VINH YEN GrEEEn CITY ACTION PLAN

Main Report
November 2014

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6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines
Tel +63 2 632 4444; Fax +63 2 636 2444
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Sonia Chand Sandhu	Senior Environment Specialist, and Team Leader, Urban Development and Water Division, Southeast Asia Department, (SEUW-SERD), ADB
Ramola Naik Singru	Senior Urban Development Specialist (Consultant) and Co-Team Leader, SEUW-SERD, ADB
John Bachmann	Senior Urban and Regional Planner (Consultant) Viet Nam Team Leader, Director AECOM
S. Vaideeswaran	Senior Environment Specialist (Consultant), SEUW-SERD, ADB
Pierre Arnoux	Senior Social Development Specialist (Consultant), SEUW-SERD, ADB
Niels Van Dijk	Senior Twinning and Institutional Specialist (Consultant), SEUW-SERD, ADB
Phuong Nguyen	Research Analyst and National Coordinator (Consultant), SEUW-SERD, ADB

Abbreviations

ADB	–	Asian Development Bank
CAGR		compound annual growth rate
DOIT	–	Department of Trade and Industry
DONRE	–	Department of Natural Resources and Environment
DPI	–	Department of Planning and Investment
FDI	–	foreign direct investment
GCAP	–	GrEEn City Action Plan
JICA	–	Japan International Cooperation Agency
LID	–	low-impact development
NGO	–	nongovernment organization
VYCWU	–	Vinh Yen City Women's Union

WEIGHTS AND MEASURES

ha	–	hectare
km	–	kilometer
m ²	–	square meter
m ³	–	cubic meter

NOTE:

In this report, “\$” refers to US dollars.

\$1 = D21, 000 (Vietnamese Dong)

as of November 2014

Map 1: Vinh Phuc Province

Source: ADB.

Map 2: Vinh Yen City

Source: ADB.

Executive Summary

This is the GrEEEn City Action Plan (GCAP) of Vinh Yen city, Viet Nam. Vinh Yen city and Vinh Phuc province formulated a vision for integrated, sustainable development of the city and then translated it with assistance from the Asian Development Bank (ADB) into this time-bound action plan.

The GrEEEn Cities approach responds to the challenges of rapid urbanization by integrating urban development with environmental planning to improve livability and resilience. By “doing things differently,” the GrEEEn Cities approach enables cities to respond to environmental degradation, inefficient resource consumption, inequitable growth, and increased risks of climate change and natural disasters. This flexible and scalable approach can be applied at any time in a city’s growth trajectory and at any stage of socioeconomic development.

Business as Usual

Vinh Yen is a successful industrial suburb of Ha Noi. Vinh Yen has excellent transport connections: Noi Bai International Airport, the newly constructed Noi Bai–Lao Cai Expressway and three national highways that link to seaports. Vinh Yen city and Vinh Phuc province have marketed these and other advantages to manufacturers in East Asia, which have invested massively in Vinh Phuc to produce vehicles and other goods for the domestic market. Total economic output in Vinh Phuc province grew at an impressive annual average rate of 20% from 2009 to 2012.

However, there are also missed opportunities. International vehicle manufacturers source few of their spare parts from local producers. Industry needs to retool to take advantage of opportunities for export that will materialize in coming years. Despite the success of Tam Dao National Park, Vinh Phuc has not been able to take full advantage of its significant natural assets, including scenic Dam Vac lake in downtown Vinh Yen, to grow tourism. Opportunities are available to develop education and health care services to serve the metropolitan market, as facilities in Ha Noi are oversubscribed. The development of services and tourism requires preservation and enhancement of the natural environment, including better wastewater and solid waste management.

Vinh Phuc’s ambitious plans for industrial and services growth are potentially on a collision course. To ensure compatibility and strike the best balance, a comprehensive planning approach is needed. The greening of Vinh Yen city starts with this action plan.

Vinh Yen’s Vision for a GrEEEn City

Vinh Phuc Department of Planning and Investment achieved a high level of consensus among stakeholders during the GCAP preparation process. Participation by the highest levels of provincial and city government ensured the commitment necessary to achieve success. Line departments helped to formulate specific proposals and concentrate

efforts in specific locations for greater development impact. Private sector and civil society representatives were key to making this a demand-driven action plan.

Vinh Yen city's vision is to become an ecobusiness satellite city in metropolitan Ha Noi. In the manufacturing sector, Vinh Phuc People's Committee will intensify its focus on green products as a means to expand high-value manufacturing. A logistics hub will be developed to promote export growth. The People's Committee will bring together foreign manufacturers and local suppliers to promote the sale of locally made parts to foreign-owned manufacturers.

In the services sector, Vinh Phuc will promote the development of low-polluting service industries such as tourism, education, and banking and finance. The diversification of the economy into services will strengthen economic resilience, as Vinh Phuc in the future will depend less on foreign investment in manufacturing.

Vinh Yen will preserve and enhance its environmental assets to capture a larger share of the regional ecotourism market. Vinh Yen People's Committee will implement a series of hard-side and soft-side measures to preserve and enhance the quality of Dam Vac lake and its shoreline. The urban wastewater and solid waste management systems will be expanded and strengthened. The shores of the lake will be selectively redeveloped to improve public access and provide facilities for overnight tourists from Ha Noi. This combination of environmental improvements and public-private partnership in lakeshore development will showcase the integrated, holistic GCAP approach.

Vinh Yen will become a regional destination not only for tourism but also for higher education and health care services. Vinh Yen will develop a university city, a local campus that will be home to seven domestic and three international universities. New hospitals will be developed in Vinh Yen to serve metropolitan customers and local residents.

To implement the vision for Vinh Yen, this GCAP sets out four initiatives:

- Initiative 1: Promote ecobusiness in manufacturing and services
- Initiative 2: Improve the urban environment, including Dam Vac lake
- Initiative 3: Promote regional ecotourism and
- Initiative 4: Become a regional leader in education and health services.

Each initiative bundles together a number of hard-side and soft-side actions, as shown in the action plan summary. The actions will be implemented in a coordinated fashion, with a spatial focus where appropriate, in order to maximize the creation of value during and after the implementation of the GCAP.

Enablers

With ADB assistance, Vinh Yen will establish an urban management partnership focused on a new Dam Vac Lake Environmental Protection Committee. The immediate aim of the committee is to introduce a participatory process for developing an urban upgrading strategy and local area plan for the Dam Vac Lake area. The committee can also lead the development of a feasibility and marketing study for the lake's waterfront, and preparation of the community scorecard to get feedback from local residents.

To help local parts producers do business with foreign vehicle and electronics manufacturers present in the province, the Vinh Phuc People's Committee will bring the parties together and facilitate consensus on the technical standards that local products must meet in order to meet the needs of the vehicle assembly plants.

With these various activities planned under this initiative, the overarching enabler is to build the institutional capacity of the city government and their utility companies. In-city training and exposure to other similar cities will be required in order to understand how better practices could be streamlined. Exposure to new technologies and their on-the-ground performance will also assist in determining what is appropriate in the Vinh Yen context.

Institutional Arrangements

The institutional arrangements for implementation include the formation of an executive GCAP implementation committee and a project delivery unit, both of which will enable collaboration across departments and traditional sectoral boundaries. Vinh Phuc province and Vinh Yen city will pursue policy reform in the areas of project identification and prioritization, project feasibility analysis, infrastructure finance and stakeholder engagement. Capacity building for local government departments in these areas is also critical for GCAP success.

Cumulative Benefits of the Vinh Yen's GCAP

The design of the GCAP enables Vinh Yen city to achieve cumulative benefits that are greater than the sum of the benefits of individual actions. Cumulative benefits result when multiple complementary actions—including capital improvements, regulatory changes, and institutional changes—are implemented in the same spatial and time frame. The set of hard and soft actions in Vinh Yen's GCAP will drive sustainable development of the Dam Vac lake area, resulting in a cleaner environment, amenities for citizens, tourism investment and jobs, and increased value of real property.

In addition to greater economic return, this integrated approach will also enhance the livability of Vinh Yen city for residents and visitors alike. People will be living in a cleaner, more pedestrian-friendly environment with greater choices for recreational and cultural activities. Their exposure to pollution and waterborne diseases will be reduced, and their economic opportunities will broaden. In this way the GrEEEn Cities approach results in a higher-value place that improves quality of life for those that experience it.

Action Plan Summary

Action	Phase I (2015–2020)					Phase II (2020–2030)										Anticipated Benefits		
	Year					Year											Cost (US\$)	
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10			
Initiative 1: Promote ecobusiness in manufacturing and services																		
Prepare inland container depot business plans																500,000	Exports in manufacturing output	
Promote car part to foreign manufacturers																50,000	Manufacturing output , new jobs	
Build showroom to showcase local products																3,000,000	Boost in demand for local products and services	
Prepare plan to attract clean manufacturing																300,000	Ecological footprint , manufacturing output	
Initiative 2: Improve the urban environment, including Dam Vac lake																		
Prepare Dam Vac lake catchment plan																200,000	Framework for managing water and wastewater	
Expand water supply distribution network																2,000,000	Best services for residents, time savings	
Expand wastewater collection and treatment																34,500,000	Cleaner lake public health and tourism	
Support household sanitation revolving fund																3,050,000	More connections health and environment	
Expand storm water collection and disposal																10,000,000	Cleaner lake tourism and resilience	
Introduce and promote low-impact development standard																150,000	Less flooding and greater resilience	
Nạo vét Hồ đầm Vạc																12,500,000	Less flooding and greater resilience	
Tree planting and landscaping																6,000,000	Less flooding and run-off, greater resilience	
Improve domestic solid waste disposal																10,000,000	Cleaner environment public health and tourism	
Build industrial solid waste incinerator																150,000,000	Cleaner environment public health and tourism	
Build medical waste incinerator																100,000,000	Cleaner environment public health and tourism	
Enhance air and water quality monitoring																1,600,000	Enhanced attractiveness as investment destination	
Implement a community scorecard																50,000	Community participation, responsive management	
Initiative 3: Promote regional ecotourism focused on Dam Vac lake and Tam Dao Park																		
Feasibility and/or marketing study for Dam Vac lake																250,000	Demand-driven development strategy	
Prepare a Dam Vac lake local area plan																200,000	Sustainable development of Vinh Yen's unique asset	
Make improvements to the lake shore																5,000,000	Increased investment, more tourism	
Prepare sustainable transport plan																400,000	Lower carbon emissions per kilometer, more tourism	
Initiative 4: Become a regional leader in higher education and health care services																		
Develop arterial roads in University City																20,000,000	Enhanced ability to attract universities to Vinh Yen	
Develop new obstetric and pediatric hospital																38,000,000	Share of regional health care services market	
Develop new general hospital																70,000,000	Share of regional health care services market	
TOTAL																206,050,000	488,600,000	

● Economic benefit ● Environmental benefit ● Equity benefit

Source: Asian Development Bank.

Background

This is the GrEEEn City Action Plan (GCAP) of Vinh Yen city, Viet Nam. Vinh Yen city and Vinh Phuc province formulated a vision for integrated, sustainable development of the city and then translated it with assistance from the Asian Development Bank (ADB) into this time-bound action plan.

The GCAP embodies ADB’s new GrEEEn Cities approach to urban development, which uses a 3E lens (environment, economy, and equity) to develop cities that are green, competitive, and inclusive. GrEEEn cities strive for more than environmental sustainability. It is not only about reducing carbon emissions and conserving resources. It is also about improving the quality of life and creating business opportunities throughout the entire economy.

The GrEEEn Cities approach responds to the challenges of rapid urbanization by integrating urban development with environmental planning to improve livability and resilience. By doing things differently, the GrEEEn Cities approach enables cities to respond to environmental degradation, inefficient resource consumption, inequitable growth, and increased risks of climate change and natural disasters. This flexible and scalable approach can be applied at any time in a city’s growth trajectory and at any stage of socioeconomic development.

GrEEEn Cities enable partnerships among local governments, civil society, community residents, the private sector, industry, and small and medium-sized enterprises. These partnerships identify and implement solutions for improving the quality of life, increasing competitiveness, and managing climate change and natural disasters, without compromising social equity.

GCAP identifies a city’s major assets and its unique selling point. It then sets out a number of focused initiatives to

Figure 3: LivabilityTriangle

Source: S. Sandhu, and R. Naik Singru. 2014. Enabling GrEEEn Cities: An Operational Framework for Integrated Urban Development. *Southeast Asia Working Paper Series* No. 9. Manila: Asian Development Bank.

preserve, enhance, or leverage the unique selling point to achieve the city’s vision. Each initiative has distinct hard-side and soft-side actions that work together to transform places and generate more value for the city, the economy, and the local population.

Implementing 3E urban plans requires inputs from a broad range of stakeholders. The GrEEEn Cities approach emphasizes building a consensus among the different parties involved in managing green, competitive, and inclusive cities. Teamwork among government, private sector, and civil society stakeholders is essential for creating and implementing the GCAP.

Vinh Phuc Department of Planning and Investment (DPI) achieved a high level of consensus among stakeholders during the GCAP preparation process. Participation by the highest levels of provincial and city government

Figure 1: GrEEEn Cities Operational Framework

Source: S. Sandhu, and R. Naik Singru. 2014. Enabling GrEEEn Cities: An Operational Framework. Southeast Asia Department Working Paper Series No. 9. Manila: Asian Development Bank.

ensured the commitment necessary to achieve success. Line departments helped to formulate specific proposals and concentrate efforts in specific locations for greater development impact. Private sector and civil society representatives were key to making this a demand-driven action plan.

This GCAP was prepared under the regional TA-8314 Green Cities: A Sustainable Urban Future for Southeast Asia, which is aligned with ADB policies and sector priorities, including the *Urban Operational Plan 2012–2020*, *Water Operational Plan 2011–2020*, *Environment Operational Directions 2001–2020*, ADB's *Urban Sector Assessment, Strategy, and Road map for Viet Nam*, and the *Viet Nam Country Partnership Strategy 2012–2015* and further catalyzes the implementation of the National Program on Urban Development 2011–2020 which ensures conformity with Viet Nam's *Socio-Economic Development Plan, 2011–2015* and *Socio-Economic Development Strategy, 2011–2020*.¹ Looking forward, the

GCAP sets the framework for the preparation of a new results-based loan program, VIE 47274: Secondary Cities Development Program (Green Cities), in which Vinh Yen is one of three participating cities.

The main report of this GCAP plan begins with a description of existing conditions and trends in Vinh Yen and the development challenges they pose (Business as Usual, Section 2). Next it sets out the vision for development of Vinh Yen, which was formulated by local stakeholders during a workshop in 2013. Based on the vision, the GCAP sets out four initiatives, each of which includes a number of capital investment, specific actions, and enabling measures. The final sections of the GCAP discuss partnerships, implementation arrangements, economic impacts, and performance monitoring.

A separate volume presents detailed assessments of local economic, environmental, and social conditions.

¹ ADB. 2013. *Urban Operational Plan, 2012–2020*. Manila; ADB. 2012. *Country Partnership Strategy: Viet Nam, 2012–2015*. Manila; Ministry of Planning and Investment. 2011. *Socio-Economic Development Strategy, 2011–2020*. Ha Noi: Government of Viet Nam; Viet Nam National Assembly. *Socio-Economic Development Plan*. Ha Noi: Government of Viet Nam; Government of Viet Nam. 2012. No. 1659/QĐ-TTg: *Decision on the Approval of the National Program on Urban Development in 2011–2020 Period*. Ha Noi. 7 November.

Business as Usual

Vinh Yen is a successful industrial suburb of Ha Noi. Vinh Yen has excellent transport connections: Noi Bai International Airport, the newly constructed Noi Bai–Lao Cai expressway, and three national highways that link to seaports. Vinh Yen city and Vinh Phuc province have marketed these and other advantages to East Asian manufacturers, which have invested massively in Vinh Phuc to produce vehicles and other goods for the domestic market. Total economic output in Vinh Phuc province grew at an impressive annual average rate of 20% from 2009 to 2012.

However, there are also missed opportunities. International vehicle manufacturers source few of their spare parts from local producers. Industry needs to retool for export opportunities that will materialize in coming years. Despite the success of Tam Dao National Park, Vinh Phuc has not been able to take full advantage of its significant natural assets, including scenic Dam Vac lake in downtown Vinh Yen, to grow tourism. Opportunities are available to develop education and health care services to serve the metropolitan market, as facilities in Ha Noi are oversubscribed. The development of services and tourism requires preservation and enhancement of the natural environment, including better wastewater and solid waste management.

Vinh Phuc's ambitious plans for industrial expansion and services growth may be on a collision course. To ensure compatibility and strike the best balance, a comprehensive planning approach is needed. The greening of Vinh Yen starts with this action plan.

annual economic growth of more than 7%, widespread industrialization and a sharp rise in living standards. Viet Nam is on track to meet almost all its Millennium Development Goals. Rapid urbanization is driven by a structural shift from agriculture to industry and services, which taken together now account for nearly 80% of economic output since 2005. However, the quality of urban growth is uneven, with many cities suffering from environmental pollution, loss of natural capital, low returns on public investments, and low economic competitiveness. Natural disasters and climate-induced impacts exacerbate the social, economic, and environment costs of rapid urbanization, especially in secondary cities with limited institutional and financial capacity. With much of the population living in low-lying coastal and river delta areas, it is expected that sea level rise by the end of this century will affect 10%–12% of the population in Viet Nam; associated economic losses could reach 10% of Viet Nam's gross domestic product.

Against this backdrop, Viet Nam approved in 2012 its *National Green Growth Strategy*,² which complements the Framework Master Plan for Urban Development in Viet Nam to 2025 and the Vision to 2050. The framework master plan aims to achieve balanced and strategic growth through a national system of well-managed urban centers and development of secondary and tertiary cities as hubs within provincial urban systems. Developing provincial capital cities, as pilots in different geographic regions will boost the local economy, balance regional development, strengthen urban–rural links, and address overcrowding in primary urban centers.

Urbanization in Viet Nam

Viet Nam has achieved significant socioeconomic development progress over the last 2 decades, with average

Economy

A Class 3 city, Vinh Yen is located at the center of Vinh Phuc, one of Ha Noi's most productive industrial

² Government of Viet Nam. 2012. *National Green Growth Strategy*. Ha Noi.

provinces. Vinh Phuc is serviced by some of the best road, rail, and air connections in the northern part of Viet Nam, namely:

- National Highway 2 (connecting Phu Tho, Tuyen Quang, and Ha Giang provinces);
- National Highways 5 and 18 connecting to the ports of Hai Phong and Cai Lan;
- Rail connections to Ha Noi and Lao Cai and into the industrial centers of the People's Republic of China (the PRC);
- Newly expanded Noi Bai International Airport, and, most recently;
- Noi Bai–Lao Cai Expressway, running just north of the city.

The province has taken advantage of these assets to attract foreign direct investment, generate local jobs, and achieve average annual economic growth rate of 20% from 2009 to 2012. (The national economy grew at 7% yearly during the same period.) Most of this growth has come from increasing foreign direct investment (FDI), which also grew 20% per year. A smaller but faster growing segment of the economy though has been the private and household businesses. This sector, making up 25% of the economy, has grown at a rate of 40% over the last 5 years.

Among the investment destinations in Viet Nam, Vinh Phuc is very attractive for manufacturers from East Asia because adjacent Noi Bai International Airport has the shortest air connections to the PRC; Taipei, China; Japan; and the Republic of Korea. Together, these four countries account for 65% of all foreign investment into Viet Nam. The PRC and Japan have been the main investors. Toyota, Honda, and Piaggio factories are located in Vinh Phuc. Firms from the Republic of Korea and Taipei, China are also beginning to invest. The region is becoming a hub for auto manufacturing as General Motors and Ford have also set up plants in other provinces bordering Ha Noi.

Vinh Phuc People's Committee was among the first in the country to set up a one-stop services center under a Japan International Cooperation Agency (JICA) project on improving the investment climate. The province has been actively marketing six new industrial parks along the eastern end of Vinh Phuc province; four of these parks

take advantage of access improvements provided by Noi Bai–Lao Cai Expressway. Ten more industrial parks are planned to 2015, and a further two by 2020, bringing the total to 18 industrial parks. Bac Ninh, the neighboring province has nine operational industrial parks, and another six in planning stages. Vinh Phuc and Vinh Yen have also actively invested in roads, sewage, power, and other industrial infrastructure. Only one of these parks, though, is within Vinh Yen city boundaries.

Despite Vinh Phuc's success in becoming a hub for vehicle manufacturing, there are missed opportunities. There is very little integration between the foreign auto companies and local parts manufacturers. Interviews with some of these large manufacturers have suggested that less than 10% of the parts in their cars are locally sourced. The main reason is the low quality of locally made parts. Even after a decade of presence of the large auto manufacturers, local suppliers have not invested enough in components or technology to meet the standards of international manufacturers.

Vinh Phuc province has also lost ground in recent years to competing provinces in Greater Ha Noi. Vinh Phuc's rating in the Provincial Competitive Index has dropped from number 5 nationally in 2005 to number 43 in 2012. The main reasons for decline have been identified as declining business support services and unclear property rights. At the same time, Bac Ninh, Vinh Phuc's neighbor, has invested highly in investment promotion, and been very successful in attracting new investors such as Canon and Yamaha.

Even within Vinh Phuc province, Vinh Yen city is losing out to other jurisdictions, which have been more successful in attracting industry (Table 3).

The medium-term challenge for Vinh Phuc industry will involve not only the domestic market for manufactured goods, but also the international market. Today, most foreign manufacturers are only licensed to produce for the domestic market. But it is anticipated that the policy environment will change in the next few years, and foreign firms will produce locally for export. Given Vinh Phuc's strong connections to ports and the airport, it has a big advantage over many other investment destinations. Vinh Phuc DPI wants to begin positioning the province now as a leader in the export market.

Figure 2: Employment by Sector in Vinh Phuc Province, 2008–2011

FDI = foreign direct investment, SOE = state-owned enterprise.
Source: Authors.

While FDI rates in Vinh Phuc have been slowing recently, services have been picking up. Table 4 shows that employment in high value services and construction and real estate has been increasing at annual rates of 23% and 17%, respectively, in recent years. Vinh Phuc's development plans, as articulated by the provincial DPI, focus on achieving more balanced growth, with an increasing share of local production coming from services. The targeted service sectors are tourism, education, insurance, and finance and banking.

Vinh Phuc has significant natural assets on which it wants to build its tourism business. Tam Dao National Park, a nationally recognized tourism site, is located in the province. Dam Vac lake in the center of Vinh Yen city is very scenic, attracts a lot of bird life, and has the potential to be developed for weekend recreation and tourism for residents of the capital city and tourists visiting Ha Noi alike. City and province leadership recognize this potential and have undertaken some investment and beautification projects, including lakeside hotels and a golf course. Still, tourism is underdeveloped, especially in relation to the value of the assets. A more comprehensive approach including environmental improvements, enhancement of public access, tourism facilities, and transport connections to Ha Noi and Tam Dao park can help realize Dam Vac lake's potential.

There is also potential for growth in the education sector. Ha Noi university campuses are oversubscribed; many of them are interested in opening up suburban campuses. Demand from international universities is also substantial. Development of university facilities locally would also provide a means to upgrade local education levels and labor skills, which will be key to driving economic growth in the long run, when the FDI-led manufacturing slows down or dries up.

Health care is another area where the traditional high-quality providers in Ha Noi city center are unable to meet regional demand. New hospitals built on less expensive suburban land could capture the spillover and even draw some patients away from the congested city-center facilities. Taken together, tourism, education, and health care are three sectors where Vinh Phuc could become a regional leader. All three sectors would benefit from a cleaner, healthier, and more attractive urban environment.

Environment

Vinh Yen city is located in the transitional area between the mountains and the river delta. The varied topography includes low hills and flat plains dotted with ponds and lakes. Dam Vac lake is a beautiful 160-hectare lake located in the heart of the city. A valuable natural asset with the potential to attract more tourists from the region, Dam Vac lake is Vinh Yen city's unique selling point.

Vinh Yen's robust industrial and commercial economy poses large and growing environmental challenges. In addition to managing domestic wastewater and solid waste, Vinh Yen city and Vinh Phuc province have to cope with a growing amount of industrial waste generated in the four operational industrial zones and 14 additional zones in various stages of development. The recent completion of the Noi Bai–Lao Cai Expressway and other transport improvements are attracting additional investment and putting additional pressure on the natural environment.

Table 1: Gross Output by Enterprise and Sector (2009–2012)

Item	2009	2010	2011	2012	CAGR, 2009–2012 (%)
Total Number	76,424,018	103,809,835	147,212,612	157,582,463	20
By Type of Ownership					
State	5,408,400	5,978,370	7,215,248	8,864,654	13
Non-State	21,506,186	28,576,192	41,627,688	45,424,519	21
Collective	2,612,147	3,851,742	4,507,766	3,810,502	10
Private and Household Business	10,894,039	24,724,449	37,119,922	41,614,017	40
Foreign Investment Sector	49,509,432	69,255,273	98,369,676	103,293,290	20

CAGR = compound annual growth rate.

Source: : Vinh Phuc Statistics Office. 2013. *Vinh Phuc Statistical Year Book 2012*. Ha Noi: Statistical Publishing House.

Table 2: Provincial Competitiveness Index Ranking by Year, 2005–2012

Provinces	2005	2006	2007	2008	2009	2010	2011	2012
Vinh Phuc	5	8	7	3	6	15	17	43
Bac Ninh	23	14	20	16	10	6	2	10
Ha Noi	14	38	27	31	33	43	36	51

Source: : Vinh Phuc Statistics Office. 2013. *Vinh Phuc Statistical Year Book 2012*. Ha Noi: Statistical Publishing House.

Table 3: Growth Rate of Provincial Cities in Vinh Phuc Province

Item	2008	2009	2010	2011	Prel. 2012	CAGR, 2008–2012 (%)
Total Number	1,501	1,649	1,846	2,681	2,704	12
Phuc Yen town	236	296	481	527	528	17
Yen Lac district	174	221	251	353	355	15
Vinh Tuong district	180	173	179	304	305	11
Binh Xuyen district	157	160	171	257	260	11
Vinh Yen city	502	520	455	784	792	10

CAGR = compound annual growth rate.

Source: Vinh Phuc Statistics Office. 2013. *Vinh Phuc Statistical Year Book 2012*. Ha Noi: Statistical Publishing House.

Table 4: Employment by Enterprise, Sector and Percent Micro and Small-Enterprises, 2008–2011

Item	2008	2009	2010	2011	CAGR, 2008–2011 (%)	mSE
Total Employment	66,846	71,235	78,548	102,565	11	98
By Type of Ownership						
State	4,484	4,552	4,659	4,431	0	68
Non-State	36,282	36,148	41,919	56,870	12	
Collective	4,012	3,838	3,197	3,545	-3	72
Private and Household Business	32,270	32,310	38,722	53,325	13	100
Foreign Investment Sector	26,080	30,535	31,970	31,264	5	70
By Sector						
Agriculture, Forestry and Aquaculture	3,309	3,211	2,798	2,894	-3	99
Manufacturing	41,082	45,698	50,433	61,576	11	93
Construction and Real Estate	9640	8872	10,908	17,931	17	98
Light Manufacturing	5,676	6,232	6,819	10,309	16	100
Hospitality	1,088	974	1,159	1,508	9	99
High value-added services	1,026	1,046	1,199	2,379	23	100

CAGR = compound annual growth rate.

Source: Vinh Phuc Statistics Office. 2013. *Vinh Phuc Statistical Year Book 2012*. Ha Noi: Statistical Publishing House.

Water Supply

About 70% of raw water supplies are extracted from groundwater sources, including 21 wells located on agricultural lands. Tests have revealed no contaminants, but high iron content. The iron is removed in the treatment prior to water supply. The remaining 30% is taken from the Pho Day river. There is a plan to take additional water from the Lo river.

The city has two water supply stations for treatment of raw water. A third station is essentially a raw water storage facility for the other two stations. About three-quarters of the population is served by the piped water system, while the others have wells. The city plans to provide piped water to the entire population.

Domestic Wastewater

Vinh Yen uses a combined wastewater and stormwater collection system. Domestic wastewater entering the system through stormwater channels and other drains reaches the Dam Vac lake by gravity flow, which pollutes

Photo: Vaideeswaran S.

Developed area of Dam Vac lake.

the lake. The current efforts to clean up the lake will not succeed unless the domestic wastewater flow is diverted to a treatment plant.

A domestic wastewater treatment plant (5,000 cubic meters [m³]/day capacity) is at an advanced stage of

commissioning. Implemented using Japan International Cooperation Agency (JICA) funds, this \$20 million investment will collect and treat about 30% of the city's domestic wastewater, and will cover 4 wards out of the total of 7 wards and 20 communes. Only the domestic wastewater flows connected directly to the combined system will reach the plant; no tertiary connections are in place. The discharge from the treatment plant will piped to the Phan river, which is 300 meters away from the treatment plant.

Solid Waste

The city generates about 110 tons per day of municipal solid waste. The Urban Environment Company URENCO manages the municipal solid waste. The collection of this waste is done through private contractors. About 10 dump trucks transport the waste to a dump yard. The collection coverage is nearly 90%. Except for two villages in the city where road access is not possible, all residents receive service.

Disposal is in a dump yard, not a sanitary landfill. The current dump yard in the north will be closed in December 2014, and the new one of 1.5 hectares will last for the next 2–3 years. Both dump yards have a high density polyethylene (HDPE) lining and the leachate is collected in a pit, which is not further treated. Once the domestic wastewater treatment plant is in place, it is proposed to take the leachate to the plant.

The user fee is directly collected by the contractor. The fee covers only 2% of the overall cost; the balance funding is provided by a provincial government transfer.

Waste is not segregated at source and efforts to promote segregation have failed. The private sector has been invited to promote waste management by disposal technology such as incineration through the public–private partnership mode. This has not yet succeeded, as the price quoted per ton is prohibitively high. Also, the city does not have waste processing activities either for the compost or recyclables.

Biomedical Waste

The city has about 10 health care establishments of different sizes. There is no consolidated approach to biomedical waste management. All disposal is done by

Photo: R. Singru

Underdeveloped area of Dam Vac lake.

Photo: Vaideeswaran S.

Ongoing wastewater network improvements.

incineration, and waste is not segregated at the point of generation. Hospitals are responsible for managing their own waste, and hospitals that do not have incinerators are required to send their waste to hospitals that have them.

Drainage and Flooding

Rainfall is not particularly heavy during the monsoon months in Vinh Yen, and there have not been any disasters from flooding. However, a few low-lying areas such as Thanh Tru, Nga Ba Tam Duong, and Lien Bao around the Dam Vac lake tend to get flooded. In one instance, about 100 households had to be temporarily vacated. Most of the roads do not have proper side

and cross-drain structures. This results in some level of flooding during the rains.

The city government has a committee that monitors the status of the various areas and prepares for any necessary evacuations. Communication campaigns, training, and drills are regularly carried out. As flooding may occur in the future due to the progressive reduction in the size of the lake, measures to stop the overflows from the Phan river into the city will be required.

Tree Planting and Green Landscaping

The city has planted trees along the median strips and the sidewalks on selected streets, such as the main road, the ring road, and in the vicinity of the recently developed theatre square. Overall it is estimated that the green areas in the city have been reduced over the years, and there is a strong case for more green areas as a part of the green city development. It is estimated that there are 10 square meters (m²) of green area per capita. The city intends to increase that figure to 15 m² per capita.

Air Pollution

Air pollution is not a major problem. An ambient air monitoring station indicates that the city's air meets the national standard. It is important to continue monitoring air quality, especially in light of the many industrial projects in the city's development plans.

Industrial Waste

The industries in the city of Vinh Yen are not highly polluting. For the most part, engineering units—spare parts, assembly, and steel accessories—are located here. There are no chemicals or food industries, and industries are located both outside and inside the industrial parks. One industrial park in Vinh Yen has a small common industrial effluent treatment plant that has treatment facilities commensurate with the requirement. Monitoring of the discharge is also done with a real-time system. Effluents that deviate from the national standard are treated again.

The treated effluent finds its way through small channels to the river. The solid waste generated from this plant and from all industries in Vinh Yen is disposed of at the Ha Noi waste disposal plant. An incinerator for the industries

Photo: Vaideeswaran S.

Urban tree planting and landscape improvements.

within Vinh Yen is needed for the final disposal of hazardous waste. A number of authorized waste recyclers collect industrial waste for processing in centers outside the Vinh Yen city.

Environmental Monitoring

Vinh Yen city has two water quality stations, and four more in the planning stage. These stations monitor the discharge into water bodies rather than measure the quality in the water bodies per se. The quality of the Dam Vac lake is not monitored, which makes it hard to evaluate effectiveness of the clean-up effort. As noted above, a fully functional air quality monitoring station with state-of-the-art facilities has been recently established at the Department of Natural Resources and Environment (DONRE) building.

Equity

Population

The population of Vinh Yen city in 2012 was 98,000. As in other cities in Viet Nam, people living in Vinh Yen city include not only registered local residents but also workers migrating from other regions. City authorities estimate the number of nonregistered persons at 10,000.

The population growth rate was 1.2% in 2011 and 2012. By 2020 annual growth rate is expected to be 1%.

In the coming years, the administrative territory of Vinh Yen city will be expanded to include some surrounding urban areas, including Phuc Yen and Huong Canh. Vinh Yen city will be renamed Vinh Phuc city and will have a population of about 400,000.

Poverty Profile

In 2012, the poverty rate³ in Vinh Yen city (3.4%), was significantly lower than the rate in Vinh Phuc province (25.1%). The rate in Vinh Yen city was also lower than the national urban average (3.9%).

Poverty does not occur in urban areas. The poor are mainly located in rural communes, outside the urban core. A total of 5.4% of the total population, or about 1,250 households across the city, is poor or close to poor. In 2012, the poverty rates in the city center urban wards of Dong Da, Ngo Quyen, Tich Son, and Lien Bao were significant lower (0.6% to 1.6%) than that in Vinh Yen city as a whole. Dong Tam ward, Dinh Trung, and Thanh Tru communes, located in the rural area of Vinh Yen city, had somewhat higher poverty rates (4.5%, 4.1%, and 9.4%, respectively) during that year.

Civil Society

Mass organizations, such as the Women's Union, Farmer's Union, Youth Union, and Fatherland Front, continue to dominate the civil society space in Viet Nam, including Vinh Yen city.

Most of the nongovernment organizations (NGOs) in Vinh Phuc province are working in the mountainous areas. Only a few NGOs are present in Vinh Yen city. Among these, GRET⁴ has carried out several capacity building programs. The Synergy Project aimed to strengthen the capacities of a network of five local NGOs in the areas of environmental and climate change management.

The Women's Union is a key organization providing information to households and implementing various socioeconomic development programs. It is present at all administrative levels (province, city, ward, commune, and village). Among other activities, the Women's Union implements environmental awareness and credit programs to households, especially poor households.

Table 5: Population - Baseline Numbers

Item	Value
Population Vinh Phuc province 2012 ^a	1,020,597
Population Vinh Yen city 2012 ^a	98,000
Nonregistered population in Vinh Yen city 2012 ^b	10,000
Annual average population growth rate 2006–2012 ^a	5.13%
Projected annual average population annual growth rate 2010–2020 ^b	0.99
Poverty rate Vinh Phuc province 2012 ^c	25.1%
Poverty rate Vinh Yen city 2012 ^c	3.4%
Unemployment rate in urban area 2012 ^a	2.5%
Urbanization level of Vinh Phuc province 2012 ^a	24%
Urbanization level of Vinh Yen city 2012 ^a	84%

Sources:

^a Vinh Phuc Statistics Office. 2013. *Vinh Phuc Statistical Year Book 2012*. Ha Noi: Statistical Publishing House.

^b Master Plan of Vinh Phuc Province

^c Department of Labour, Invalids and Social Affairs Vinh Phuc Province.

Access to Urban Services

Equity to urban services is based on the following principles of inclusiveness, accessibility, and affordability. Equity in service delivery includes:

- Equity of access to key services among all citizens;
- Equity among generations;
- Equal access to development benefits, e.g., employment, revenue, social investment; and

³ As per government of Viet Nam poverty standards for 2011–2015, in urban areas, households are defined as poor if the average household income is equal to or less than D500,000 (US\$ 23.8) /person/month. Households are defined as “close to poor,” with an income threshold in urban areas from D501,000 (US\$ 23.8) –D650,000 (US\$ 31.0)/person. Poor households are entitled to range of benefits including lower fees for services and reduced cost health care.

⁴ <http://www.gret.org.vn/EN/organize.htm>

Figure 3: Vinh Yen City Showing Environmental Monitoring Stations

Legend:
 ● Surface water monitoring point
 ■ Air emission monitoring point
 ★ Automatic air emission monitoring station
 ▲ Automatic water monitoring station
 ◆ Proposed point of automatic water monitoring station

Source: Department of Planning and Investment, Vinh Phuc Province, 2013.

Figure 4: Poverty Rates Among Wards and Communes

Sources: Department of Labour, Invalids, and Social Affairs, Vinh Phuc Province 2012.

- Opportunities to participate equally in the consultation and development process.

Currently, residents of Vinh Yen generally have low access to urban services (Table 6). Some services are

completely absent (public transport). However, existing services are generally affordable and satisfactory to users. Relationship with the community can be improved with more regular efforts by service providers to get feedback from users.

Table 6: Urban Service Coverage Levels (2014)

Urban Services in Vinh Yen City	Households with Service (%)
Electrical Power	100
Piped Water Supply	85
Piped Sewerage	70
Sanitation (Septic Tanks)	94
Solid Waste Collection	100
Road Access	100
Road Access (Wider than 3 meters right-of-way)	50
Green Spaces within Walking Distance	1
Public Transport	0

Source: Vinh Yen city departments and utilities.

Water Supply

Accessibility to the piped water supply system (currently 85%) is anticipated to rise to 100% by 2020.

Water quality. Water is safe for the whole network, but because the water company cannot control water quality between the water meter and the tap, some households have water quality issues. The water company has installed six public fountains in some public locations such as parks.

Feedback from users. The water company organizes workshops with customers every year. Comment boxes have been installed in each ward to get customer feedback on water service quality. Surveys have also been conducted in the area not covered by the water network to assess conditions and help determine priorities.

Tariffs. Costs for water remain affordable: D6,800 (\$0.32)/m³ for the first 10 m³ and D7,5 00 (\$0.36)/m³ for the next 10 m³. No specific tariff for poor households is

implemented; in some special cases poor households can be exempted from water fees.

Drainage/Sanitation

Accessibility. The urban sewerage network covers only 70% of the households in Vinh Yen city. Thirty percent of households have no service.

Sanitation conditions. Most households (94%) in Vinh Yen city have their own toilets. Thirty percent of wastewater from toilets are self-absorbed or run-off into ditches, rivers, and lakes.

Ability to pay for sanitation improvements. A study⁵ on the implementation of a revolving fund for sanitation improvements conducted in 2013 in four wards (Ngo Quyen, Dong Da, Lien Bao, Khai Quang) in Vinh Yen city estimated the local willingness-to-pay for sanitation services. The study concluded that subsidies may be required to improve sanitation access of low-income households.

Solid Waste

The solid waste management company recently held a workshop with users on waste issues, including service quality and tariff levels. The company also collects feedback from the waste collection contractors.

Public Transport

The city does not currently have a public transport network. Seventy percent of local trips are by motorbike. Vinh Yen city plans to develop public transportation, and several projects have been discussed, including light rail transit and bus rapid transit.

The city lacks pedestrians and bicycle paths within the city and around the lake. Due to encroachment on sidewalks by small business and motorbikes, pedestrians have to walk on the streets.

A coherent and sustainable public transport network within the city is needed, which guarantees service access in all areas in Vinh Yen city.

Green Spaces

In 2013 the total area of green open space in Vinh Yen city was 47 hectares (ha).⁶ This represents an average of 4.8 square meters (m²)/person. This number is lower than the standard of city class III (5 to 7 m²/person).⁷

Currently only the park on the north side of the lake is accessible to the public. Other areas are mainly residential areas or unused due to lack of accessibility. Pedestrians use a road along the river. As the lake will be developed for tourism, it is important to expand public access and make sure that the benefits of tourism investments flow not only to tourists, but also to local residents.

Social Infrastructure

To become an administrative center at regional level, Vinh Yen needs a strong development of education and health sector. Strong investments are necessary to meet this objective.

Health

Currently Vinh Yen city health facilities meet the basic demand of the current population. However, medical equipment and additional space are needed. Biomedical waste also needs to be disposed of in a more systematic and effective way. The incinerator in the existing hospital is old and inefficient.

Two main investments are planned:

- Relocation of existing main hospital to a 9.5 ha site in the south of the city, and
- New hospital for women and children on a 10 ha site in the south of the city.

⁵ Vinh Phuc PPC. 2013. *Feasibility Study Report, Project of Revolving Funds for Households Sanitation in Vinh Yen*. Vinh Phuc.

⁶ Vinh Phuc PPC. 2012. *Vinh Phuc Socio-Economic Development Plan 2015-2030*. Vinh Phuc.

⁷ Government of Viet Nam. 2005. *TCXDVN 362 : 2005: Standards for green space in urban area*. Ministry of Construction. Ha Noi.

Photo: Vaideeswaran S.

Existing incinerator at Vinh Phuc General Hospital.

With universities in Ha Noi oversubscribed and many universities seeking to expand their facilities in less congested areas, there is an opportunity for suburban locations like Vinh Yen to become regional education centers. Vinh Yen plans to develop a university city, a 2,000 ha project north of the downtown that will be home to a number of university campuses. The presence of many vocational training centers, the availability of land, the high transport connectivity, and the proximity to Ha Noi gives Vinh Yen a clear advantage over competitors in the region in this field.

Education

Vinh Phuc has one of the highest graduation rates in Viet Nam (99.52% for upper secondary education).⁸ By 2015, the city aims to make general education compulsory through grade 9. Currently Vinh Yen city education and training facilities meet the demand of the current population until high school. Only one university is currently in operation; one more private university will open next year.

⁸ Vinh Phuc Statistics Office. 2013. *Vinh Phuc Statistical Year Book 2012*. Ha Noi: Statistical Publishing House.

Vinh Yen's Vision for a GrEEEn City

Visioning Workshop

As part of the preparation of the GCAP, a visioning workshop was held in Vinh Yen on 21 November 2013. Key stakeholders and decision makers from the provinces and cities attended the workshop. The list of participants of the visioning workshop is presented in Appendix 2.

During the workshop a visioning exercise and strengths–weaknesses–opportunities–threats (SWOT) analysis were conducted. For the visioning exercise the question “Where do you want your city to be in 10 years?” was presented to participants. The results of the visioning exercise are summarized in the table below. Appendix 3 presents the complete set of participants’ answers.

SWOT Analysis

Based on the SWOT analysis conducted, the main strengths of Vinh Yen city are its geographical location (gateway to Ha Noi) and the proximity to Noi Bai Airport, as well as its robust economy and vibrant private sector. Its environmental assets (Dam Vac lake and nearby Tam Dao tourism area) are also counted among its strengths.

Vinh Yen’s main weaknesses are its vulnerability to natural disasters, the presence of polluting industries, the disparity between the economic growth rate and lower social growth rate, lack of financial resources, outdated urban infrastructure (wastewater, solid waste, drainage) and the absence of a public transportation system.

The main opportunities are development of the transportation system to improve access from Ha Noi, and greater integration into the global economy through

export-oriented industry and logistics development. The results of the SWOT analysis are presented in Appendix 3.

The Vision

Vinh Yen city aspires to become an ecobusiness satellite city in metropolitan Ha Noi.

In the manufacturing sector, Vinh Phuc People’s Committee will intensify its focus on green products as a means to expand high-value manufacturing. A logistics hub will be developed to promote export growth. The People’s Committee will bring together foreign manufacturers and local suppliers to promote the sale of locally made parts to foreign-owned manufacturers.

In the services sector, Vinh Phuc will promote the development of low-polluting service industries such as tourism, education, and banking and finance. The diversification of the economy into services will strengthen economic resilience, as in the future, Vinh Phuc will depend less on foreign investment in manufacturing.

Vinh Yen will preserve and enhance its environmental assets to capture a larger share of the regional eco-tourism market. Vinh Yen People’s Committee will implement a series of hard-side and soft-side measures to preserve and enhance the quality of Dam Vac lake and its shoreline. The urban wastewater and solid waste management systems will be expanded and strengthened. The shores of the lake will be selectively redeveloped to improve public access and provide facilities for overnight tourists from Ha Noi. This combination of environmental improvements and public–private partnership in

lakeshore development will showcase the integrated, holistic GCAP approach.

Vinh Yen will become a regional destination not only for tourism but also for higher education and health care services. Vinh Yen will develop a university city, a local campus that will be home to seven domestic and international universities. New hospitals will be developed in Vinh Yen to will serve metropolitan customers and local residents.

To implement the vision for Vinh Yen, this GCAP sets out four initiatives:

- Initiative 1: Promote ecobusiness in manufacturing and services;
- Initiative 2: Improve the urban environment, including Dam Vac lake;
- Initiative 3: Promote regional ecotourism; and
- Initiative 4: Become a regional leader in education and health services.

Each initiative bundles together a number of different hard-side and soft-side actions. The actions will be

implemented in a coordinated fashion, with a spatial focus where appropriate, to maximize the creation of value during and after the implementation of the GCAP. The following section defines the initiatives, the actions they comprise, and the key enabling measures that are critical for smooth implementation.

Table 7: Results of Visioning Exercise–Vinh Yen City

Environment/Culture	Social Cohesion
Better adaptation to climate change	High standards for quality of life
Development in harmony with nature	More infrastructure for children
More public green spaces	
Economic Development	Governance
Modern infrastructure	Efficient use of land and other natural resources
Competitive economy	Environmentally friendly development
Renewable energy development	

Source: Authors.

GrEEEn City Action Plan

INITIATIVE 1 Promote ecobusiness in manufacturing and services

INITIATIVE 1 Outcomes

Economic resilience is strengthened:

- The provincial and city economies diversify into services, thereby decreasing their dependence on FDI-led manufacturing; and
- Manufacturing generates more value for the local economy, as local parts producers capture a greater share of the “captive” parts market created by the FDI enterprises.

Vinh Yen becomes more economically competitive:

- The local economy is poised to take advantage of future opportunities in export-led manufacturing; and
- Vinh Yen is considered by businesses to be a more attractive investment environment because of enhanced environmental sustainability (focus on green products, improved urban environment).

Environmental resilience is strengthened:

- Vinh Phuc has a smaller environmental footprint per unit value of production because green products represent a larger share of local manufacturing output.

Department of Industry and Trade (DOIT) is now working with other departments to issue special policies for green products and energy saving. DOIT will develop a list of green and energy-saving products and introduce it as an additional criterion in the industrial permitting procedure.

To develop the domestic parts industry for vehicles and electronics, the Vinh Phuc People’s Committee will bring together foreign manufacturers and local suppliers to promote the sale of locally made parts to foreign-owned auto assembly plants. A formal committee will be formed for this purpose. Improved communication will enable the definition of the technical and quality standards that local parts manufacturers will have to meet. This facilitative role can differentiate Vinh Phuc province as an FDI destination from its competitors, including Bac Ninh province, thereby helping Vinh Phuc to close the investment gap that has developed in recent years.

Vinh Phuc will develop an inland container depot to streamline export clearances. A new Vinh Phuc customs office will be set up in the depot. Exporters will be able to bring their goods to the depot, clear customs, and ship them out through the seaports or the airport. This will help Vinh Phuc position itself ahead of competing provinces and capture the growing export market.

Manufacturing

Vinh Phuc People’s Committee will intensify its focus on green products as a means to grow high-value manufacturing that will have a smaller environmental footprint throughout the product life cycle. The provincial

Services

Vinh Phuc will promote the development of nonpolluting service industries such as tourism, education, insurance, and banking and finance. This is already the policy of the province, as it seeks to achieve a more balanced economic base that includes both manufacturing and services. The diversification of the economy into services will also strengthen economic resilience, as Vinh Phuc will depend less on the future of foreign investment in manufacturing. At the same time, focusing services is putting pressure on the province and the city to enhance the quality of the urban environment, a critical success factor for services development.

For tourism development plans, see Initiative 3. For education and health care development plans, see Initiative 4.

Below are the top priority actions that Vinh Phuc province intends to undertake as part of Initiative 1. A longer and more detailed set of actions is being prepared by the province.

Proposed Actions	
Short Term	Medium and Long Term
Action 1: Prepare a business plan for the inland container depot	Action 3: Build a showroom to showcase local products
Action 2: Promote the use of local parts by foreign manufacturers	Action 4: Prepare a plan to attract clean manufacturing

ACTION 1 Prepare a business plan for the inland container depot

The depot was originally proposed by a Singapore investor to facilitate the export of computer hardware manufactured in Vinh Phuc. A concept plan was prepared on a 200 ha site southeast of the Vinh Yen city center and the development cost was estimated at \$30 million. However, no feasibility analysis has been carried out, and the proposal was shelved in 2008 because of the global economic crisis.

As Viet Nam's manufacturing sector becomes more export-oriented, however, it is a good time to reconsider this investment project. While many large-scale manufacturers have agreements in place with customs that allow them to move goods directly from the factory to the port or airport, small and medium-sized enterprises would benefit greatly from a central location where they could bring and store their goods, clear customs, and then ship them out. This would be the function of the inland container depot. A new Vinh Phuc customs

office independent from the Ha Noi customs office could be established in the depot. The export facilitation services available in the depot would give Vinh Phuc manufacturers a clear advantage over their competitors in other northern Viet Nam provinces.

The project needs a feasibility study and business plan that identifies the conditions for success and quantifies the anticipated return on investment. With this business plan, Vinh Phuc DPI can go to potential developers and investors and discuss their interest in participating in the project.

Agencies	Estimated Cost
Vinh Phuc Department of Planning and Investment, Vinh Phuc Department of Trade and Industry, and the Customs Authority	\$500,000

ACTION 2 Promote the use of local parts by foreign manufactures

The fact that only 10% of parts for vehicle and electronics manufacturing in Vinh Phuc are sourced from local manufacturers constitutes a major missed opportunity. Companies in Viet Nam should be producing these parts locally and selling them to Honda, Toyota, Piaggio and other companies. The quality gap perceived by the international companies needs to be defined in a collaborative fashion by the local and foreign companies. Vinh Phuc People's Committee is best positioned to bring together foreign manufacturers and local suppliers to address the problem. A formal committee will be formed for this purpose. Working together under the auspices of the provincial government, the parties can define the specific technical and quality standards that local parts manufacturers should meet. The additional clarity will

help local companies make the investments they need to raise product quality.

If local companies are successful in capturing a larger share of the parts market, then the Vinh Phuc economy will climb the manufacturing value ladder, moving out of pure assembly and into the actual production of key manufacturing components. Climbing the value ladder in this way is considered essential to maintaining economic competitiveness in the future.

Agency	Estimated Cost
Vinh Phuc Department of Trade and Industry	\$50,000

ACTION 3 Build a showroom to showcase local products

Vinh Phuc DOIT plans to build a showroom to showcase goods and services available locally. One function of the showroom will be to showcase products manufactured in Vinh Phuc. During the final workshop on the GCAP, both provincial leaders and the DOIT emphasized that the function of the showroom should be defined broadly to promote tourism and other services also. The integrated approach to marketing Vinh Phuc certainly has potential benefits. But more consideration of the compatibility of tourism and manufacturing marketing, and indeed the compatibility of tourism and manufacturing as economic activities, should be given. Tourists may get a more

positive impression from a dedicated (exclusive) tourism office than from a mixed facility where manufacturing is a major theme.

This action includes the programming, design, and construction of the Vinh Phuc trade showroom.

Agencies	Estimated Cost
Vinh Phuc Department of Trade and Industry, Vinh Phuc Department of Construction	\$3,000,000

ACTION 4 Prepare a plan to attract clean manufacturing

Vinh Phuc's economic development strategy includes "greening" the manufacturing sector to decrease the environmental footprint of local industry. The main thrust is to attract clean manufacturing, defined as

manufacturing activities with a low environmental impact. DOIT will study the potential target sectors, develop a prioritized list, and then design measures to attract firms

in those sectors to locate their production and/or design facilities in Vinh Phuc.

As part of this overall clean manufacturing focus, Vinh Phuc will intensify its focus on green products. The provincial DOIT is now working with other departments to issue special policies for green products and energy saving. DOIT will develop a list of green and energy-saving products and introduce it as an additional criterion in the industrial permitting procedure.

To the extent that this action will minimize the negative environmental impacts of manufacturing, it is expected to enhance the compatibility of industry and services in Vinh Phuc.

Agencies	Estimated Cost
Vinh Phuc Department of Trade and Industry, Vinh Phuc Department of Planning and Investment	\$300,000

Enablers for Initiative 1

Enablers in the GrEEEn Cities context are regulatory, institutional, or financial measures that enable the implementation of specific actions on a timely basis.

To help local parts producers do business with foreign vehicle and electronics manufacturers present in the province, the Vinh Phuc People's Committee will bring the parties together and lead them through the implementation of Action 2 (Promote the use of local parts by foreign manufacturers). The objective is to improve mutual understanding among the local and international parties about the technical standards local products must meet in order to meet the needs of the vehicle assembly plants. The role of the People's Committee is to bring the parties together and facilitate the discussion.

The implementation of the clean manufacturing plan described in Action 4 above may require fiscal or financial measures to attract investment. These could include tax exemptions and credits, incentives for capital formation, relocation support or investor credits. Some of these measures specifically target green products. The study and the plan will shed light on exactly which measures will be most effective in enabling the growth of clean manufacturing.

Continued institutional support to Vinh Phuc province and Vinh Yen city will also be important for the realization of the GCAP vision. Vinh Phuc is an impressive manufacturing engine that has achieved a lot of success in the past decade. The fact that growth has slowed recently is actually an opportunity for them to retool toward a greener future that balances clean manufacturing with services. Leadership is focused on this goal and focused on the individual actions necessary to achieve it. But the trade-off between “business as usual” manufacturing growth and the greener aspects highlighted in this GCAP are not always given due consideration. The potential incompatibility of building 14 more industrial parks, on the one hand, and developing an ecologically vibrant, people-friendly city were discussed. To steer the province toward a greener future, it will be important for leaders and staff to continually assess individual investment decisions in light of the overall GCAP goals and objectives.

A public-private partnership can be considered for implementation of the inland container depot, depending on the results of the feasibility study and business plan. Certainly, private sector financing and development and management expertise should be sought. Vinh Phuc province may be in a position to finance the off-site infrastructure.

INITIATIVE 2 Improve the urban environment, including Dam Vac lake

INITIATIVE 2 Outcomes

Water quality in Dam Vac lake improved:

- Wastewater system improvements reduce pollution loads in the lake, and
- The outcome is measured by the city's environmental monitoring system.

Natural hazard resilience strengthened:

- The city is better able to cope with flooding because of stormwater improvements and increased containment capacity of Dam Vac lake.

Urban services and urban amenities for local Residents improved:

- Many new households are connected to the wastewater system;
- Wastewater is not only collected, but treated;
- Incidence of flooding goes down in areas around the lake;
- Solid waste is treated more effectively; and
- Public open space around the lake is more accessible.

Tourism developers consider Vinh Yen an attractive investment destination:

- Management of the lake shore is more effective, with a combination of public access and private development;
- Infrastructure services are better around the lake; and
- The lake in particular and the environment in general are cleaner.

Improving the urban environment is closely linked to Dam Vac lake, the heart of the city's ecosystem and the key to the development of its tourism business. In the absence of a functional domestic wastewater treatment plant, the lake is being used as an oxidation pond for Vinh Yen's liquid waste. Over the years, the shrinking of the lake due to landfill has reduced its containment capacity during rainy periods. For tourists and residents alike, the lake serves as a recreation facility not only because of its aesthetic appeal, but also because of its pleasant climate. Vinh Phuc People's Committee will implement a series of hard-side and soft-side measures to improve the quality of the urban environment that will include the Dam Vac lake and the surrounding city of Vinh Yen, which is also the lake's buffer zone.

Proposed Actions

Short Term

- Action 1:** Prepare a Dam Vac lake catchment plan
- Action 2:** Expand the water supply distribution network
- Action 3:** Expand wastewater collection and treatment
- Action 4:** Support the household sanitation revolving fund and public toilets
- Action 5:** Expand stormwater collection and disposal
- Action 6:** Develop and promote low-impact development standards
- Action 7:** Dredge Dam Vac lake
- Action 8:** Improve domestic solid waste disposal
- Action 13:** Implement a community scorecard

Medium and Long Term

- Action 9:** Tree planting and landscaping
- Action 10:** Develop an industrial solid waste incinerator
- Action 11:** Improve biomedical waste management
- Action 12:** Enhance air and water quality monitoring

Many factors degrade the quality of the lake. In addition to wastewater piped into the lake, stormwater runoff from the whole Dam Vac lake watershed picks up surface contaminants and flows into the lake. To make a difference, the approach must be comprehensive and geographically broad. Vinh Yen People's Committee will develop a wastewater management plan that combines engineering improvements with innovative development solutions to reduce stormwater runoff.

Domestic wastewater collection and treatment will be improved incrementally over time. At present, one treatment plant established under JICA is in an advanced stage of commissioning. Additional infrastructure is needed. With the upgrading of the wastewater facility, the monitoring of the water quality in the Dam Vac lake needs to be initiated, established, and maintained. To mitigate

the flooding of the surrounding area, the lake needs to be deepened to expand the containment capacity. This will be done through dredging certain sections of the lake. At the same time, the development of the banks of the lake will be more carefully managed.

Local residents and other stakeholders must participate in this initiative to get sustainable results. A Dam Vac lake environmental protection committee will be established and maintained. This committee will secure and maintain the stakeholder buy-in necessary to preserve and enhance the lake. This committee will gather representatives of mass organization (youth union, women's union) from wards around the lake, local residents, and companies involved in recreation and tourism.

As a first activity, a community scorecard will be introduced. The aim is to monitor the improvement of the Dam Vac lake environment (i.e., water quality, public access, timeliness of development of infrastructures etc.) and gather feedback from local residents about the results and effectiveness of the protection activities. This will lead to the community mindset shift that is required for the sustainable management of the lake.

One big factor in the management of the lake is the management of municipal solid waste. On the collection and transportation, there is 90% coverage. However, there is a significant problem with the disposal as there is no land planning for the disposal site beyond a 5- year timeframe. The city will address possible municipal solid waste processing technologies such as aerobic and anaerobic composting and plastic recycling to reduce the quantity for final disposal. The city will also identify a site for the landfill and develop it in an environmentally responsible manner. The other solid wastes—industrial and biomedical—will also be the focus of the city's attention. New incineration facilities for these hazardous waste will be planned and developed. The city's many industries will benefit from a local incineration facility, and the city's network of hospitals will enhance their biomedical waste management practices through training and better infrastructure facilities.

The greening of Vinh Yen by enhancing the existing green spaces and expanding to new areas will be the focus. The vision is to establish 15 square meter (m²) per capita. Along with this progressive and incremental expansion, existing green areas will also be enhanced to improve the quality of green open space.

ACTION 1 Prepare Dam Vac Lake catchment plan

Vinh Phuc People's Committee will prepare a catchment plan to manage the water, wastewater, and stormwater in the entire Dam Vac lake catchment area. The objective is to include in the future management framework all of the factors to degrade the water quality in the lake such as wastewater discharge, stormwater runoff, landfill, and other encroachment into the lake, and solid waste management. This overall plan will provide the conceptual framework and the management structure for the lake

clean-up process, which includes all of the specific capital improvements and engineering measures below.

Agencies	Estimated Cost
Vinh Phuc Department of Natural Resources and Environment; Water Supply Drainage and Environment Company No. 1; Department of Construction	\$200,000

ACTION 2 Expand water supply distribution network

This objective is to expand the water supply coverage from the current 74% of the population to 100%. Three existing water treatment plants and one new plant are under implementation. The expansion will include identifying the exact source of water (likely to be a surface water resource), building the pipeline and the pumping station to transfer the water from the abstraction point to the city, and building the distribution pipelines and associated

pumping stations required to service the remaining 26% of the population.

Agency	Estimated Cost
Vinh Yen Water Supply, Drainage and Environment Company No. 1	\$2,000,000

Urban Watershed Management Plan: City of Portland, Oregon

The Portland, Oregon Watershed Plan in the United States seeks to achieve and maintain healthy rivers that carve through the center of the city while enhancing city infrastructure. The plan comprehensively integrated the activities of many city bureaus, maximizes the use of limited resources by looking for solutions that meet multiple objectives, and focuses on addressing environmental problems at their source.

Within a few years of implementation, the city is managing 890 million gallons of stormwater in a natural way, letting it filter through plants and soak into the ground to recharge water supplies. The comprehensive plan includes stormwater management, revegetation, restoration of streams, stormwater facility operations, education, and stewardship and protection policies for water resources.

Planning and scientific analysis throughout development of the plan has led to capital project investments that integrate natural or “green” approaches with “grey” or traditional approaches. Green approaches manage stormwater at the source, reduce degradation of waterways, and involve the community and local partners. Lessons learned from the planning process include:

- A multidisciplinary approach has been essential to the plan’s success, involving participation and collaboration of engineers, planners, department heads and watershed managers from across the city government.
- Start small with demonstration projects. Monitoring of pilot project practices and modifying the designs for improvement function and effectiveness has enabled larger projects to be implemented more successfully.

Sources: City of Portland, Bureau of Environmental Services; Water Environment Research Foundation.

ACTION 3 Expand wastewater collection and treatment

With the Japan International Cooperation Agency (JICA)-supported domestic waste water collection and treatment plant of 5,000 cubic meters (m³)/day, about 30% coverage has been achieved. Another 8,000 m³/day capacity plant is required to expand to 100% coverage. It is estimated to cost \$40 million. In addition, a tertiary domestic wastewater network will be implemented for four wards in the short term for \$12 million. For the remaining three

wards and two villages, another \$12 million is estimated for medium-term improvements.

Agency	Estimated Cost
Water Supply, Drainage and Environment Company No. 1	\$2,000,000

ACTION 4 Support household sanitation revolving fund and public toilets

The city government has equipment for evacuating septic tanks. Arrangements are in place for disposal of waste as manure in specified green areas and plantations. However, some low-income households do not have sanitation facilities. To address the same, a sanitation credit scheme will be put in place, which will specifically target the Ngo Quyen, Dong Da, Lien Bao, and Khai Quang wards, with about 5,000 households in total. Associated with this credit scheme will be a community awareness program. Vinh Yen City Women's Union (VYCWU) will manage the scheme and the awareness program. The VYCWU will inform households on the loan conditions for the construction of a toilet, a septic tank, or latrine, and connections to the piped wastewater network through a household sanitation credit

scheme. Poor and low-income households will have access to the credit scheme. Start-up capital of \$3 million from this scheme—to be administered as a revolving fund—will be provided, the conditions for loan and repayment, and the criteria for eligibility will be identified. This includes the loan for the capital assessment, operation and management, and costs for environmental awareness. Further to this sanitation scheme, the city government will provide for 10 fixed toilets in parks and public areas. This is estimated to cost \$50,000.

Agencies	Estimated Cost
Vinh Yen People's Committee and relevant departments	\$3,050,000

ACTION 5 Expand stormwater collection and disposal

With the separation of the domestic wastewater from the stormwater system, the capacity of the stormwater system is expected to be sufficient. However, rehabilitation of selected segments will be required. The particular focus will be collection points. Presently, about 12 collection points have been identified for rehabilitation in a total segment about 10 kilometers long.

Vinh Yen city will use an upstream dyke to help control floodwater quantities entering Dam Vac lake. Low-cost water containment structures such as those used in traditional “tank” systems can be combined with

the dyke to provide additional stormwater absorption capacity. This in combination with dredging (Action 7) and low-impact development techniques (Action 6) will greatly increase the resilience of Vinh Yen's city center to withstand stormwater spikes.

Agencies	Estimated Cost
Vinh Yen Water Supply, Drainage and Environment Company No. 1; Department of Construction	\$10 million

ACTION 6 Introduce and promote low-impact development standards

Low-impact development (LID) refers to an environmentally sensitive approach to managing stormwater runoff. LID aims to absorb as much stormwater locally into the ground as possible. This reduces runoff, which picks up contaminants on the ground and deposits them in surface water bodies. LID emphasizes conservation and use of on-site natural features to absorb water into the ground. The idea is to increase the quantity and capacity of surface materials and treatments to absorb rainwater. Typically LID features

include bioswales, pervious paving, and unpaved public and natural open space areas.

This action includes the preparation of the LID standards, incorporation of the standards into the development code, and promotion of the standards to the developer community and the general public.

Agency	Estimated Cost
Vinh Phuc Department of Construction	\$150,000

The “Street Stewards” of Portland, Oregon

The city of Portland, Oregon in the United States has implemented numerous low-impact development programs including green streets, community and youth programs and the on-site stormwater management program. More than 169 green street facilities have been installed for collecting stormwater runoff and also provide pedestrian, bicycle, and automobile safety.

The Community Watershed Stewardship Program and the Youth Conservation Crew program provide work opportunities for young people by employing them to help the city plant trees and restore river shorelines for reducing erosion and promoting wildlife habitat.

The Portland Clean River Rewards provide a discount to sewer rate payers who disconnect their downspouts, reduce impervious surfaces and manage stormwater onsite. Nearly 35,000 residents participate in the program managing more than 110 million square feet of impervious area.

Sources: City of Portland, Bureau of Environmental Services, <http://www.portlandoregon.gov/bes/52501>

ACTION 7 Dredge Dam Vac Lake

With the reduced area of Dam Vac lake due to landfill, the containment capacity has been progressively decreased. Furthermore, the lake has been receiving untreated domestic wastewater that accumulates at the bottom of the lake. Pilot dredging of 35 ha has been planned and is estimated to cost about \$4.5 million. In addition to expanding the containment capacity, flood preventive measures will also be required. Building a dyke in the south of Vinh Yen city to prevent the flow of water from the Phan river entering the Dam Vac lake is included, subject to future feasibility analysis. This will ensure

upstream containment and reduce the river overflows from reaching the Dam Vac lake. This is estimated to cost \$8 million. Further, as an emergency response measure, a pumping station is required in the event of flooding. One fixed flood water pumping station is planned in the flood prone areas. A cost estimate has not yet been worked out.

Agency	Estimated Cost
Vinh Phuc Department of Construction	\$12,500,000

ACTION 8 Tree planting and landscaping

The greening of Vinh Yen will be done by enhancing the existing green spaces and creating new ones. It is planned to increase the present green area of 47 ha to 225 ha. This will enable reaching the goal of 15 square meters per capita. The rehabilitation of existing green areas is estimated to cost \$6 million, while the creation of about 175 ha of new green areas with supporting infrastructure will require \$10 million.

Vinh Yen's green space development efforts are intended to spark a city-wide reforestation effort that will see trees planted not just in public open spaces, but also

in a wide range of natural and public areas. Part of the overall catchment management approach (Action 1), this will reduce erosion and stormwater runoff. Vinh Yen will consider designing and implementing a 10,000 Tree Program, focused on planting that number of trees in multiple locations all over the territory of the city over 5 years.

Agencies	Estimated Cost
Vinh Yen People's Committee and relevant departments	\$16,000,000

ACTION 9 Improve domestic solid waste disposal

A new landfill will be developed, with a leachate collection and treatment system similar to that of the existing dumpsites. With a capacity of 30 m³/day, the leachate system is estimated to cost \$250,000. Given the shortage of land for the landfill, Vinh Yen People's Committee will introduce solid waste processing technology, such as anaerobic digestion or aerobic composting, in order to reduce the quantity of waste requiring disposal. Composting will also reduce the emission of methane gas, a major contributor to the greenhouse effect. Vinh Yen

will explore the public-private partnership option, but a provisional budget of \$30 million has been estimated for this purpose. Along with the establishment of treatment and disposal practices, the city government will also promote segregation of municipal solid waste at the source and recycling of selected types of waste.

Agency	Estimated Cost
Urban Environmental Company	\$30,250,000

ACTION 10 Develop an industrial solid waste incinerator

Industries generating hazardous waste are presently using private companies for collection, recycling, and disposal of waste outside the city. Industries have long requested that a hazardous waste incinerator be located in the region. The People's Committee will establish an incinerator for this purpose. The budget for this activity is yet to be estimated.

Agencies	Estimated Cost
Urban Environmental Company and the Department of Natural Resources and Environment	Not available

ACTION 11 Improve biomedical waste management

As a part of becoming a regional health care hub, the Vinh Phuc People's Committee will strengthen and streamline biomedical waste management. Presently, selected hospitals have incinerators do not have proper labelling and processing technologies for different types of biomedical waste. A centralized biomedical waste disposal facility will be established in one of the larger hospitals and a proper system for collection and transport will be institutionalized.

Vinh Phuc will introduce technical innovations in the future biomedical waste management system. Through

feasibility analysis, Vinh Phuc will review and select specific techniques from a global best practices menu that includes incineration combined with segregation, autoclaving, recycling, effluent treatment, secured landfill disposal, among others. Centralized disposal will also require introducing innovative practices in collection and storage.

Agency	Estimated Cost
Vinh Phuc Department of Health	Not available

ACTION 12 Enhance environmental monitoring

Vinh Yen People's Committee has had success in this area recently with the establishment of the first continuous air and water quality monitoring station. They will broaden the geographical scope by building another such station at a total cost of \$600,000. The water quality monitoring station will be in the vicinity of the Dam Vac lake. Further, as a measure to strengthen the laboratory monitoring, equipment for both air and water monitoring will be procured. This is estimated to cost \$1 million.

From a broader environmental management perspective, DONRE will undertake carbon emissions monitoring. A comprehensive approach will include carbon dioxide

emitted from a broad range of sectors and actors, including industry, buildings, energy, and transport. The original assessment of carbon emissions will allow the DONRE to determine which sectors and establishments are the big emitters.

This will help focus priorities on future plans designed to reduce carbon emissions. Reducing the carbon footprint of Vinh Yen city needs to be a lynchpin of the effort to become a green city.

This type of activity will also communicate to multinational companies such as Toyota and Honda that

Vinh Yen and Vinh Phuc are serious about progressive environmental management. Many of the multinationals are serious too. This will make Vinh Phuc a more attractive investment destination for international companies, thereby strengthening the economic resilience described in Initiative 1.

Agency	Estimated Cost
Vinh Phuc Department of Natural Resources and Environment	\$1,600,000

ACTION 13 Implement a community scorecard

As a part of the monitoring activities of the Dam Vac Lake Environmental Protection Committee, a community scorecard will be implemented. The stakeholders on the committee will work together to identify and prioritize actions, including some of those already identified in this GCAP: surface water clean-up, infrastructure development, planting trees, tourism development, and public access. Indicators will be developed to monitor progress, and may include the number of outlets (individuals, public, industrial) discharging directly in the lake, size of the public open space adjacent to the lake,

area covered with trees, water quality parameters, and timeliness of construction. The People's Committee will use the scorecard to improve its performance and that of the utility companies and planning departments, as required.

Agencies	Estimated Cost
Dam Vac Lake Environmental Protection Committee, Women's Union	\$50,000

Urban Lake Rehabilitation in India's Garden City: From Sewage to Stewardship

The Kaikondarahalli lake in Bangalore, India, is a unique example of how a network of concerned citizens can restore an urban lake. Called the Garden City of India, Bangalore has experienced rapid growth in recent decades due to investments in the information technology industry. This growth has put enormous pressure on the urban environment. Lakes connected by channels across the city have been severely degraded by sewage inflows and other causes, with negative impacts on flood control, water livelihood use, and groundwater recharge. The Kaikondarahalli lake is one example. Covering about 20 hectares, the lake was part of a traditional tank system that was developed over centuries. As the city grew, it became increasingly attractive to land developers. At the same time, the lake fell to neglect because farmers were no longer using it. Encroachment, growth of unhealthy hyacinths, and sewage discharge became the norm. Under the Mahadevpura Environment Protection and Rejuvenation Trust (MAPSAP), a group of nongovernment organizations from India; civil society groups; and local communities from diverse socioeconomic backgrounds came together and decided to work with the government to draw up plans to restore it into a living water body. MAPSAP oversees maintenance of the lake and the construction of public amenities and other works. This urban environmental stewardship body functions as a platform for action and also acts as a lake watchdog, which is being replicated across other lakes in the city. More citizens are questioning the formal, established visions for development and are looking for a genuinely sustainable urbanization for Bangalore.

Sources: Stockholm Resilience Centre, 2014.

Photo: Swaminathan

Enablers for Initiative 2

With the various activities planned under this initiative, the overarching enabler is to build the institutional capacity of the city government and their utility companies. In-city training and exposure to other similar cities will be required in order to understand how better practices could be streamlined. Exposure to new technologies and their on-the-ground performance will also help determine the appropriate actions in the Vinh Yen context.

With the formation of the Dam Vac lake environmental protection committee, the responsibility becomes that of the People's Committee and the other stakeholders, who need to be made aware of environmental issues such as proper domestic wastewater disposal and better

municipal solid waste management practices. Through public education, the citizens' awareness should be gradually increased to bring about a mindset change that is vital for sustaining these activities in particular and the initiative as a whole.

The sanitation credit program is a key financial enabler that is listed above as Action 3. The Women's Union and GRET could be key partners for implementing the program. These civil society organizations could also conduct the public education programs on environmental management.

Public-private partnerships may be used to implement some of the actions under Initiative 2. Private companies can also be invited to submit tenders to finance, build, and operate the proposed sanitary landfill.

INITIATIVE 3 Promote regional ecotourism

INITIATIVE 3 Outcomes

Dam Vac lake and Tam Dao mountain will be regionally known as eco-tourism destinations:

- Ecotourism activities are developed, and
- Facilities and attractions around the lake are enhanced.

Increased tourism business:

- Regular tours with jointly packaged attractions are offered,
- Number of tourist visits is increasing, and
- Visitors stay longer and return.

Economic competitiveness is strengthened:

- Public transport to Ha Noi is improved, and
- Transport connections from downtown Vinh Yen city to Tam Dao mountain are improved.

Vinh Yen will position itself to attract more overnight visitors from outside Vinh Phuc province. The two main destinations are Dam Vac lake and Tam Dao National Park. With environmental improvements discussed in Initiative 2 and better management of the Dam Vac lake area development process, the Vinh Phuc People's Committee aims to attract more tourists from Ha Noi. This will require careful and high-quality development of the lakeside areas to provide the environment and the services sought after by the target market (consumer). This will also require better transport connections among Ha Noi, downtown Vinh Yen city, and Tam Dao mountain.

Proposed Actions

Short Term	Medium and Long Term
Action 1: Prepare a feasibility/marketing study for the Dam Vac Lake	Action 3: Make improvements to the lake shore
Action 2: Prepare a Dam Vac Lake local area plan	Action 4: Develop sustainable transport plan

What is Ecotourism?

Ecotourism involves travel to relatively undisturbed natural areas with the specific objective of studying, admiring, and enjoying the natural and cultural features in those areas. It is distinguished from mass or resort tourism by its lower impact on the environment, lower infrastructure requirements, and its role in educating tourists about the natural environment and local culture.

Source: Chesworth, N. 1995. Ecotourism seminar paper delivered in the Institute of Environmental Studies and Management. UPLB. College, Laguna

photo: John Bachmann

ACTION 1 Prepare a feasibility and marketing study for Dam Vac Lake

To define the tourism and marketing strategy for Dam Vac Lake, a feasibility and marketing study will be prepared. The study will collect and analyze primary demand data to determine the preferences of the target tourist groups. The preferences will then be built into the program for lakeside development, including hotels and recreation facilities. To avoid excessive development pressure on the lake, ecotourism activities (nature-based, with low environmental impacts) will be targeted. Tam Dao mountain and Dam Vac lake will be jointly packaged and promoted.

The study should address the following:

- Definition of the target market;
- Consumer preferences and price points (accommodation, food, activities, etc.);
- Activities that will attract tourists and encourage them to stay longer;
- Existing infrastructure and gap analysis;
- Workforce skills required to provide the right type of tourist experience;
- Institutional options for implementation, including partnerships with stakeholders and private firms;

- Program for lakeside development based on findings of the study;
- Strategy for marketing Vinh Phuc province tourism

Agencies	Estimated Cost
Department of Planning and Investment, Department of Tourism of Vinh Phuc Province, and the Bureau of Urban Management of Vinh Yen City	\$250,000

Table 8: Possible Ecotourism Activities

Item	Dam Vac Lake	Tam Dao Mountain
Study Tour		X
Forest Walk		X
Mountain Climbing		X
Visit to Ethnic Minority Villages		X
Adventure Trip		X
Bird Watching	X	X
Boating	X	
Camping	X	X
Fishing and Hunting	X	X

Source: Authors.

Tam Dao National Park

Tam Dao National Park lies along a massif running from northwest to southeast. Of the multiple several peaks over 1,300 meters, the highest is Mount Tam Dao Bac at 1,592 meters. Tam Dao National Park lies within the catchment of two major rivers: the Cong and Day rivers. Most of the streams and rivers in the national park are steep and fast flowing.

Tam Dao supports 21,982 hectares of natural forest of two main types: lowland evergreen forest and lower montane evergreen forest. Tam Dao National Park qualifies as an important bird area because of its importance for the conservation of biome-restricted bird species. The park is home to many reptile and amphibian species. Two species of bears (Asian black bear, sloth bear) can also be found in the park.

Source: <http://vietnamnationalpark.org/2750/tam-dao-national-park/>
http://www.activetravelvietnam.com/nationalparks/north-eastern/Tam_Dao_National_Park.html

ACTION 2 Prepare a Dam Vac lake local area plan

Better land management and land use planning is necessary for Dam Vac lake to realize its potential. Uncontrolled development around the lake could lead to environmental damage and loss of public access to the lake. A bridge through the lake, to enhance north-south communications, is planned; it may affect the aesthetics of the lake and reduce its attractiveness. The community and other stakeholders should be involved in the preparation of the local area plan first through the Dam Vac lake environmental protection committee introduced in Initiative 2.

The objective of the plan is to provide a blueprint and road map for the preservation and enhancement of Dam Vac lake, the jewel at the heart of Vinh Yen city. The benefits of lakeshore development should accrue to residents of the city, the community around the lake, and tourism businesses. The land use mix around the lake can be defined so as to provide different zones with different character and activities. Public access should be expanded, especially to the lake shore itself. Parkland with

walking and biking paths should be developed along part or all of the lakeshore. Private developments can be set back from the lake where appropriate. Implementation measures should be designed to recover from tourism businesses and local property owners part of the cost of the infrastructure investments and the lake clean-up efforts. Transportation around the lake and from the south to north shores should be rationalized. The proposal to build an elevated bridge through the middle of the lake should be reviewed critically from a long-term cost-benefit perspective.

Agencies	Estimated Cost
Department of Planning and Investment, Department of Tourism of Vinh Phuc Province, Department of Natural Resources and Environment, Department of Construction, Bureau of Urban Management, and the Dam Vac Lake Environmental Protection Committee	\$200,000

Building a city on the principles of social equity and quality of life in Bogotá, Colombia

The city developed a public transport system that included bike lanes and pedestrian-friendly sidewalks. Existing public parks were improved and new ones developed, including in the poorer areas of the city. Efforts were made to connect the slums to the inner city. In short, Bogotá developed infrastructure that benefitted all its inhabitants, especially the poor, resulting in the creation of one of the most competitive and livable cities in Latin America.

Source: United Nations Economic and Social Commission for Asia and the Pacific, United Nations Economic Commission for Latin America and the Caribbean, United Nations Human Settlements Programme, Urban Design Lab. 2011. *Are we building competitive and liveable cities? Guidelines for developing ecoefficient and socially inclusive infrastructure*. Bangkok: United Nations.

ACTION 3 Make improvements to the lake shore

Projects identified in the Dam Vac Lake local area plan will be implemented under this action. The actions could include:

- Development of recreational parkland, including walking and biking trails;
- Preservation and enhancement of natural areas along the shoreline that can be open to the public and to tourists;
- Development of new transport facilities, including roads and public transit;
- Shoreline clean up;
- Development of hotels and other tourist facilities;
- Development of mixed-use, walkable tourist areas with commercial facilities such as stores and restaurants; and

- Planting plants, shrubs, and trees.

Better development control will be needed to enhance and maintain the quality of the lakeshore. Vinh Yen People's Committee will need to ensure coordination among the relevant departments to make sure that land use and construction permitting is consistent with the local area development plan.

Agencies	Estimated Cost
Department of Planning and Investment, Wastewater and Drainage Company, Bureau of Urban Management of Vinh Yen City, and the Dam Vac Lake Environmental Protection Committee.	\$20,000,000

ACTION 4   Develop a sustainable transport plan

Transport connections need to be enhanced between Ha Noi and Vinh Yen, between Vinh Yen and Tam Dao and within Vinh Yen city.

The transport connections between Ha Noi and Vinh Yen city center will be made more tourist-friendly (e.g., direct buses, with no transfer required). The connections between the lake area and Tam Dao National Park will also be improved.

The section of National Highway 2B linking Vinh Yen to Tam Dao starting 15 kilometers (km) north of city center to Tam Dao needs to be upgraded to support tourism development.

The current plan for the north–south transport connection in Vinh Yen city will be reviewed for compatibility with the tourism development plans and the conclusions of the Dam Vac lake development feasibility study. The aesthetic disruptions caused by an above-ground road crossing over the middle of the lake may outweigh the transport convenience. Alternatives can be explored: a lakeside shuttle bus can connect tourists to the light rail stop downtown, where they board to

reach the Tam Dao National Park. Studying the transport demand study at the level of the whole city is first step in the analysis.

The sustainable transport plan should address the following:

- Transport demand across in Vinh Yen city;
- Improvement of the public transportation to Ha Noi;
- Options for making north–south road connections in Vinh Yen City;
- Type of sustainable transportation between Vinh Yen and Tam Dao (shuttle, bus etc.); and
- Improvement of sections of National Highway 2B.

Agencies	Estimated Cost
Department of Planning and Investment, Department of Transport, and Department of Tourism	\$400,000

Enablers for Initiative 3

- The proposed Dam Vac lake environmental protection committee will be a critical vehicle not only for implementation of Initiative 2, but also of Initiative 3. The committee will bring together the major stakeholders necessary not only for safeguarding the environment, but also for undertaking the right kind of development around the lake. The committee can guide the scoping, review, and finalization of the lake area plan. It can also serve as a forum for resolving trade-offs and/or differences of opinion related to individual lakeside development projects.
- The regulatory framework for lakeside development needs to be adjusted. Once the local area plan for Dam Vac lake is prepared, Vinh Yen People's Committee should review and revise as required the existing Vinh Yen master plan to ensure consistency among the two plans.
- Public–private partnerships should be used for individual development projects. Some sites that are appropriate for tourism development along Dam Vac lake have current residents or are owned by private landowners. Tourism development in such sites may be beneficial to the residents and landowners, but it will be necessary to safeguard their interests through a mutually beneficial partnership with real estate developers. The People's Committee

can facilitate the creation of a partnership among the city, a public or private real estate developer, and the landowners and/ or local residents. Different conditions can be worked out for different projects. In some cases, it may be appropriate for the landowners to provide the land rights; the developers to provide the expertise, project management, and financing for on-site infrastructure and facilities; and the city will provide the off-site infrastructure and public realm improvements. Landowners can be compensated in cash by the developers or in kind by the project; in-kind payments can include discrete real estate products (such as apartments produced under the project) or shares in a joint stock company created by the developers and the landowners.

- Recovering the cost of infrastructure is a major challenge in urban redevelopment projects. The infrastructure investments made around the lake will increase the market value of lake side property. To capture the “unearned increment” associated with such value increases, it is appropriate to use a betterment tax or other fiscal mechanism. Landowners will see the value of their property increase, and can pay part of that increase back to government through the betterment tax. Unlike a property tax, which is

usually levied on a regular basis (e.g., annually), a betterment tax is usually levied only once, at the time of the infrastructure improvements. It is a transparent, targeted and equitable way to raise financing for infrastructure improvements.

- It will be important to raise the capacity of the Vinh Yen and Vinh Phuc people’s committees in the area of urban planning and land management. Both committees recognize the importance of this and insisted during GCAP preparation (notably at the final workshop) that capacity building measures in this field be included in the action plan.
- Making transportation between Dam Vac lake and Tam Dao park convenient and affordable is an important factor in the success of the tourism development effort. The People’s Committee should consider subsidizing the shuttle service between the two tourist sites if the cost is prohibitive. The first option should be to contract this service out to a private transport operator. If this results in a price that is prohibitively high, then the subsidy can be built into the pricing policy. (User fees will finance most of the cost; a government subsidy will fill the financing gap, as required.) This can be studied as part of the sustainable transport plan.

INITIATIVE 4 Become a regional leader in higher education and health care services

INITIATIVE 4 Outcomes

Vinh Yen will be known as regional destination for higher education and health care services:

- University campuses are established and operational,
- Vinh Yen produces thousands of university graduates per year starting in 2020, and
- Regional hospitals are established and operational.

The population of Vinh Yen is more educated and more qualified for service jobs:

- Many local residents attend the new universities in Vinh Yen;
- The college graduation rate in Vinh Yen rises; and
- Vinh Yen's population acquires new skills needed to work in the service sector, including tourism, insurance, education, and banking and finance.

Economic competitiveness is strengthened:

- Vinh Yen becomes a more attractive investment destination for service sector firms because of the education level of its workforce.

The Ha Noi metropolitan market for higher education and health care is changing. Many of the service best providers historically, which are located in or near the city center, are saturated. People wait for long periods to get service, or sometimes are not served at all. Conditions in the facilities are overcrowded.

This has created opportunities for new providers or extensions of the old ones. Most of the available land for new facilities is in suburban areas. Vinh Phuc province plans to position itself as a regional leader in higher education and health services, capturing future market share. Together with tourism, this will undergird Vinh Phuc's growing services economy. The other targeted service areas — insurance, finance, and banking — will be developed over the medium term once this foundation has been laid.

Vinh Yen city will develop a new 5-square kilometer university just north of the existing city center. It will

Photo: John Bachmann

Artist's rendering of the University City.

be home to about seven campuses, each of which has university buildings and open spaces, residential areas, and existing village areas. The average radius of a campus will be 800 meters. The total area of the campuses will be linked by a new set of arterial roads running through the site. At the center of the site will be a common services center with a library, music hall, museum, convention facilities, and parkland available to the universities and local residents. Bicycle and pedestrian paths, as well as roads, will link the seven campuses to the common services center.

The approach of Vinh Yen People's Committee to developing a university city is to integrate it with the existing community, which consists of a number of villages dispersed throughout the site. The village residents will benefit from the trunk infrastructure improvements. The current population of the area is 19,000. The planned population after project completion is 173,000, including 80,000 students in dormitories.

National law prohibits charging a fee for land leases to institutes of higher education. To generate financing for the development, the People's Committee will develop about 100 ha of residential mixed-use development in different pockets around the site. Some of the new

development will be adjacent to the villages; residents will benefit from access to the new commercial facilities.

The universities in Viet Nam that have expressed interest to Vinh Yen People's Committee in opening a campus at the university city include the National Economic University, University of Trade and Commerce, Police College, Military College, University of General Education, Oil and Gas University, and the Institute of Journalism. The foreign universities that have expressed interest include Arizona State University (US), Deakyung University (Republic of Korea), and KinderWorld (Singapore).

A concept plan for the site was prepared by a consultant from Japan. No feasibility study has been carried out yet.

In the health care field, Vinh Phuc People's Committee plans to renovate existing facilities and build new ones, to offer alternatives to the congested hospitals in Ha Noi. The plan is to relocate the existing main hospital to a 9.5 ha site in the south of the city and to build a new hospital for women and children on a 10 ha site nearby.

Proposed Actions

Short Term:	Medium and Long Term:
Action 1: Develop arterial roads in the university city	Action 2: Develop a new general hospital

ACTION 1 Develop arterial roads in the University City

Vinh Yen will develop two arterial roads in the university city, which will provide access to the university campus areas. This will provide the overall framework for development of the area. The construction of the roads will also facilitate the efforts of the province to attract investment from universities. The length of the roads is approximately 10 km.

Agencies	Estimated Cost
Department of Planning and Investment, Department of Trade and Industry	\$50,000,000

ACTION 2 Develop Vinh Phuc Provincial Polyclinic

Vinh Phuc province will develop a new general hospital on a 9.8 ha site along the border of Binh Xuyen district and Yen Lac district, close to National Highway No. 2. The total built area will be 83,000 m². The Vinh Phuc provincial polyclinic will be a teaching hospital, with research facilities and international research partners. The project has been approved by Provincial People's Committee. Land acquisition and site clearance are nearly complete. The plan is to prepare the project in 2014 and implement it from 2015 through 2018. The \$150 million development cost includes construction and purchase of medical equipment.

Artist's rendering of Vinh Phuc Polyclinic.

Photo: John Bachmann

Agency	Estimated Cost
Vinh Phuc People's Committee	\$150,000,000

Vinh Phuc Province is going to build a new obstetric and pediatric hospital with total area being 9.9 ha along Vinh Yen city's detour, on the border between Yen Lac district and Tam Duong district, nearby Vinh Yen city. Floor area is approximately 60.000 m², including: technical boarding operation department, Services area, Nutrition and dietetics department, Infectious disease department, Infectious control department, Pathological anatomy and funeral, other supplemental categories; Medical equipment is modernized and synchronized in accordance with infrastructure. The project has been approved by Vinh Phuc PPC. The land acquisition and site clearance are almost completed. The aims of the project are to prepare for the project in 2016 and implement plan for the period from 2015 to 2020. The development cost is 78 million USD including construction and medical equipment.

Agency	Estimated Cost
Vinh Phuc PPC, Department of Health	\$78.000.000

Enablers for Initiative 4

Integrating the existing communities into the area development planning and implementation will expedite the process and produce more equitable results. Village leaders, mass organizations, and other stakeholders should be invited to participate in local planning decisions such as where to locate new mixed-use residential development and what the character of that development should be, such as density, land use mix, urban form, and transport improvements.

To simplify the development process it is recommended that the province purchase land use rights from existing holders on market terms. The land can be transferred to a developer on negotiated terms to do the infrastructure improvements and build the buildings. Alternatively, the province can facilitate the creation of public-private partnerships among a real estate developer, the province or city People's Committee, and the local community. In exchange for contributing land use rights to the project, local residents can be compensated in cash by the developers or in kind by the project. In-kind payments can include discrete real estate products (such as apartments

produced under the project) or shares in a joint stock company created by the developers and the landowners.

A betterment tax or other financial mechanism may be needed to capture the unearned increment of the land value increases resulting from the trunk infrastructure improvements. The province can consider levying such a tax on universities locating in the area in lieu of charging them land lease fees.

View of campus site in the University City.

Photo: R. Singru

The Role of Partnerships in GCAP Implementation

Partnerships among Stakeholders

Vinh Yen city will systematically involve civil society, the private sector, Vinh Phuc province, and other stakeholders in the implementation of the GCAP by inviting them to participate in the GCAP implementation committee (see section on Institutional Arrangements for Implementation). This will allow all stakeholders to participate where they can contribute to the refinement and implementation of specific GCAP actions.

There will also be a separate management committee dedicated to Dam Vac lake. The Dam Vac lake environmental protection committee is central to the implementation of both Initiative 2 (environmental improvement) and Initiative 3 (tourism promotion). This committee will be strengthened through the use of an urban management partnership.

Vinh Yen city will also involve local communities in the management of disaster risk and climate change risk. Specifically, Vinh Yen will adopt the community-based disaster risk management model that has proven successful in other cities in Viet Nam. This is one key to building resilience to climate change. As practiced by the nongovernment organization, Canadian Centre Studies and Cooperation⁹ in Hue and other cities, the model engages local officials and community members in a process of analyzing their vulnerability and opportunities for development based on information about hazards, climate patterns, the environment, livelihood options, and social and economic infrastructure. The results of the

collaboration are used in planning for disaster response and disaster-resistant development plans and projects.

Urban Management Partnership

ADB will help establish an urban management partnership, a local partnership platform for implementing one of the key initiatives of the GCAP. Implementation of actions under initiatives 2 and 3 call for participation of a wide range of stakeholders: government, private sector, and local communities residing or doing business around Dam Vac lake. To that end, a Dam Vac lake environmental protection committee will be established. The urban management partnership will help Vinh Yen city set up and operate the committee by creating a partnership with other local governments that have successfully undertaken similar endeavors.

It is anticipated that the Dam Vac lake committee will comprise representatives from:

- Communities living in wards around the lake (e.g., representatives from youth and women's unions, nongovernment organizations);
- Businesses involved in lake-related recreation and tourism, including ecotourism companies and real estate developers); and
- Government agencies involved in the rehabilitation, maintenance, and protection of the lake, its shores and dykes, and the

⁹ International Environment and Disaster Management, Graduate School of Global Environment Studies, Kyoto University. 2005. *Enhancing Human Security, Environment and Disaster Management: Focus on Central Viet Nam*. Kyoto. http://www.iedm.ges.kyoto-u.ac.jp/images/res-jpn/research_ADB_PEF_project.pdf

surrounding land (e.g., DPI, Department of Tourism of Vinh Phuc province, Bureau of Urban Management of Vinh Yen city, Wastewater and Drainage Company, Department of Transportation.)

The immediate aim of the lake committee is to introduce a participatory process for developing an urban upgrading strategy and local area plan for the Dam Vac Lake area (Action 3-2). The committee can also lead the development of a feasibility and marketing study for the lake's waterfront (Action 3-1), and preparation of the community scorecard (Action 2-11).

Government agencies involved in improving the urban environment around Dam Vac lake (Actions 2-1 thru 2-10, and 3-3) will actively coordinate with, and seek input from the committee.

The main challenge for introducing a partnership platform like the Dam Vac lake committee is that participatory planning is still relatively new in Viet Nam. Vinh Yen could learn from the experiences in Nghe An province (in the North Central Coast region of Viet Nam) where the government has successfully piloted and institutionalized participatory planning reforms in some communes. There is ample relevant experience outside of Viet Nam, such as the successful rehabilitation of Lake Mariout area in Alexandria, Egypt, where local government established a lake management authority that actively collaborates with residents and businesses in the rehabilitation of Mariout lake. Vinh Yen government may consider adopting some of the approaches applied in Alexandria.

Institutional Arrangements for Implementation

Implementation Strategy

Establishment of an Executive GCAP Implementation Committee

The Vinh Phuc People's Committee will establish a supra- departmental executive GCAP implementation committee to carry out the following functions:

- Facilitate inputs of all major stakeholders in GCAP implementation;
- Ensure coordination among the different municipal and provincial departments involved in implementing all of the actions under the GCAP;
- Ensure that decision making for individual investment projects is consistent with the approach and the objectives of the GCAP;
- Monitor and evaluate progress on implementation of the GCAP; and
- Report to stakeholders on the status of implementation of the GCAP.

Chaired by the vice-chairman of the Vinh Phuc People's Committee, the supra committee will consist of vice-directors of key provincial departments and representatives of Vinh Yen People's Committee:

- Department of Planning and Investment
- Department of Natural Resources and Environment
- Department of Construction
- Department of Transportation
- Vinh Phuc Water Supply and Drainage Joint Stock Company
- Department of Finance

Figure 5: Institutional Arrangements for GCAP Implementation

DOC = Department of Construction, DOIT = Department of Trade and Industry, DONRE = Department of Natural Resources and Environment, DPI = Department of Planning and Investment, GCAP = GrEEn City Action Plan.

Source: Asian Development Bank.

- Department of Industry and Trade
- Vinh Yen City People's Committee representatives
- Women's Union and other mass organizations

Establishment of a Project Delivery Unit

A project delivery unit that will identify, prepare, and implement GCAP actions will be established. The unit shall be composed of experts from relevant departments, such as DONRE, Department of Construction, DPI, and Department of Tourism. Acting as the technical arm of and reporting to the GCAP implementation committee, the unit will:

- Prepare a detailed road map for implementation of the GCAP, including breaking each action into a number of subactions that identify responsible parties and timelines;
- Oversee the preparation of capital investment projects in the GCAP, including preparation of scopes of work, monitoring consultant studies and designs, and assigning projects to relevant departments for supervision of construction;
- Ensure adequate analyses of environmental and social impacts of GCAP actions; and
- Oversee the implementation of noncapital actions in the GCAP, including preparation of scopes of work and monitoring consultant studies.

Policy Reform

The policy framework for Vinh Phuc province will be improved with a view to facilitating smooth implementation of the GCAP. Vinh Phuc People's Committee will prepare and implement the following new or revised policies.

Project identification and prioritization—A new methodology will be developed for rapid and effective identification of new projects. Short project briefs will define project objectives, preferred technical option, cost, financing, economic and social impacts, environmental impacts, and implementation arrangements. The methodology will also define a process and criteria by which projects will be evaluated and prioritized by the project delivery unit.

Project feasibility before project design—The mandatory project cycle for public investment projects will be revised to carry out project feasibility analysis before concept design. This way development programs specifying land area and built area will be defined based on demand assessment before designs are prepared. This will ensure that designs are more demand-driven. As a result, the economic efficiency of public investments will increase.

Infrastructure finance—With a view to accessing more financing for implementation of green infrastructure

projects, the policy will define a broader range of financial instruments and a methodology for matching individual projects to different instruments. Feasible forms of private sector participation will be identified by type of project. A long list of sources of finance to be considered with a description of the utility, terms, conditions, and advantages of each will be drawn up.

Stakeholder engagement—The process and method for engaging stakeholders in the design and implementation of capital and noncapital GCAP projects will be defined. Minimum levels and types of stakeholder participation will be defined for the preparation and implementation of different types of projects. Mechanisms for stakeholder engagement such as surveys, focus groups, and community scorecards will be drawn up and made available to local government staff.

Capacity Building Needs of Selected Departments

Department of Planning and Investment

To fulfill its roles in identifying strategic projects and mobilizing financing, DPI will require capacity building in the following areas:

- Project prioritization, which depends on effective collaboration with other departments. The method will require maintaining the link between the overall development strategy and the impacts of individual projects. Investment projects that do not support the overarching strategy will be ranked lower priority or discarded.
- Public-private partnership execution and the deployment of nonconventional financing strategies.

Department of Construction

The Department of Construction needs greater technical capacity to respond adequately to the challenges posed by natural hazards and environmental degradation. Construction plans, standards, and design guidelines issued by the department in particular will take into

account the evolving risk and climate profiles of Vinh Phuc province. The following areas will in particular be targeted by capacity building efforts under the GCAP:

- Risk-sensitive urban planning and design,
- Resilient urban construction,
- Stormwater management, and
- The preparation and construction of environmental facilities such as water and wastewater treatment plants.

Department of Natural Resources and Environment

DONRE will be strengthened in the field of integrated water planning by catchment area. This skill is part of the conceptual framework of the GCAP. DONRE will develop new expertise on simultaneously monitoring and managing the broad range of factors that contribute to Dam Vac lake water quality, including stormwater, land use, land development techniques, and wastewater.

As the main agency that manages and protects the province's environment, DONRE will also need to significantly develop its capabilities in the monitoring and evaluation of evolving environmental and climate conditions. This will necessitate investments in the development of relevant technical expertise, such as the use of key performance indicators (KPIs), analytical techniques, and advanced equipment for collecting information. Land use plans devised by the department will in turn need to be linked to evolving risks profiles. DONRE staff will be trained in:

- Integrated catchment area planning,
- Low-impact development methods and techniques,
- Monitoring of natural hazard risks,
- Risk-sensitive land use planning, and
- Stormwater management.

Cumulative Benefits and Economic Justification

The action plan summary identifies the main benefits that each action in the GCAP is expected to generate. Feasibility studies to be conducted as part of GCAP implementation can quantify these benefits and weigh them against the costs. More important than the individual benefits produced by individual actions, however, are the cumulative benefits that result when multiple complementary actions—including capital improvements, regulatory changes, and institutional changes—are implemented in the same spatial and time frame. Each initiative generates a range of complementary environmental, economic, and equity benefits, as indicated by the colored dots.

Figure 6: Synergistic Development of Dam Vac Lake: Environmental Improvements Drive Economic Growth

Source: Authors.

Figure 6 illustrates how the multiple actions in Vinh Yen's GCAP will drive sustainable development of the Dam Vac lake area, resulting in a cleaner environment, amenities for citizens, tourism investment and jobs, and increased value of real property. Each of the four actions in the blue ovals are worthwhile in their own right; their benefits will in all likelihood outweigh their costs. These are all standard actions commonly found in development programs. But these diverse set of actions, from infrastructure improvements, to lakeshore planning, to development control, will all be brought to bear on the same asset, the same district of the city. The cumulative effect of these actions on Dam Vac lake will be greater than the sum of the benefits from each of the individual actions, were they to be implemented separately.

In addition to greater economic return, this integrated approach will also enhance the livability of Vinh Yen city for residents and visitors alike. People will be living in a cleaner, more pedestrian-friendly environment with greater choices for recreational and cultural activities. Their exposure to pollution and water-borne diseases will be reduced, and their economic opportunities will broaden. In this way the GrEEEn Cities approach results in a higher-value place that improves quality of life for those that experience it.

The box on p. 43 presents an international example of how the rehabilitation of an important urban surface water asset can drive local socioeconomic development.

Copenhagen's Harbor Enhancement: Box : Environmental Clean Up Sparks Economic Growth

Until 2000 Copenhagen harbor was the depository for almost 100 storm overflow channels in the Danish capital city. Over a 10-year period, the city government upgraded the stormwater and wastewater systems, improved water quality, and developed open space and mixed-use facilities around the harbor. Today the harbor is a thriving neighborhood and a major leisure and recreation destination in Copenhagen. Residents and tourists report high levels of satisfaction. The number

of cafés and restaurants near the harbor has increased threefold. The market value of adjacent apartments increased by 57% from 2002 to 2011, compared to 12% in comparable areas far from the harbor. The geographically focused environmental clean up + place- making initiative has created real value and jobs as well as increasing quality of life for residents and tourists.

Sources: "Copenhagen – Beyond Green," Green Growth Leaders.

Photo: Joe deSousa

Monitoring and Evaluation

The GCAP implementation committee will create and manage a performance monitoring and evaluation framework for the GCAP. The framework will define the roles and responsibilities of participating entities; the key performance indicators; the frequency of data collection, analysis, and reporting; and the sources of finance for performance monitoring.

The performance monitoring and evaluation framework will include the following activities:

- Define indicators;
- Define baseline values;
- Monitor changes over time. Once a year, collect data, calculate indicator values, and compare progress to targets;
- Propose adjustments to GCAP to make up for any gaps;
- Develop a long-term public awareness and information program;
- Organize public forums on the GCAP;
- Set up a project website in coordination with the GrEEEn Cities Network; and
- Prepare biannual monitoring reports.

Table 9 sets out indicators that could be used to monitor progress on implementation of the GCAP.

GrEEEn City Scorecard and Citizen Monitoring Mechanism

An important step towards achieving GrEEEn Cities is to gather information that can be used by citizens to

monitor progress and direct actions towards sustainability. GrEEEn City Scorecards (GCSC) could be used as a monitoring tool on the model of community scorecards (CSC).

Community Scorecard

CSC are sustainability assessment tool widely used for monitoring delivery of services. CSC are a useful tool for providing service users the opportunity to monitor and evaluate services provided by local governments. It is believed that, if the service providers are more accountable to their clients, and more specifically, to low-income households, service provision will improve. Improvements of service delivery are both in terms of who can access them and their quality and cost.

GrEEEn City Scorecard for Vinh Yen City GCAP

GCSC can ensure citizens involvement for monitoring of livability indicators and priority needs for future development. GCSC can help local governments and communities to set targets and assess progress towards greener cities.

GCSC could be used by citizens to monitor not only delivery of services but also actions proposed under the GCAP. The GCAP prepared for Vinh Yen City developed such scorecard to monitor the initiative: Improve Urban Environment Including the Dam Vac Lake. Appendix 5 presents the content of the scorecard. The Dam Vac lake is the heart of the city's ecosystem and the key to the development of its tourism business. Due to its

importance, the GCAP proposed to establish a Dam Vac Lake Environmental Protection Committee.

The purpose of the committee is first to introduce a participatory process for developing an urban upgrading strategy and local area plan for the Dam Vac Lake area. The committee will also prepare and implement the GCSC. The committee will identify and prioritize actions, including some of those already identified in this GCAP: surface water clean-up, infrastructure development, planting trees, tourism development, public access etc.

The committee will develop and input tracking matrix, which includes indicators to monitor progress. Indicators may include the number of outlets (individuals, public, industrial) discharging directly in the lake, size of the public open space adjacent to the lake area covered with trees, water quality parameters, and timeliness of construction. The committee will then develop a matrix to score the performance of the GCAP proposed actions regarding for example quality of the environment or efficiency of construction. Services providers and the GCAP implementation committee will develop their own scorecard and an interface meeting will then be organized between the committee and services providers and/or GCAP implementation committee.

The meeting will provide an opportunity for the committee to provide feedback to service providers and the GCAP implementation committee and to negotiate agreements on improving the services and actions under GCAP together with relevant stakeholders.

It is expected that implementation of the GCSC will help the city, the utility companies and planning departments to improve their performance. It is also expected that the implementation of the GCSC will lead to the community mindset shift that is required for the sustainable management of the lake.

Other Example of Green Scorecards

Cities already developed various types of scorecards (e.g. balanced green scorecards, sustainability scorecards) to measure and monitor activities related to environmental quality of to measure and monitor sustainability in the City. The following boxes present such experiences.

Community Scorecard Purpose

The purpose of a community scorecard (CSC) exercise is not just to produce a scorecard, but also to initiate a sustainable dialogue among service users and providers at the community level to produce demonstrable improvements in service delivery. As such, implementing teams formulate the objectives and focus areas for the CSC exercise based upon potential synergies with the broader institutional and policy environment (local government initiatives, sector strategies and assessments, national development strategies, results frameworks, performance budgeting, etc.). The CSC process itself has six main stages:

1. Preparatory work
2. Development of input-tracking matrix
3. Community scoring of performance
4. Self-evaluation by service providers
5. Interface meeting between service users and providers
6. Postimplementation activities (training a cadre of facilitators, standardizing indicators, collecting and consolidating feedback, etc.)

Source: World Bank. 2011. *The Role of Community Scorecards in Improving Service Delivery*. Washington, DC. <http://siteresources.worldbank.org/EXTSOCIALDEVELOPMENT/Resources/244362-1193949504055/4348035-1296838689014/7712311-1298494972121/Rapid-Feedback.pdf>

Green Scorecard for the Environment: City of Gothenburg

The city of Gothenburg uses balanced ‘Green scorecards’ as a means of measuring and presenting information on the environmental quality of each of the neighborhood areas of their 21 city district committees.

The green scorecard is based on four areas:

- Environmental behavior,
- Environmental situation,
- Infrastructure, and
- Environmental performance of city district committees.

As well as being an important tool for communicating local level environmental information to the city’s district committees and their respective communities, the balanced scorecard technique has proved a successful means of raising awareness on how the four areas interlink and impact upon each other.

The new system is recognised as an innovative approach to the survey technique. Its main information source is a citizen satisfaction survey, through which responses to littering questions are combined into a “Nice and Clean” index before being presented on the scorecard.

The balanced scorecards allow each district to identify existing environmental issues in their areas and to target need by allocating resources accordingly. For example, in response to the most recent survey indicating that littering is a problem in many of the city districts—different activities including information campaigns and special clean-up activities have been planned for the coming year to address the problem.

Source: Clean Cities Working Group of the EuroCiTiEs Environmental Forum. http://nws.eurocities.eu/MediaShell/media/Our_Clean_Cities_Best_Practice_Guide-JCHA_5175.pdf

Sustainability Scorecard for Wyndham City Council in Melbourne's West.

The Melbourne Sustainable Development Institute, under the University of Melbourne local sustainability developed with the Wyndham City Council in Melbourne's west an assessment tool (the scorecard).

The scorecard focuses on three pillars:

1. Environmental health
2. Economic security
3. Social well-being

Indicators are assigned to each of these groups. Many indicators contain elements of more than one 'pillar' and are therefore especially important in measuring overall sustainability.

The steps in developing the scorecard were:

1. Establishing a sustainability framework
2. Identifying key issues
3. Selecting indicators
4. Collecting data
5. Consulting with council staff
6. Reporting on the assessment

As part of step 3 (selecting indicators), the following questions were asked: (i) Does the indicator provide information about sustainability? (ii) Is acquisition of data feasible? and (iii) Can the council take action that will improve the status of the indicator in the future?

Through consultation with Wyndham Council staff, a sustainability vision statement was proposed:

To develop a prosperous, healthy, and vibrant local community that maintains and enhances environmental systems for the benefit of current and future generations. Eighteen indicators were selected to be included in the Scorecard

ENVIRONMENTAL HEALTH

ECONOMIC SECURITY

SOCIAL WELL-BEING

KEY

Indicator bars denoting the relative performance of each selected sustainability indicator. Each indicator is measured according to its present condition relative to other comparable regions (state) and its change over time (trend).

Source: Christopher Ives. 2012. *Sustainability Scorecard: A tool to help local governments set targets and assess progress towards more sustainable futures*. Melbourne: University of Melbourne.

Table 9: Proposed Indicators by Initiative

No.	Initiative	Description of Indicator	Data Sources and Reporting Mechanisms	Assumptions
Economic Competitiveness				
1	Initiative 1	Ecobusiness gross domestic product as share of total city gross domestic product (%)	Government statistics, decrees, and reports	Assumption: National and provincial government continue to support the city's development as a regional growth center
2	Initiative 1	Ecobusiness employment as share of total city employment (%)	Provincial reports and economic statistics	
3	Initiative 3	Tourist inflow (% change)		
4	Initiative 4	City share of regional health services market (%)	Surveys	
5	Initiative 4	% change in number of higher education students (%)		
Environment				
6	Initiative 2	Change in untreated domestic wastewater inflows into Dam Vac Lake (%)	Monitoring data from provincial Department of Natural Resources and Environment (DONRE)	Assumption: National and provincial government continue to support the city's development as a regional growth center
7	Initiative 2	Incidence of street flooding during monsoons (No.)	Monthly status and project progress reports	
8	Initiative 2	Change in population using new and upgraded green spaces (%)	Surveys	
9	Initiative 2	Green open space area per capita (square meter) and trees per capita (No.)	Monthly status and project progress reports	
10	Initiative 2	Water quality in Dam Vac lake (Parameters)	Monitoring data from DONRE of Province	
11	Initiative 1 & 2	Air quality in the city (Parameters)	Monitoring data from DONRE of Province	
12	Initiative 2	Change in solid waste collection (%) and disposal in a sanitary landfill (%)	Monthly status and project progress reports	
13	Initiative 2	Quantity of hazardous waste incinerated (tons)	Monitoring data from DONRE of Province	
Equity				
14	All initiatives	Unemployment level (%)	Government statistics, decrees and reports	Assumption: National and provincial government continue to support the city's development as a regional growth center
15	All initiatives	Poverty rate in the city (%)	Provincial reports and economic statistics	
16	Initiative 3	Community meetings held in managing Dam Vac lake (No.)	Monthly status and project progress reports	
17	Initiative 2	Low-income access to piped water supply (% of poor households connected)	Monthly status and project progress reports	
18	Initiative 2	Change in wastewater connections resulting from the household sanitation revolving fund for low-income households (Number of households participating)	Monthly status and project progress reports	

Note:

Initiative 1: Promote ecobusiness in manufacturing and services.

Initiative 2: Improve the urban environment, including Dam Vac lake.

Initiative 3: Promote regional ecotourism.

Initiative 4: Become a regional leader in education and health services.

Source: Asian Development Bank.

Appendixes

Appendix 1: List of Participants in Visioning Workshop Held in Vinh Yen on 21 November 2013

No.	Name	Organization
1.	Tran Manh Hung	Vinh Yen People's Committee Vice-Chairman
2.	Nguyen Van Nguyet	Provincial Security
3.	Nguyen Thai Hoc	Provincial Security
4.	To Thi Chinh	City Security
5.	Nguyen Viet Cuong	Vinh Phuc TV
6.	Nguyen Huu Tho	Vinh Phuc TV
7.	Le Xuan Thieu	Department of Labor, Invalids, and Social Affairs
8.	Tran Kien	Vinh Phuc Provincial People's Committee Office
9.	Le Minh Thuong	Department of Industry and Trade Deputy Director
10.	Dam Dinh Hien	Department of Construction
11.	Nguyen Th. Quang	Department of Construction
12.	Pham Van Y	Department of Agriculture and Rural Development
13.	Nguyen Van Chuc	Vinh Yen People's Committee Secretary
14.	Tran Ngoc Oanh	Vinh Yen People's Committee Chairman
15.	Nguyen Minh Son	Vinh Yen People's Committee Vice Chairman
16.	Dong Van Cuong	Department of Foreign Affairs
17.	Guyen Van Nhien	Song Hong Hotel Director
18.	Pham Quang Thang	Vinh Phuc Province Investment Climate Improvement Project
19.	Vu Thi Thu Hoa	Women's Union
20.	Trieu Huu Dai	Provincial Development Project Management Unit
21.	Duong The Quyen	Department of Industry and Trade
22.	Nguyen Van Khanh	Water company
23.	Quach Viet Hung	Water company
24.	Chu Quoc Hai	Department of Natural Resource and Environment
25.	Le Anh Tan	Vinh Yen People's Committee
26.	Vu Tien Thinh	Vinh Phuc Security
27.	Le Duy Hien	Environment company
28.	Nguyen Van Kien	Vinh Phuc Newspaper
29.	Nguyen Thuy Chung	Vinh Phuc Newspaper
30.	Tran Thai Son	Ha Giang People's Committee
31.	Phan Thanh Hoa	Ha Giang Department of Industry and Trade
32.	Tran Dinh Chien	Ha Giang Department of Construction
33.	Nguyen Dinh Dan	Vinh Yen People's Committee Inspection Department Director

List of Participants in Visioning Workshop Held in Vinh Yen on 21 November 2013 (continued)

No.	Name	Organization
34.	Kim Van Thinh	Vinh Yen People's Committee Legal Department
35.	Le Van Lang	Phuc Yen People's Committee Vice-Chairman
36.	Trieu Bich Phuong	Vinh Phuc Newspaper
37.	Nguyen Hoang Thuc	Council of International Schools
38.	Nguyen Van Dung	Council of International Schools
39.	Nguyen Hong Quan	Department of Construction
40.	Nguyen Ngoc Khanh	Vinh Yen People's Committee
41.	Hoang Thi Hong	Vinh Yen People's Committee
42.	Le Hoc Hai	Vinh Yen People's Committee
43.	Nguyen Phu Binh	Vinh Yen People's Committee
44.	Bui Van Quy	Industrial Zone Management Authority
45.	Nguyen Van	Industrial Zone Management Authority
46.	Kieu Duc Thang	Department of Finance
47.	Nguyen Van Truong	Vinh Phuc Investment Promotion Agency
48.	Luu Thi Tuyet Nhung	Vinh Phuc Investment Promotion Agency
49.	Thieu Chi Duy	Vinh Phuc Investment Promotion Agency
50.	Han My Hang	Vinh Phuc Newspaper
51.	Nguyen Quang Hung	Department of Education and Training
52.	Vu Thi Ngoc	Department of Education and Training
53.	Vu Manh Quan	Vinh Phuc TV
54.	Nguyen Hong Phuong	Binh Xuyen People's Committee
55.	Nguyen Ba Hien	Department of Natural Resource and Environment
56.	Pham Huy Phuc	Asian Development Bank
57.	Nguyen Ba Loc	Vinh Phuc PMU
58.	Bui Anh Thu	Asian Development Bank
59.	Nguyen Thi Minh Nguyet	Department of Natural Resource and Environment
60.	Phan Tien Dung	Department of Planning and Investment
61.	Luu Bach Thang	Department of Planning and Investment
62.	Tran Hai	Department of Planning and Investment
63.	Nguyen Duc Tai	Department of Planning and Investment
64.	Ho Quang Phuc	Department of Planning and Investment
65.	Lo Anh Hieu	Vinh Phuc TV

Appendix 2: List of Participants in Stakeholder Workshop Held in Vinh Yen on 21 November 2013

No.	Name	Organization
1.	Hoang Minh Ai	Ethnic Minorities Committee
2.	Nguyen Van Loc	City Veteran Organisation
3.	Nguyen Van Thong	Dong Da Ward
4.	Nguyen Van Thanh	Korea Food for the Hungry International
5.	Nguyen Huong Ninh	Groupe de Recherche et d'Échanges Technologiques
6.	Nguyen Kim Tuan	Vinh Yen Party People's Committee
7.	Van Hong	Vinh Yen Party People's Committee
8.	Ta Y Thu	Vinh Yen Party People's Committee
9.	Thieu Chi Thiet	Vinh Yen Party People's Committee
10.	Phan Anh Duc	Dong Tam Ward
11.	Thieu Chi Huynh	Vinh Yen Party People's Committee
12.	Nguyen Xuan Quyen	Vinh Yen Party People's Committee
13.	Nguyen Van Chung	Hoi Hop Ward
14.	Phung Quang Do	Hoi Hop Ward
15.	Do Ngoc Anh	Confederation of Labour
16.	Ngo Giang Thanh	Confederation of Labour
17.	Nguyen Thai Sinh	Lien Bao Ward
18.	Nguyen Xuan Chieu	Vinh Yen Party People's Committee
19.	Hoang Viet Anh	Youth Union
20.	Nguyen Tien Thinh	Fatherland Front
21.	Nguyen Thi Mai	Women's Union
22.	Nguyen Van Binh	Women's Union
23.	Hoang Duy Han	Dinh Trung Commune
24.	Bui Kim Phuc	Thanh Tru Commune
25.	Nguyen Van Manh	Youth Union
26.	Dong Van Cuong	Department of Foreign Affairs
27.	Nguyen Van Cuong	Fatherland Front
28.	Pham Thi Diem	Red Cross
29.	Nguyen Duy Bac	Tich Son Ward
30.	Nguyen Kim Dinh	Ngo Quyen Ward
31.	Ha Thu Hien	Business Association

Appendix 3: Results of the Visioning Exercise

What you want your city to be in 10 years?

"Wherever I go in the world, I will always remember my city."

Source: Participants to the Visioning Exercise.

Appendix 4: Results of the Strengths, Weaknesses, Opportunities, and Threats Analysis

Strengths	Weaknesses
Geographical location and diversity (land, water)	Private sector investment
Connectivity, gateway to Ha Noi	Exposed to natural disasters and environmental pollution
Long history of development	Polluting industries
Existence and maintenance and quality of natural resources (land, water)	Economic development short-term focused
Green environment	Economic growth rate higher than social growth rate
Internal strengths	Lower environment impact assessment compliance
Good human resources	Low energy efficiency and high consumption
Hardworking people	Poor communities more vulnerable
Strong leadership	Climate vulnerability
Provincial center for economy and culture	Financial tools and regulations
One of three development zones	Decentralization depending on provincial decisions
A lot of good surface water	Lack of support by national government
High gross domestic product per capita	Lack of financial resources
Private sector well developed	Capacity of infrastructure (solid waste management, drainage system)
	Urban waste water management
	No public transportation system
Opportunities	Threats
Greening open space	Lack of institutional framework and/or reform and management system within city
Community awareness enhanced	Lack of harmonization of relationship between government levels
Transportation: expansion of roads	Management system capacities
Connections to Ha Noi	Difficulty in meeting economic growth demands
Greening transport infrastructure	Dependence on industry creates pollution
Integration into global economy	Increased pollution, waste, air contamination, etc.
Tourism	Adverse impacts on living quality (society and environment)
Social exchange, commercial activities, industrial growth	Lack of land for development (need for densification)
Sustainable development chance	Challenge of advocacy and awareness raising (changing mentality and practices)
Commitment by government for green growth strategy	
Good demographic factors	
Service sector development	

Appendix 5: Green City Scorecard for the Dam Vac Lake

What if the purpose of the scorecard?

- The scorecard aims to monitor the improvement of the Dam Vac lake environment (i.e. water quality, public access, timeliness of development of infrastructures etc.) following the implementation of Initiative 2 of the Green Cities Action Plan (GCAP): Improve the urban environment, including Dam Vac lake;

Where the scorecard will be implemented?

- The scorecard will be implemented in the Dam Vac Lake area and along the main tributaries;

Who will implement the scorecard?

- A Dam Vac lake protection committee will be created. It will gather: representatives of communities living around the lake; representatives of the civil society (e.g. youth and women's unions, nongovernment organizations); and representatives of the private sector: (e.g., businesses involved in lake-related recreation and tourism and real estate developers);
- A facilitator such as nongovernment organization (i.e., GRET) will assist the committee.

What are the steps to implement the scorecard?

1. Planning and preparation

- Establish the committee by Vinh Yen city People's Committees;
- Identifying and training of lead facilitators.
- Contacting and securing cooperation of the relevant service providers (i.e., Water supply and drainage and Environment Company No.1 other urban divisions of Vinh Phuc province/Vinh Yen city);
- Identifying the main groups who may have an interest for the protection and development of the Vam Dac lake
- Develop a work plan and a budget for the full scorecard exercise.

2. Implementing the scorecard

- The committee will develop the Green City Scorecard by generating and prioritizing issues (i.e., cleanup environment water quality, infrastructures development, planting trees, tourism development, public access etc.);
- Input and/or indicators will be developed: number of outlets (individuals, public, industrial) discharging directly in the lake, public area around the lake, area covered with trees, water quality parameter, timeliness of construction etc.)

3. Develop an input tracking matrix (example of such matrix is presented below)

Input/indicator	Entitlement/Plan budget	Existing situation	Remark/comments
- Number of public outlets discharging in the lake	- Only public storm sewers to discharge in the lake;	- XX combined outlets (waste/ storm water still discharging;	
- Area planted with trees	- 12 hectares planted with trees	- 6 hectares planted with trees	- Delay in planting
- Shoreline cleanup	- Cleanup every week	- Cleanup is not regularly done	- Lack of employees
- Expenditures on sewage system	- \$4 million	- \$3 million	- Delay in hiring contractor
-	-	-	-

4. Develop a matrix for scoring the performance; could be done by subgroups (women, business etc.)

	Community criteria	Score 1-5	Reasons/comments
A	Quality of environment	-	
A-1	- Shoreline cleanliness	2	Presence of waste at different location; no regular cleanup
A-2	- Water quality for bathing	3	Improving but still under national criteria;
A-3	-		
B	Transparency and Efficiency of construction		
B-1	- Timeliness of waste water sewage system	3	Delay in construction
B-2	-		

5. Developing the scorecard for the service providers

- The Water Supply and Drainage Company and other relevant services will make self-evaluation of the services provided under the GCAP; it will help the committee to assess the performance from the supply side.
- The steps are almost identical to the generation of the community scorecard as presented above and involves facilitated brainstorming on criteria for self-evaluation and scoring done in small groups of the providers.

6. Interface meeting

- The main purpose of the interface meeting is to share the scores generated by the committee and by the service providers to ensure that feedback from the community is taken into account, and that concrete measures are taken to improve services and/or maintain good practices. The meeting should provide an opportunity for the committee to provide feedback to service providers and GCAP implementation committee and to negotiate agreements on improving the services under GCAP together with relevant stakeholders.

Vinh Yen GrEEEn City Action Plan

The GrEEEn City Action Plan (GCAP) of Vinh Yen in Vinh Phuc Province, Viet Nam, is a time-bound action plan to respond to the city's challenges of rapid urbanization by integrating urban development with environmental planning. Based on the flexible and scalable GrEEEn Cities Approach of “doing things differently,” this GCAP will guide Vinh Yen in becoming an ecobusiness satellite city in metropolitan Ha Noi through cross-sectoral actions that combine economic, environmental, and equity features—the 3Es of a grEEEn city. The rehabilitation of the renowned Dam Vac lake in Vinh Yen will be one anchor point of these efforts toward a more livable and resilient city.

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ASIAN DEVELOPMENT BANK

6 ADB Avenue, Mandaluyong City

1550 Metro Manila, Philippines

www.adb.org