corridors that will serve as main public open spaces. Private sector agents are also involved, and 125 companies were registered by 2010 in the eco-city. The Sino-Singapore Tianjin Eco-City signed agreements with Hitachi, Philips, Siemens, ST Engineering and two leading property developers in Asia to develop 'green central business district.

It is expected that by 2020, the eco-city will create 80,000 to 100,000 jobs, contributing a total of 40-50 billion Yuan to GDP.

Source: Compiled by author.

Social harmony is a key consideration of Tianjin City, covering such areas as education, healthcare and culture. Important instruments include subsidized public housing to help meet the housing needs of low-income people and to enable different social strata to live together, catering to the needs of the elderly and the disabled, and providing public facilities and respecting local heritage.

In 2010 the city received a grant of US\$6 million from the World Bank's Global Environment Fund (GEF) to support the development of policy, monitoring and regulatory mechanisms to which the recipient promised to invest an additional US\$57.9 million. As the World Bank has extensive experience in urban development and capacity building, it could provide Tianjin City with strategic support in developing an energy- and resource-efficient city with low greenhouse gas (GHG) emissions, including:

- technical assistance, software and equipment for implementation framework of the master plan and dissemination activities,
- technical assistance for public transport system, and
- technical assistance and pilot investment for green building (World Bank 2012a).

Project design was founded on the experiences of past projects implemented by the GEF-World Bank in China with relation to urban transport and building energy efficiency. The main focus was on energy, transportation, public housing, infrastructure and climate change with corresponding indicators (e.g., quality of tapwater and carbon emissions per unit GDP) and timelines). But the adoption of energy-efficient technologies in the pilot public buildings was delayed due to scheduling conflicts, design changes and inconsistencies with the master plan. This underscores the fact that project plans need to be practical, cost- and market-based, while implementation must conform to standards, be well controlled, regularly inspected and evaluated. Government is the key in policy enforcement.

World Bank aid was helpful in project planning and management. By collaborating with other international donor partners such as Australian Agency for International Development on ecological urban development and ESMAP on building energy efficiency, the World Bank gained knowledge and generated expertise which it lacks itself. IE Singapore also offered a range of financial tools, grants and tax incentives to help Singapore enterprises in the city gain access to capital, develop their financial management capabilities and defray developmental costs.

The Tianjin Eco-City project did not strive for technical advancement but was instead based on existing practices, utilizing the best technology currently available and affordable to minimize the harmful impact of development, in other words, technology that could be scaled up and transferred to other cities in China (BBC 2012). It was designed partly as an experiment to determine how urban problems such as gridlock, water pollution and energy consumption could be resolved. Other than using public transport or recycling rubbish, main contribution of Tianjin residents was the role of a guinea pig, to participate in the experiments of their city.<sup>4</sup> In 2012 people started to move in and smart grid service, renewable energy, eco-industrial park, electric vehicle charging stations and green parks were operational. An

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<sup>4</sup> General Motors, for example, is experimenting in the city to determine if electric driverless cars could provide the solution to China's pollution and traffic problems.

international school will be opened later, with environmental protection as an important part of its curriculum.

However despite progress, according to a recent study, it may not be possible to reach some of the city's key environmental indicators such as CO and SO<sub>2</sub> levels due to heavy pollution from the surrounding areas. The frequency of diseases caused by poor air quality and water contamination is already high, and some critics argue that the project is more a propaganda instrument than a comprehensive ecological project (Wikipedia 2012).

#### *Wenchuan and Beichuan areas after earthquake*

On 12 May 2008, a devastating earthquake hit southern China<sup>5</sup> that left 87,000 people dead or missing, destroyed five million homes, and produced direct economic losses valued at US\$120 billion. The earthquake, which was centred in Wenchuan county, destroyed all public service facilities such as hospitals and schools, 70 per cent of its housing, industries and the 80 per cent of farmland. Economic losses totalled 63.4 billion Yuan (US\$9.29 billion). In the post-disaster period, aid poured in both from China itself and the international community for rescue work and later rebuilding.

After initial disaster relief efforts, aid was directed to rebuilding and improving public infrastructure, roads, water, transportation, electricity, and helping economic recovery and structure transition. The Wenchuan Earthquake Recovery Project, based on a framework approach, was launched in early 2009 with the aim to facilitate the emergency response, support the government's recovery and reconstruction strategy, and restore and improve essential infrastructures and health and education facilities, while attempting to provide the basis for longer-term sustainable development. A rapid assessment project financed by the GEF to assess and mitigate the risks and potential environmental impacts was initiated. Next, a knowledge management workshop was organized to share global expertise on post-disaster reconstruction and risk control, and to ensure that the knowledge gained from the project could be incorporated in future plans on disaster control. The project can be considered a success, as the mitigation activities proposed by GEF are now included in Sichuan's future action plan for post-disaster recovery and reconstruction, with further support forthcoming from the World Bank's emergency recovery loan (World Bank 2009a, 2009b). In the remote, impoverished areas that received less attention, Oxfam Hong Kong has been working in the fields of reconstruction, sustainable livelihoods, ecological conditions assessment for disaster prevention, social participation and capacity building (Oxfam 2011). Other NGOs such as 512 Centre, Handicap International, and the World Health Organization have directed their expertise to sectors where it was needed the most, such as rebuilding, education, health and rehabilitation, etc.

International research communities have also set their sights on the transition to an eco-city. Feffer and Pastreich (2008) suggest that China could turn its disaster into an advantage and utilize the assistance from Japan or South Korea, for instance, to leapfrog over current technology and create a new kind of city in Wenchuan. But the authors also warn that in order to deal effectively with pollution, climate change, and energy inefficiency, the problems currently facing China, the Wenchuan project needs to be more than simply a showcase: it must be sustainable and replicable. Baozong, China's Minister for Housing and

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<sup>5</sup> This region also includes the Wolong National Nature Reserve which houses more than 150 endangered giant pandas.



Building, has called for innovative city structures, which would be equipped not only to reduce pollution and save energy but also to deal with disaster. He notes that post-disaster reconstruction standards for an eco-city need to emphasize anti-disaster capacity, environment protection, technology adaption and creation of economic opportunities (Sina Finance and Economics 2008).

Immediately after the disaster, the State Council of China drew up a general plan to rebuild the 51 destroyed county-level regions, Wenchuan included. Immediate priorities included reconstruction of homes, schools, hospitals, roads, as well as temples. Tragic as the earthquake was, it also provided opportunity for economic and environmental improvement in these regions. With help from Japan, other countries and international organizations, the central government assigned each province with the financial responsibility for redevelopment and rebuilding of a particular area; in the case of Wenchuan county, Guangdong Province became its aid partner. As Wenchuan is one of the four main ethnic centres of the Qiang people, efforts were made to ensure that town reconstruction reflected this cultural heritage.<sup>6</sup> By 2011, three years after the earthquake, 95 per cent of the post-quake reconstruction projects had been completed, although few earthquake ruins were preserved as monuments to support tourism as one of the key pillars of economic development in the post-disaster period. Wenchuan county also plans to explore natural resources such as aluminium and hydropower.

The schemes for the Wolong area redevelopment and the Giant Panda Nature Reserve restoration were funded by Hong Kong, with a master plan that ascribes value to ecological remediation, and landscape as a placeholder. Redevelopment of the urban and natural landscape was divided into three zones: (i) core area, and (ii) buffer zones to protect core habitats and ecological system, as well as (iii) eco-tourism and resettlement areas to house human population and protect the local culture. Damaged ecologies will be restored through natural processes. Likewise, the scheme endeavours to re-establish the interdependent relationship between man and nature implicit in traditional Chinese planning practices (Bassett 2009).

Remarkably, the reconstruction scheme envisions not only new towns being erected on the earthquake ruins, but also hopes to see changes in the attitudes and lives of Wenchuan residents, with people being more attentive to maintaining a good community environment. But there has been criticism of the rampant pollution, misuse of funds and poor quality of newly built homes (*South China Morning Post* 2012). It has been said that reconstruction efforts in Wenchuan have destroyed the area's distinct cultural identity. The reconstruction project launched by Hong Kong Red Cross in 2009, which favoured modern building materials, has been blamed for altering the area's unique appearance. In response, authorities attempted to restore some of the cultural elements, an effort which upset local residents even further because of cultural misunderstandings.

Reconstruction projects in these damaged zones must include input from local residents as well as experts, and cannot simply be set up for rebuilding houses and exploiting the area as a tourist attraction without respect for local wishes. On the other hand, it needs to be acknowledged that there are no national guidelines for this kind of 'starting-from-scratch'

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<sup>6</sup> In addition, the government organized various activities to ease the psychological trauma of the people by arranging, for example, guozhuang competitions (a traditional Qiang dance) or psychological lectures by professionals.

concept for eco-cities, although the relevant housing ministry recommended that cities and towns hit by the earthquake should prioritize reconstruction that was aligned with eco-city principles.

Beichuan City, in the epicentre of the earthquake, was completely erased and had to be relocated and rebuilt for 50,000 inhabitants. Aiming for a new urban form, to be supported by tourism, Beichuan City was designated by the authorities for development as an eco-city even before reconstruction had started and would serve as a distinct model city of sustainability for the country. Reconstruction has followed a top-down approach in accordance with a central government master plan, and the government at the implementation level respected the unique position of the planners with regard to power and control (Ward 2011). This is seen to broadly reflect the shift towards eco-cities in China's national urbanization policy in order to support the environment and harmony of society. Beichuan's design is organized around the principles of environmentally-friendly urbanism and local landscapes across a spectrum of elements, including culture preservation, environment valuation and protection, industrial economy transition, green transportation, renewable energy, green building, water and waste systems management. Economically the development of the city is founded on green industry and tourism to take advantage of its ecological resources. Existing heavy industry will be de-industrialized and the environment assessed in economic terms.

Aid has been forthcoming from a number of agencies. The International Finance Corporation (IFC), the private sector arm of the World Bank Group, provided equity support to local small and medium enterprises. It also provided the local township bank with funds and technical support to strengthen its operations and to develop into a competitive and commercially sustainable microfinance institution to serve the lower segments of the market (World Bank 2011, 2009a, b). FII/CW, on behalf of the Canada-BC initiative, constructed a comprehensive care facility for senior citizens, which was designed to incorporate elements of the traditional housing style of the Qiang with the Canadian wood-framed structures. The Prince Claus Fund provided funding for the Beichuan Library, which houses a collection of works of great importance to the Qiang minority.

### *Curitiba in Brazil*

The city of Curitiba (Brazil) has been heralded as one of the first eco-cities. It began proactively to address the challenges of sustainable urban development in 1966. Designed through a commercial competition, the master plan outlined integration between urban development, transportation and public health, and the city created an administrative agency to implement it. Political will and skill were important factors in the success of the city's urban development. The adopted philosophy centred on the integration of functions and urban services, predominately in a tripod type fashion: transportation, roads network and use of land for residential, commercial, industrial, and service purposes. These were linked to expansion out of the city centre along arterial growth corridors to distribute settlement densities more evenly. The results have been substantial: 22 per cent drop in private car usage, dynamic economic growth for local shops, development of community space for pedestrians, the lowest air pollution rates in Brazil, natural flooding reduction and high rate of resident participation in recycling (Suzuki et al. 2010).

The plan created a modern Curitiba with green spaces, low-density residence, an effective bus system, environmental education and waste processing system. Since then, the plan has regulated the physical, economic and cultural transformation of the city. The harmonious co-existence of people, the environment and its urban ambience has made the city a tourist

attraction. Curitiba's master plan also introduced economic changes, such as the creation of Industrial City of Curitiba, but this conforms to city criteria with regard to topography and integration with the rest of the surroundings. The city's cultural transformation gained momentum with a celebrated event when Rua XV de Novembro was converted into a popular pedestrian walkway, and people began to realize that they were a part of the city and wanted to be involved. The Fundação Cultural de Curitiba was set up as a facilitating agent for the cultural production of the city, and preservation of local heritage. Curitiba adheres to a practical and repetitive planning process; proposed concepts and ideas are tested and tried before being put into practice, and the generated feedback resulted in further improvements and applications.

Curitiba's strategy focused on integrated planning (e.g., transportation, land use and efficient resource management) that prioritized people and commitment to local values such as accessibility, transparency, social justice and poverty reduction. Strong leadership guaranteed the successful, long-term implementation of the strategy (ICLEI 2002). Curitiba has faced similar urbanization problems as the rest of the world (overcrowding, poverty, pollution and limited public funding), but it addressed these in a cheaper and more integrated manner. The city's extensive bus system, costing less than a tenth of a subway network, addressed at the same time concurrent issues of pollution and poverty,<sup>7</sup> industries and green space, heritage and tourism. Curitiba did not become successful overnight, its master plan has persisted and evolved over generations and through experimentation with the help of local urban planning expertise. People still worry about the plan's continuity, and related expertise and leadership (Gnatek 2003).

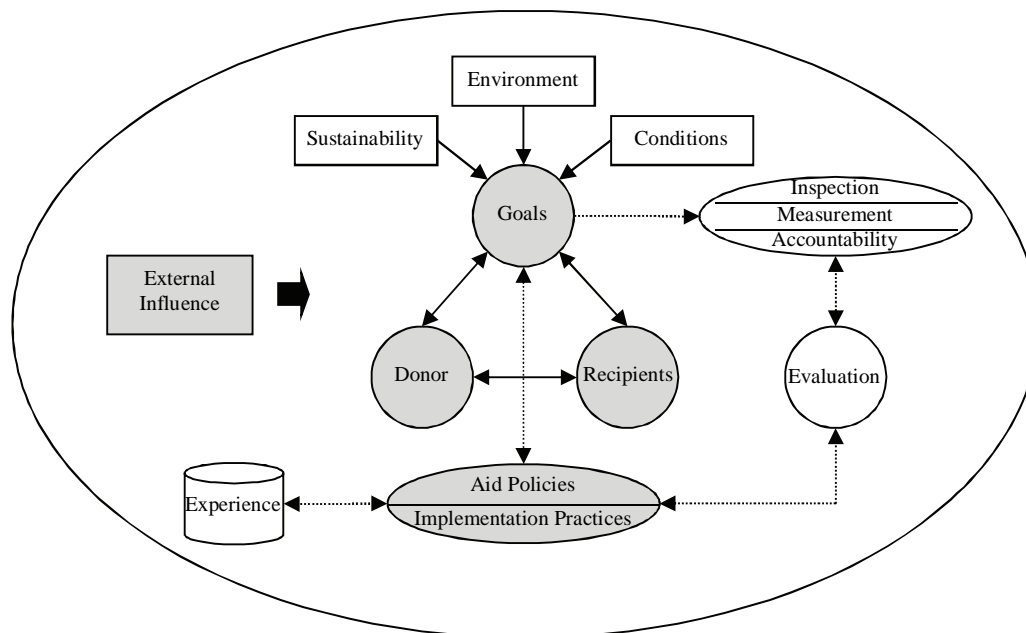
Curitiba's many initiatives—environmental cleanup, city restoration, job creation, education improvement, disease intervention, and hunger prevention—were tackled without too great a reliance on federal government, international organizations or charity. The city has, however, received financial and technical support from various sources such as United Nations, Inter-American Development Bank (IDB) and developed countries. The CIFAL Curitiba project, founded by United Nations Institute for Training and Research, is helping to develop the capacities of local stakeholders in urban transport, green cities, municipal finance, and infrastructure project management. The IDB loan is supporting Curitiba in developing an integrated programme to improve the quality of life for local residents, particularly in the slums. Specific efforts include improvement in housing and environmental sanitation, mobility, social and public services in poor areas, as well as institutional capacity. France's multi-sectorial aid is helping Curitiba with urban environment and transport to promote the city's development and transformation through land-use planning (e.g., housing, urban equipment, construction of transport infrastructure and environmental preservation).

This review and these case studies underscore the need of a foreign aid framework geared towards urbanization and eco-city development to ensure project success. The framework should include both objectives and reports outlining progress towards earlier goals for a socially, environmentally and economically sustainable city. Because of the complexity of aid for urbanization and green city development, in order to simplify issues and clarify ambiguities, the paper presents diagrams to illustrate the various roles involved, their inter-relationships and the process of policies and practices and implementation.

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<sup>7</sup> Including such measures in low-income neighbourhoods as bus tokens awarded for recycling initiatives, or food and school supplies for trash collection.

Diagram 1: Factors, conditions, interactions and process of aid on eco-city development

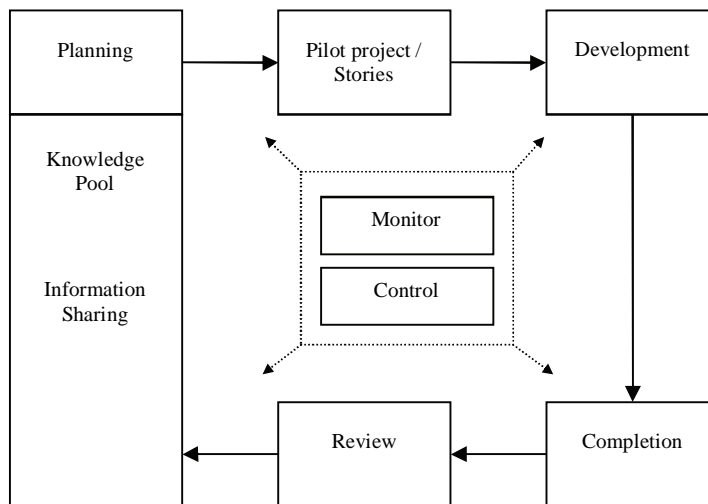


Source: Author's illustration.

In Diagram 1, donors and recipients are recognized as the major actors of aid earmarked for eco-city development. However surrounding environment and external players such as central government (if aid is allocated directly to the locals) may exert considerable influence, while external elements could come from geographical, environmental, political and economic contexts. Aid policies that are designed according to aid type coupled with specific requirements and implementation practices, are founded on successful aid experiences, and can thus lead to fulfilled goals. The experiences generated by aid in the development of eco-cities, on the other hand, may differ case-by-case, while others may share common features, making them scalable and transferable. In practice, aid objectives are always tied to conditions regarding donor pursue of ideologies, political returns, etc. In the context of this paper, the sustainability of aid, including replicability and scalability, and its environmental valuation for the development of eco-cities are essential concerns, and are thus highlighted here. Figure 1 also shows the importance of evaluation and monitoring during implementation of an aid project. The agreed targets may be reached through various methods, including 'trial-and error', pilot projects and performance-based approaches. As implementation is a key driver for the success of an aid project, it is further illustrated by Diagram 2.

Here the paper suggests a recursive aid process that prioritizes project sustainability, including transferability and scalability. As Diagram 2 shows, a prospective aid project designs the plan based on past experiences, i.e., the pool of knowledge accumulated through earlier work in the same field. The project starts on a small scale, either with a pilot plan or one or few sub-functional tasks (called here 'stories'), which enable early feedback of possible results. The pilot plan or 'story' is carried out through four stages, i.e., development, completion, review and plan revision, during which the knowledge and experience collected during the on-going analysis are identified and documented. The whole process is controlled by stakeholders through constant mutual interaction. It is also monitored and evaluated by responsible authorities or third parties. Thus in a recursive process, all changes can be

Figure 2: Diagram 2. A recursive implementation process of an aid project

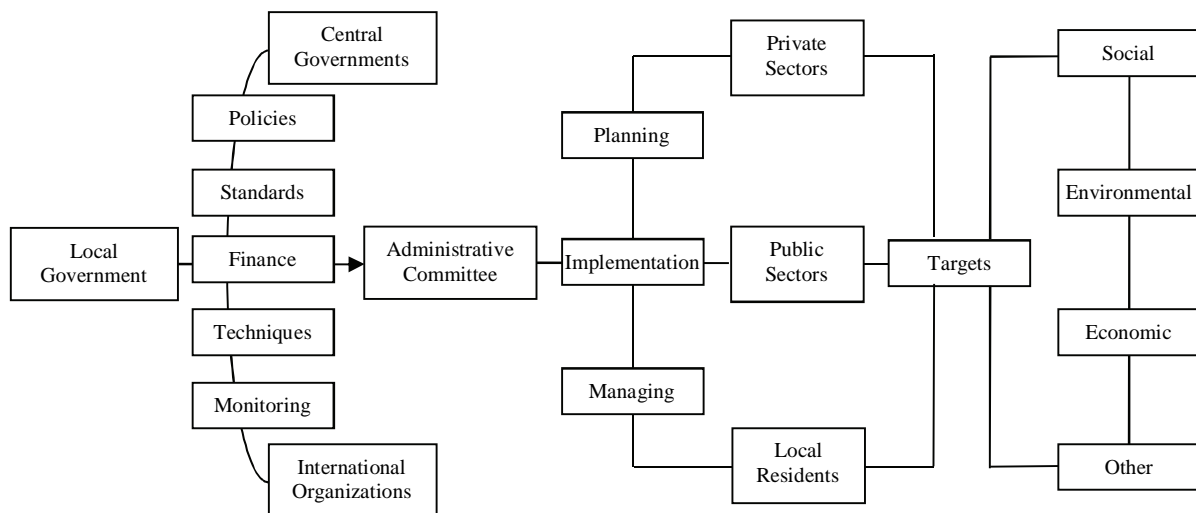


Source: Author's illustration.

properly incorporated and risks avoided or reduced to a minimum. Based on review and feedback from donors, recipients and other stakeholders, implementation results can be properly evaluated and errors eliminated. Harmonization between various schemes is achieved through information-sharing and active communication, ensuring that different programmes complement one another and avoid duplication. An exit strategy is included in an evidence-based approach: if after proper evaluation the trial is unsuccessful, the aid project can be aborted with minimal loss.

The case studies of Tianjin, Beichuan and Curitiba all suggest that large-scale green city development requires considerable government power and involvement. The work is generally supported by central government but implemented by local authorities. Figure 3 describes the two levels of involvement and support with practices and goals in eco-city development.

Diagram 3: Stakeholders, practices and goals in eco-city development



Source: Author's illustration.

With respect to the timeline of eco-city development, the main body responsible for drawing up the city plan and implementing policies is the administrative or planning committee, as the experiences of Curitiba and Beichuan show. Central and local governments are responsible for policies and standards, provision of financial and technological support and monitoring. It is important to involve private and public sectors and local residents in a systematic process, although their input may be required at different stages. For example, Beichuan concentrated on the reconstruction of the city and tourism during the initial stages while Curitiba mainly focused on transportation, roads and land use. Usually the objectives of eco-city development are defined along three target pillars (i.e., social, environmental and economic benefits). But a government may also pursue other goals such as self-promotion and technological advancement. Diagram 3 assigns a role for international organizations involved with aid agencies, which is similar as that of government, but it does recommend that these interact with the locals or become directly involved in the locals' development, as demonstrated in Diagram 1.

#### **4 Conclusion**

In summary, an aid framework in policy dimension that provides integrated solutions to combine poverty, environment and governance concerns is the road for foreign aid in supporting urbanization and green city building in developing countries. More specifically, the framework should focus on aid earmarked to green city planning, accountability, alignment, aid sustainability, governance, capacity building, harmonization between donors and donor-recipient coordination. On the other hand, the framework should also support aid efforts on specific issues within recipient countries (e.g., poverty) without overlooking other concerns. The framework should be transferable and able to work for most projects in this particular field. It should be flexible so that it can be tailored to any particular context (e.g., geographical, environmental, political and economic). The framework also needs to function as a bridge to link foreign aid to cities. Centrally planned or politically-tied aid has not worked in the past. But as political stability and effectiveness are important factors in any nation's development process, an aid-driven solution for gradual institutional reform should be investigated. During implementation, the search approach through 'trial and error' with an outcome-oriented goal is recommended. If a pilot experiment succeeds, then the project can be scaled up with subsequent aid allocations. Furthermore, on-going analyses and documentation of experiences can provide an important knowledge management component that contributes to scaling-up global cooperation at the local level.

Foreign aid for urbanization and green city development can focus on urban poverty reduction, climate change and other environmental issues such as water and sewage, waste management, air pollution, transport, urban energy and sustainable construction. Lax funding commitments and paucity of aid are still major obstacles for urbanization and green city development. A share of the funding should also be earmarked for technical innovation for green city development in developing countries. Assistance motivated solely by technical or capital considerations is not the right solution, although a combination of the two may well be the right answer. Selectivity and sustainability can be fostered by foreign aid agencies in their allocations in support of green city development. A local-driven initiative with main reliance on local resources and participation of all stakeholders in decision-making is one way to ensure the success of green city development. There are also some new ideas worth testing, such as a foreign aid 'market' or a performance-based approach. A project always implies

some risk and it should be flexible to tolerate such risks. However, as Adelman and Eberstadt (2008) suggest, this should not become an obstacle to experimenting with new approaches.

International aid could play an important role in promoting eco-cities with the development of policy or major plans, or it could pursue a smaller role in filling the gap left by development authorities with regard to vulnerable groups. For instance, research shows that the points detailed below could secure the success of an aid project facing the challenge of urbanization and green city development. These could, therefore, be viable for further replication and scaling up:

*Aid should be focused at both policy and implementation levels.* At the policy level an aid framework to provide integrated solutions that include measures on poverty, environment and governance is ideal, but it should also be flexible enough to allow tailoring to specific issues. Aid could help with policymaking and developing eco-city standards. For example, as no common definition exists for eco-city, it has been necessary to develop standards for individual eco-city projects by combining local realities with key sustainability features. Aid could be used to help establish quantitative and qualitative key performance indicators, etc. At the implementation level, proper procedure is vital and should include project planning, harmonization, coordination, risk control, and capacity building, etc. A well-designed plan is equally important. For example, in connection with the environmental assessment project on the Wenchuan earthquake, the World Bank included a follow-on workshop to ensure that the newly acquired knowledge would be incorporated into the city's future risk-control plans.

*Aid should emphasize that the sustainability* of an aid project extends to its transferability and scalability. For example, the World Bank supports the sustainability of aid programmes through specific policies, regulatory, incentive and institutional frameworks, management systems and financing mechanisms. It tests the replicability of evaluation standards for green building through pilot projects. On the other hand, as eco-city development is a long-lasting process, stable and continuous support from international aid agencies is important.

*Aid has multiple goals with multiple measures* to be achieved through multiple means. Aid may involve the transfer of financial resources, commodities, technology, training and research. An aid project is usually based on multiple goals rather than pure altruism, and these can differ between donor and recipient. Thus it is important for both parties to maintain good dialogue and to be fully informed. On the other hand, it is important to have multiple measures of aid effectiveness at both macro- and micro-levels that relate to the three target pillars rather than just economic growth. Moreover, the effectiveness of a policy framework with respect to transferability and scalability, and implementation practices such as alignment, harmonization and mutual accountability should also be included in the measures.

*Aid is a tool for filling the gaps.* International aid investments may not contribute much to eco-city development projects because of the scale, timeline, complexity and challenges of these initiatives. For example, compared to the overall estimated investments of ¥150 billion (US\$22 billion) for Tianjin Eco-City, GEF's US\$6 million input is small. But aid could be engaged in various ways to assert influence. For example, international aid could be the channel for fundraising and the introduction of new technology by organizing international forums or expos through which development authorities, financial organizations, business partners and research institutes interested in green, environmentally-friendly construction can establish contacts. Aid could adopt a demand-driven model based on contributions and promises of commitment by the recipients themselves. Aid could also work to fill whatever gaps environmental development may have overlooked, such as raising public awareness for

environment protection, alignment development, or eliminating risks that may emerge during the development process.

For large aid investments, such as eco-city development, however, *a systematic and integral approach is necessary*. In the Tianjin case, the World Bank adopted a city-based approach rather than a sector-approach by being attuned to more than one sector, i.e., transport and building sectors. Furthermore, aid should be applied where organizational expertise is already present. For example, in Tianjin the World Bank focused on: (i) knowledge transfers (i.e., incorporating best international practices into the design, planning and management of eco-cities); and (ii) best-practice demonstrations (which involves not only technology but also establishing benchmarks and standards for follow-on investment) (World Bank 2012b).

*Aid can work to promote information transparency.* In developing countries, information transparency is a technical and political issue, while information collection, transmission, and provision for eco-city development, including feedback from implementing officials and local residents, are essential for any eco-city project. This is also important for generating international aid and raising awareness of the issues encountered. For example, although China deserves praise for its handling of the Wenchuan disaster, the lack of transparency regarding aid, requirements of the disaster area and status of reconstruction have concealed some of the successes, and blurred areas where improvement was still needed. On the other hand, literature shows that for eco-city development and related aid investments in particular, the current mechanisms for knowledge sharing, collaboration between aid organizations, guidance on where to target aid, and project progress are not well established.

*Urbanization and eco-city development is a three-pillar advancement process* that includes social, economic and environmental aspects, which co-exist and interact with each other. The development of the three pillars should be compatible with and integrated into urbanization plans. World poverty, for example, is considered to be one of the major threats to the environment, while economic growth is believed to offer the solution to social and environmental issues. But the prerequisites of eco-city development mean alleviating poverty, respecting local identities, generating economic growth, and directing modern technology towards energy efficiency, while working at the same time to protect the environment. This harmonious integration could bring about extra benefits, as in the case of Curitiba where active, fruitful interaction among the residents, environment and the urban atmosphere made the city a tourist attraction.

*Comprehensive investigation, integrated policy guidance and standards for an eco-city at the national level* are needed to support the developing countries' urbanization and eco-city development process. Currently, many governments are developing their own standards and protocols, which may be reinventing the wheel, but which may not be transferable, scalable or work well for other cities.

*Urbanization and eco-city development make up a systematic, long-term, practical and repetitive process.* It needs collaboration at all levels, with all types of organizations (governments, private agencies, research institutes and aid agencies) and on a wide range of issues (urban planning, economic promotion, public infrastructure, technological advance and environment improvement). For example, the Tianjin eco-city project was a government-to-government cooperation effort that included six public-sector working committees and a consortium of private sector agents. Eco-city development calls for strong, effective governance, and implementation has to be practical and repetitive as eco-city plans evolves. New issues or ideas, as they emerge, need to be tested and then, based on feedback, put into



practice. But development of an eco-city essentially relies on guidance from the city itself in terms of the scale needed. Although strong governance is a prerequisite, local residents are also an important factor. It is important to recognize that foreign aid can usually play only a complementary role. A direct appeal for foreign aid by a local community may be a good way to sidestep bureaucracy and corrupt governments.

*Eco-city development must complement a country's own urbanization process* and national development plans as well as local practices of the urban centre. One of the reasons for the selection of the Tianjin site was because it offered the opportunity to find solutions to problems common in northern China, i.e., shortage of arable land and drinking water. It is also important to make sure that foreign aid allocated within the context of, and integrated with, the government's core plans and policies. Eco-city development is one of the solutions for the pervasive urbanization trend in developing countries. Strong government support, involvement of firms and international organizations, financial incentives, ample opportunities and creation of markets, and advanced technologies for eco-solutions should be prioritized by planners.

The approach in *eco-city development planning can be neither top down and bottom up*, and aid plays a significant role at both levels. Policies and development plans can originate with top government or be driven by the requirements of the local public and private sectors or residents. An issue can be integrated in a common plan that, for example, considers pollution and poverty together, or heritage and tourism. On the other hand, the initial phases of eco-city development may concentrate on a few key sectors considered significant by local people, as in the cases of Tianjin and Curitiba, where emphasis was given to transportation and land use. The initial success of an experiment may attract more interest nationally and internationally, as happened in Curitiba.

Eco-city development authorities need to *respect local culture and identities*, and consider the needs of the end-users. The focus of eco-city planning is predominantly on the reconstruction of the area and of homes. China was perceived to have failed with the development of Huangbaiyu as an eco-city because the concept was not integrated into the daily lives of the inhabitants. Furthermore, the ecological structures and urban form introduced in the Huangbaiyu area overlooked existing local economies (Bassett 2009).

While aid agencies are bound to well-defined practices, it is also *important that recipients create an effective and reliable environment* as well as define the procedures to be followed. An enabling atmosphere also includes good governance, respect for human rights and gradual reduction of aid dependency. Cooperation between aid agencies and recipients is needed. For example, during Curitiba's developmental stages, local authorities set up an administrative entity to coordinate public and private sectors as well as possible international aid organizations.

*Coordination and collaboration among the evolving eco-cities* is currently rare but necessary, and recognition of successful or dysfunctional experiments is an important input. Curitiba's approach to controlling population density through measures in land use and transportation planning is a very good example for the cities of China that are confronted with fast development through vast immigration. International aid agencies may play an important leading role in this area.

*Mitigating climate change is one of the primary goals of eco-cities.* Similarly to the development of eco-cities, climate change mitigation needs extensive collaboration between

governments and international organizations, and more importantly the involvement of each individual. It must be recognized that climate change involves a series of global public good elements. As countries strive towards an international agreement, it is important that newly established policies are embedded already at the planning and implementation process of an eco-city.

As demonstrated, urbanization and green city development is a systematic process. However, the concept of a green city and the nexus of aid–urbanization–green cities are not well established yet. Developing countries need stronger financial and technological support, but data suggest that the international donor community has failed to meet the agreed targets. Meanwhile, social reform or improvement in information transparency, governance, human rights and reduction of aid dependency on the part of the recipients will encourage the international donors and build their confidence. At present, majority of the green cities are at the planning stages, with the duration from plans to full implementation lasting more than a decade (ECMM 2011). Therefore, the success of aid in other domains has to be applied to green city development and urbanization in developing countries. The case studies and the analysis here have also shown that policies and implementation practices can be scaled and transferred to other projects. Comprehensive analyses of the link aid–urbanization–green cities, with a more specific focus on policy and implementation are required.

Even though we emphasize various stakeholders in eco-city development, it needs to be remembered that residents of the relevant cities are the main participants. Therefore it is important to raise their awareness of the eco-city notion, to secure their involvement and feedback, while at the same time, respecting and protecting their identity and culture. Ancient Chinese philosophy proposes the harmony between man and nature (天人合一) i.e., the human being is an integral part of nature and this should be construed as the best target for the development of an eco-city and the involvement of aid.

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