

2015 Suwon LAB Project

Toward a city that history and nature thrive



ICLEI's LAB (Local Action for Biodiversity) Project

'ICLEI – Local Governments for Sustainability' is one of the world's leading local government networks for environmental protection. It includes over 1,000 cities, towns, and metropolises of 86 countries committed to building a sustainable future.

ICLEI seeks to advance local actions aimed at sustainability. It supports local governments in using resources efficiently, in order to build low-carbon/green cities that respect and protect biodiversity, with eco-friendly and efficient infrastructure, and social equity. It also seeks to help local governments effectively respond to disasters and crises.

ICLEI launched the **LAB (Local Action for Biodiversity)** programme in 2006 through its ICLEI Cities Biodiversity Center (CBC), to create a model for a BBiodiveCrCity, one of ICLEI's ten agendas. This uniquely action-oriented international partnership program is led by local governments actively working for urban biodiversity. It supports local governments' biodiversity policies and projects in cooperation with urban and biodiversity experts and helps to create an advanced biodiversity management system by building a network among local governments.

From 2006 to 2009, 21 local governments worldwide took part in pioneer projects, followed by theme-specific projects like biodiversity, climate change, CEPA (Communications, Education and Public Awareness) and food. The pioneer projects were primarily composed of the following five stages, with possible adjustments according to the situation of the cities.

- ① Evaluating biodiversity
- ② Expressing political will (Signing of Durban Commitment)
- ③ Creating a local biodiversity strategy
- ④ Political approval by appropriate local governing body
- ⑤ Executing three biodiversity projects suggested by the above strategy

In South Korea, the Seoul Metropolitan Government (2007) and Gyeonggi-do (2014) carried LAB Project initiatives forward through several stages, including status analysis of biodiversity, signing of the Durban Commitment and suggestion of a basic direction for biodiversity strategies. In 2015, Ansan and Suwon have launched the project, marking the first time for local Korean cities to join the project.

The ICLEI Korea Office has named biodiversity as a strategic policy project, launching the "LAB-KOREA" project in 2014 while adjusting the program to fit the domestic situation in cooperation with the local governments concerned.

LAB project websites : (International) <http://cbc.iclei.org/lab-about>
(Domestic) <http://www.icleikorea.org/>

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I. 2015 Suwon LAB Project Overview

1. Project Background and Purposes
2. Project Outline and Approaches



I. 2015 Suwon LAB Project Overview

1. Project Background and Purposes

- There has been a severe decline in biodiversity worldwide resulting from factors due to development and environmental changes such as habitat destruction, urbanization and climate change.
- In March 2014, Republic of Korea drew up the third National Biodiversity Strategies and Action Plan (NBSAP), comprising with 6 strategies and 18 objectives) and also joined global efforts for biodiversity conservation and enhancement by hosting the 12th Conference of the Parties to the Convention of Biological Diversity (CBD COP 12) in Pyeongchang, Gangwon-do in October of the same year.
- Recently, the important role of the local governments and cities in effective implementation of biodiversity conservation efforts has been emphasized in international discussions, such as the CBD decisions, as well as in the central governments' policies.
 - In addition, citizens awareness that biodiversity and ecosystem services need be more strengthened in local governments' policies for safe and healthy cities.
- Under the city's priority policy of 'Environmental Capital', the city of Suwon has been enforcing various policies to create a low-carbon green city and making considerable efforts regarding climate change and eco-mobile city for a sustainable city in cooperation with ICLEI, the global network of local governments for sustainability.
 - In particular, Suwon, represented by Deputy Mayor, Jaejun Lee, was one of four Korean local governments that signed the Durban Commitment for biodiversity at the 2015 Urban Nature Forum held in Seoul City Hall on April 12, concurrent with the 2015 ICLEI World Congress, formally initiating the city's efforts to be a BiodiverCity.



< Deputy Mayor of Suwon, signing the Durban Commitment in April 2015 >



The Durban Commitment (Local Governments for Biodiversity), as part of ICLEI's LAB project, publicly announced that local governments are committed to implementing the CBD at the local level; working for the biodiversity conservation and enhancement; and striving for sustainable management of biodiversity.

- Following the signing of the Durban Commitment, Suwon implemented the other steps of the LAB pioneer project in later half of 2015 in order to enhance its capacity for policy planning and implementation.
- The main goals of the project are outlined below:
 - To diagnose the status and characteristics of Suwon's biodiversity
 - To lay a foundation for a local cooperative network to spread and strengthen the biodiversity agenda within the local administration and civil society
 - To draw up Suwon's direction for biodiversity policy and its priority biodiversity actions

2. Project Outline and Approaches

Name of Project	Suwon's Local Action for Biodiversity (2015 Suwon LAB Project)
Duration	June to December 2015 (7 months)
Area Covered	Land within Suwon's city limits
Conducted by	ICLEI Korea Office (supported by city subsidies)

- **Project Outline**
 - Based on the standard steps of the ICLEI LAB Pioneer Project (refer to the front cover), 2015 Suwon LAB project was designed like the following, in consideration of the project's duration, budget and specific purposes.

Purpose

Details

Rapid Biodiversity Assessment

- 1 Compiling and characterizing of data related to biodiversity in Suwon
- 2 SWOT analysis for the conservation of Suwon's biodiversity
- 3 CBI (City Biodiversity Index) application for Suwon

Strengthening Biodiversity Governance and Participation

- 1 Formation and operation of Suwon LAB Planning Committee
- 2 Suwon LAB workshop
- 3 International cooperation and public promotion

Development of Biodiversity Action Plan

- 1 Suwon Biodiversity Action plan
- 2 Project proposals for priority actions

● Operational approaches and project partners

- The Suwon LAB Planning Committee was formed by main actors such as responsible officers of Suwon City, representatives of citizen groups and researchers in the area of biodiversity and was operated to reflect their experiences and opinions into the project implementation and to create a foundation for networking among local biodiversity actors.
- In order to spread the local biodiversity agendas and promote civil participation, a workshop was organized in broad attendance of various local civic groups working on biodiversity-related subjects such as urban agriculture, green space and river conservation.
- Academic and field experts from biodiversity-related institutions and NGOs in Suwon and other cities consulted and advised in the process of identifying and the main direction for biodiversity conservation and developing priority actions for Suwon.
- The ICLEI Cities Biodiversity Center (CBC), which globally manages and supports the LAB projects, has provided the information on other international cities applicable to Suwon. The CBC will share and promote the outcomes of Suwon LAB project among other ICLEI member cities throughout the international community.

II. Detailed Project Processes

1. Rapid Biodiversity Assessment

- 1 Compiling and characterizing of data related to biodiversity of Suwon
- 2 SWOT analysis for the biodiversity conservation of Suwon
- 3 CBI (City Biodiversity Index) application for Suwon

2. Strengthening Biodiversity Governance and Participation

- 1 Formation and operation of Suwon LAB Planning Committee
- 2 Suwon LAB workshops
- 3 International cooperation and public promotion

3. Development of Biodiversity Action plan

- 1 Suwon biodiversity action plan
- 2 Project proposals for priority actions

III. Conclusion



Dorani (Suwon tree frog), Suwon's SNS mascot

II. Detailed Project Processes

1. Rapid Biodiversity Assessment

1 Compiling and characterizing of data related to biodiversity of Suwon

● Location and area

- Located in the south-central basin of Gyeonggi-do Province, Republic of Korea, Suwon is the center for the administration, economy and culture of the province as the seat of the provincial government. The city is 33km and 40km away from Seoul and Incheon respectively.
- The total land area of Suwon is 121.05km² or 1.19% of Gyeonggi-do Province.



Source: Suwon's basic urban plan for 2030 (2014)

● Population (as of the end of December 2014)

- The total population stands at 1,209,169 among which 34,941 are foreign nationals. Suwon is one of three local authorities in the country with a population of more than 1 million.
- Suwon is a densely populated city with 10,011 people/km², far higher than the average population density of Gyeonggi-do Province, which is 1,248 people/km².

● Administrative units

- The city is divided into 42 Dongs (Sub-districts), which are contained in four Gus (Districts), that is, Jangan-gu, Gwonseon-gu, Paldal-gu and Yeongtong-gu. Among the four districts, Gwonseon-gu is the largest and Gwanggyo-dong the second-largest.



Source: Website of Suwon City

● Land use

- Over the recent decades, the area of city development has rapidly increased, while the natural areas such as farmland and forests have been considerably reduced.

- According to the biotope map of Suwon made in 2009, the area of city development comprised 43.1% out of the total city area. The area has since increased further due to residential development projects in the area classified as area of other uses.
- Local economy and urban development
 - The volume of tertiary industry in the city is by far high with a large number of wholesale and retail businesses, accommodations and restaurants.
 - There is an ongoing influx of population into the city due to the creation of large-scale residential development projects such as Gwanggyo New Town, along with the construction of the Suwon Industrial Complex and the opening of additional metropolitan and urban railways.
 - The city's topographical feature is favorable for urban development with 69.0% of the city's land area having a gradient of less than 5%.

- Agriculture

- Suwon was the heartland of national agricultural policy reform during the modernization period, but from 1990 to 2010, the farmland was reduced as much as 21.8%.
- Farmland has been much more converted to developed area than forests.
- Since the 2000s, urban agriculture has been booming, promoted by local NGOs' activities. In 2010 the *Ordinance to Promote Urban Eco-agriculture in Suwon* was enacted, and the Suwon Network for Urban Eco-agriculture was formed in 2012. More than 200 vegetable gardens are currently being cultivated within the city, as of 2014.



< Urban farming site in Suwon >
Source: Suwon Gardening Mentoring Center

- Climate and climate change

- Situated in the central inland region, Suwon has a typical continental climate.
- The annual precipitation in Suwon for 10 years from 2001 to 2010 amounted to 1,364.7mm, which is more than the national average, 1,245mm.
- The annual average temperature in Suwon has risen by an average of 0.057°C per year over the last 37 years from 1973 to 2010.

- Forests and rivers

- Mt. Gwanggyo in the north and Mt. Chilbo in the west, which constitute the majority of the city's forest area, are found on the outskirts of Suwon, functioning as the city's biodiversity hot spots. Mt. Palda, Mt. Yeogi and Mt. Sukji can be found isolated in the center part of the city.

- The total forest area is recorded at 2,641 ha as of the end of 2014, of which 75% is privately-owned.

- The seven local rivers including the four major rivers, such as Hwanggyujecheon, Seohocheon, Suwoncheon and Woncheonricheon, flow across the city. There are also 24 streams which are tributaries of the local rivers.

- The Suwon River Basin Network was established in May 2011 as a public-private partnership. The network has been carrying out various activities to improve water quality and conserve the ecosystem along the each four major river in Suwon.

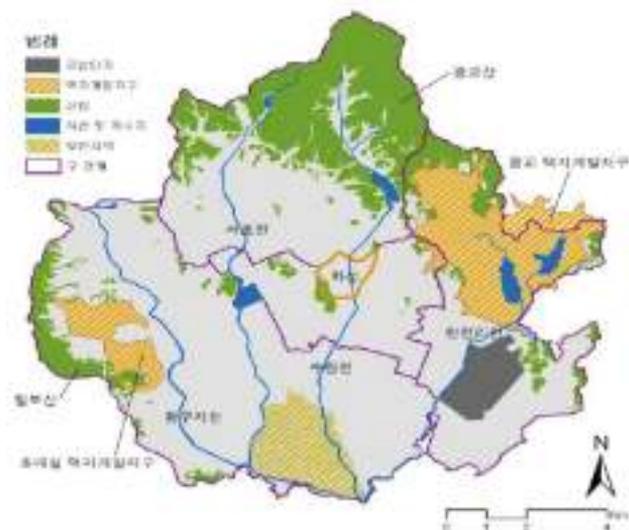
- With regards to biodiversity, the rivers and riverside greens can serve as habitats for terrestrial and aquatic organisms and also connect small ecosystems in the suburban forest areas and the highly urbanized downtown areas.

- City parks and green areas

- The total number of decided city parks in Suwon is 413 with a total area of 16,378km², while 256 parks have already been created with a total area of 7,738km². The per-capita park area stands at 6.40m² per person as of the end of 2014.

- As the neighborhood parks have the most prominent ecological features among the city parks, these can serve as habitats for species. It is necessary to create and manage the neighborhood parks so that they can act as an ecological network connecting urban ecosystems such as forests and rivers. However, the 2020 Suwon Park and Green Area Master Plan does not reflect the need of connectivity between city parks and original forests.

- Suwon has been creating 'forests for citizens' where residents can enjoy green areas under the policy entitled *Forests within 6 minutes walk*.

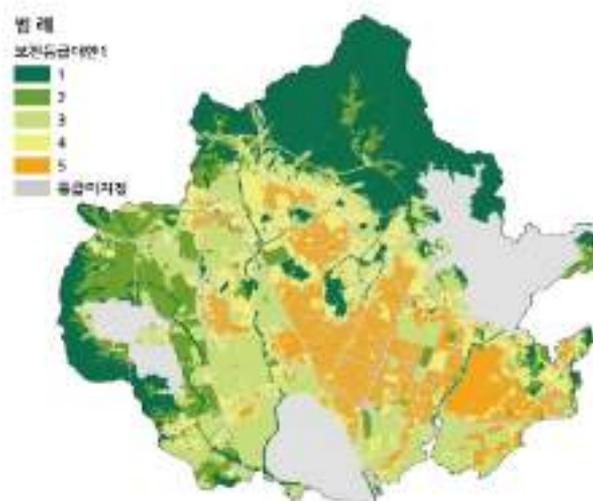


< Main forests and rivers in Suwon >

Source: Study of the natural environment and GIS establishment for urban ecological state, 2010

- Urban ecosystems

- In 2009, abiotope map was produced including vegetation and animal species status of the city (insects, amphibians, reptiles, birds and mammals). The conservation status of biotopes was evaluated in five grades and their management measures were suggested; however, the result has not been reflected in relevant policies such as the city's urban planning.



< Conservation grade of Biotope in Suwon >

Source: Study of the natural environment and GIS establishment for urban ecological state, 2010.

- Major habitats

- While no natural parks such as national, provincial and city parks are not designated within the city limits, a Wildlife Protection Area for birds including white herons in Mt. Yeogi is the only legal protected area in the city.
- The rice paddy wetlands are habitats for Suwon tree frogs, which are classified as an endangered species (Grade 1) by the Ministry of the Environment, have been decreasing. Against the problem, an alternative new habitat is under creation in the Ilwol Reservoir starting from the end of 2014.



< Mt. Yeogi Wildlife Protection Area >

Source : 2014 Suwon Environment White Paper (2014)

- Major species

- The entire number of species identified in Suwon can not be accurately calculated. Some large-scale surveys have been carried out, but it is hard to integrate the produced data due to the different survey sites and methods and inventory forms.
- Suwon tree frogs (*Hyla suweonensis*), which were designated as an endangered species (Grade 1) by the Ministry of the Environment in 2012, are a native species which are found only in Gyeonggi-do and Chungcheongbuk-do globally. They are the only amphibian species whose name contains the local name 'Suwon.' For long they were not found in Suwon due to a decline in rice paddies which are their habitats. In May 2014 they were identified again in Suwon.

- In 2012, the Council for Suwon Agenda 21 selected eight flagship species as symbolic animals that reflect the city's ecological characteristics. Since then, the Council has done monitoring their habitats and suggested conservation measures.

- Ecological surveys and monitoring

- Since 2014, local NGOs and the Council for Suwon Agenda 21 have carried out species surveys in Mt. Chilbo and Mt. Gwanggyo by taxonomic groups, and monitoring of habitats of the eight flagship species in collaboration with Suwon City Government.
- A standardized survey methodology and a data integration system are needed in order to effectively utilize the ecological data produced by local NGOs.



Chilbo montanartheolium



White heron



Titmouse



Suwon tree frog



Narrow-mouthed toad



Dactylopsalis obsoleta interrupta



Luciola lateralis Motschulsky



Alypus suwonensis

- Relevant institutions

- There is no biodiversity ordinance corresponding to the *Act on the Conservation and Utilization of Biodiversity* in Suwon. The Environmental Ordinance of Suwon enacted in 1997 includes one item on conservation of natural environment.
- In addition, many ordinances are relevant to biodiversity, such as those regarding climate change, water, urban parks, urban eco-farming, urban planning and environmentally-friendly agriculture. But the perspective of biodiversity conservation are not properly taken into account.
- A number of legal plans have relevance with biodiversity, such as the Environmental Conservation Master Plan of Suwon, which is now being re-established for the coming years 2016–2025, the 2030 Urban Master Plan of Suwon, the Suwon Landscape Master Plan of Suwon (revised in 2015), and the Suwon Master Plan for the Creation of Green Areas.

< Eight flagship species of Suwon >

Source: Environmental Capital where flagship species thrive, 2012.

- Administration and institutions and facilities for research and education

- In Suwon City Government, the Environment Policy Division (Natural Environment Team) under the Environment Bureau is responsible for biodiversity. Besides, the Parks & Landscape Management Office (Green Landscape Division, Eco-park Division), City Policy Bureau (Urban Planning Division) and Jobs and Economic Affairs Bureau (Life Industry Division) are also highly relevant to urban biodiversity and ecosystem service.



< Front view of Suwon Experience Education Center for Ecological Environment >

Source : 2014 Suwon Environment White Paper(2014)

- The Suwon Research Institute, which opened in 2013, have several researchers who conduct policy research on environment, landscape, and urban planning. Suwon has also universities, such as Ajou University and Kyonggi University, which have professionals in the biodiversity-related areas.
- The Experience Educational Center for Ecological Environment was opened in April 2012 near Mt. Chilbo to the public, providing ecological educational programmes for children, students and adults.

- Private Sector

- The Council for Suwon Agenda 21 (Local Agenda 21) have 12 sub-committees including the Biodiversity Committee. The 2013-2017 vision of the Suwon Agenda 21 is Suwon Community where humans and nature co-exist. 'Caring for Suwon's 8 flagship species' was chosen as one of the 10 Action Agendas of Suwon citizens.
- The 28 environmental groups have registered to Suwon City Government as of the end of December 2014. Their activities include biodiversity conservation of biodiversity like monitoring of species and rivers.
- There are not many cases where Suwon-based companies supported biodiversity conservation projects. One example is the funding for the research on habitat rehabilitation for Suwon tree frogs by Samsung Electronics from 2013 to 2014.

- Biodiversity awareness and education

- In the survey of Suwon citizens conducted as part of the process of re-establishing the Environment Conservation Master Plan of Suwon (2016–2525), 9.4% of respondents answered an ‘eco-green city’ to the question on the city’s current image. But when questioned about the future image the city should pursue, the answer of an eco-green city (24.6%) was the second following a healthy future city (26.3%), which shows the citizens’ high expectation for improvement of the ecological environment.
- In 2013, an environmental school book entitled *Suwon tree frog’s environmental story*, was published targeting at third- and fourth- grade students of elementary schools, together with a teacher’s guidebook. The books were distributed to 83 elementary schools in Suwon for the use of creative activity classes.



< Cover pages of *Suwon tree frog’s environmental story* >

2 SWOT analysis for the biodiversity conservation of Suwon

- Based on the information and data regarding biodiversity described above, the SWOT analysis tool was used to identify the status and characteristics of biodiversity in Suwon and to provide a direction for the biodiversity action plan.
 - SWOT: A tool to evaluate a project or an issue by identifying internal and external factors, which is composed of Strengths (positive factors), Weaknesses (negative factors), Opportunities (possibility for improvement) and Threats (restrictions and limitations).
- The conservation of urban biodiversity is closely associated also with the awareness and actions of members of the local community, local economy, legal and institutional settings, etc., not only natural environment such as species and habitats. Considering the fact, the analysis was made on the three divided aspects of natural environment and ecosystems, society and economy, and laws and institutions.

< SWOT Analysis for the Conservation of Suwon's Biodiversity >

	Natural environment & ecosystems	Society & economy	Laws and institutions
Strengths	<ul style="list-style-type: none"> • Forests such as Mt. Gwanggyo • Suwon tree frogs, an endangered species • Continuous river protection & management under a public-private partnership • Four main rivers & riversides, green areas, urban vegetable gardens, etc. • Suwon biotope map produced in 2009 	<ul style="list-style-type: none"> • Capacity of Local Agenda 21 and local environmental groups and, public-private partnership • Residents activities supported by various programmes • Citizens' aspiration for an eco-green city • Pride in a historical city • School education programme using a subject of Suwon tree frog • Opportunity to secure large space for eco-education on the occasion of the military airport relocation 	<ul style="list-style-type: none"> • City government's strong policy for an environmental capital • Specialized ecological education facility • An active city plans to expand green areas • Specialized city policy institute (Suwon Research Institute) • Other professional institutes such as universities
Weaknesses	<ul style="list-style-type: none"> • Increasing impervious surfaces and densely developed areas resulted from urbanization • Few legal protected areas and important species • Poor management system for protecting endangered species • Lack of a ecological education site like an eco-park • Drastic decrease of rice paddy wetlands and their organisms 	<ul style="list-style-type: none"> • Ease of large-scale development due to the large area with low terrain gradient • Large residential and industrial development projects • High population density and ongoing population growth • Citizens' low awareness of biodiversity & ecosystem service • Weak natural tourism factors 	<ul style="list-style-type: none"> • Weak institutional foundation for biodiversity conservation • Absence of the system for biodiversity data and management • Insufficient administrative personnel and budget for biodiversity
Opportunities	<ul style="list-style-type: none"> • External interest in the protection of the Suwon tree frog 	<ul style="list-style-type: none"> • Growing interest in ecosystem service nationally & internationally • Increased need to cooperate with other sectors such as urban planning 	<ul style="list-style-type: none"> • Gyeonggi-do provincial biodiversity ordinance • Emphasis on the role of local governments in the 3rd National Biodiversity Strategy & Action Plan • Strengthening international discussions on biodiversity and cooperation system
Threats	<ul style="list-style-type: none"> • Environmental changes of habitats due to climate change 	<ul style="list-style-type: none"> • Continuous development pressure from the capital metropolitan regions 	

3 CBI (City Biodiversity Index) Application for Suwon

- The City Biodiversity Index (CBI) is a tool to measure the status of their biodiversity and biodiversity conservation efforts and changes over time.
 - The index is also called the Singapore Index, since it was first initiated by Singapore in 2009.
 - The CBI has been revised several times based on the results of applications to many cities by the secretariat of the Convention on Biological Diversity (CBD) and other expert groups.
 - The CBI is not a comparison tool among cities; rather it aims to enable a city to conduct a self-evaluation of the state of its biodiversity and the outcome of its conservation efforts. Although it is a simple index, it is designed to have scientific credibility.
- The CBI is composed of Part 1: Profile of the City and Part 2: Indicators for the city biodiversity index. There are 23 indicators under the three sectors: native biodiversity, ecosystem services, governance and management with 92 points in total.
- The results of test applications conducted nationally and internationally show that there are some indexes which cannot be estimated accurately due to difficulty in securing the necessary data and the ambiguity of definitions of variables.
- In response to the identified difficulties and challenges in the CBI application, revised versions of the CBI have been suggested considering the specific state and characteristics of the countries or cities, such as ones of Japan and Nagoya.
 - The Japanese version of the CBI focuses on the three revision criteria: necessity, simplicity and applicability.
 - A 'Korean version' of the CBI or its application guidance has not yet been developed.
- Referring to the discussions and implications regarding the CBI application above, the Suwon CBI version need to be developed particularly taking into account the data availability, characteristics of highly urbanized cities, main challenges of biodiversity conservation, etc.
- It is suggested that the CBI estimation for Suwon be carried out periodically, e.g. every 2–3 years, in a public-private partnership, such as the Suwon LAB Planning Committee or the similar. The CBI results and necessary actions are to be publicized to the public for promoting the interest and awareness of the citizens in local biodiversity conservation.
- The 2015 Suwon LAB project suggests the core indicators of the Suwon CBI version as shown on the table below. The final Suwon CBI version will be developed based on the suggested core indicators in future, which is included as one of the Suwon Biodiversity Action Plan, an outcome of the project.
- Among the three sectors of the international CBI, indicators of the native biodiversity can be better calculated comparing with other sectors. It is not easy to calculate indicators of the ecosystem services, since evaluation techniques of ecosystem services are not yet enough developed in general. Many of the 9 indicators of governance and management sector have difficulties in identifying or obtaining the necessary data in Suwon, like other many test cases.

< Exemplified Suwon CBI version >

	Item	Index	How to apply	Remarks
Part 1	Profile of the city		<ul style="list-style-type: none"> • Size (total area, administrative districts, etc.) • Population (total population, population density, etc.) • Physical environment (temperature range, annual average precipitation, etc.) • Local economy (city's financial self-reliance or independency ratio, main industries, etc.) 	
Part 2	I Ecosystem & Biodiversity	Indicator I-1, Proportion of natural areas in city	<ul style="list-style-type: none"> • Total area of (forests + grassland + rivers + wetlands) area (m²) / Total area of city (m²) × 100 • Potential data sources: land cover maps provided by the Ministry of Environment, biotope maps 	
		Indicator I-2, Urban ecological networks (ratio of total of connected natural areas)	$100 - \frac{1}{n} (a + c + d + \dots + e)$ <ul style="list-style-type: none"> • A = Total area of (natural area + arable land + artificially created green area) (m²) • Apply a buffer of 50m; when the distance between blocs is within 100m, sum the adjacent areas • Potential data sources: biotope maps 	Need of alternatives not depending on biotope maps, which are not often updated
		Indicator I-3, Number of plant and animal species in main sites	<ul style="list-style-type: none"> • Main sites: Mt. Gwanggyosan, Mt. Chilbosan, four main rivers, etc, which are subject to continuous biodiversity monitoring • Species: Selected from monitored species including Suwon's 8 flagship species • Potential data sources: National natural environment surveys, citizens' biological monitoring, experts' surveys, etc, 	Difficulty in identifying the total number of species inhabiting at the whole area of Suwon
		Indicator I-4, Proportion of important habitats	<ul style="list-style-type: none"> • Total area of (legal protected area + biodiversity hot spots in Suwon (e.g. Mt. Gwanggyosan) + habitats for protected important species (e.g. Suwon tree frog)) (m²) / Total area of city (m²) × 100 • Potential data sources: data and reports published by the city 	Uncertainty of designation of new legal protected areas in Suwon; Need of emphasis on importance of other main habitats due to ongoing urbanization
		Indicator I-5 and others to be added	<ul style="list-style-type: none"> • Determine the additional indicators through discussions or research 	

Item	Index	How to apply	Remarks
II, Ecosystem Service	Indicator II-1, Regulation of quantity of water	<ul style="list-style-type: none"> • (Total permeable area) (m²) / Total terrestrial area of city (m²) x 100 • Potential data sources: National environmental map systems 	Need of alternatives not depending on biotope maps, which are not often updated
	Indicator II-2, Climate regulation	<ul style="list-style-type: none"> • (Tree canopy cover) + (Total terrestrial area of city) x 100 • Potential data sources: land cover maps provided by the Ministry of Environment, biotope maps 	
	Indicator II-3, Recreation	<ul style="list-style-type: none"> • Total area of (natural area + artificially-created green areas) (m²) / 1,000 people • Potential data sources: data and reports published by the city 	
	Indicator II-4 and others to be added	<ul style="list-style-type: none"> ※ Determine the additional indicators through discussions or research 	
III, Policy and Practice	Indicator III-1, Policy, rules and regulations relating to biodiversity	<ul style="list-style-type: none"> • Number of related plans and policies : Local biodiversity strategies & action plan and other relevant plans, such as environmental conservation plan, the city council's biodiversity initiatives • Potential data sources: data and reports published by the city 	
	Indicator III-2, Number of agencies or organizations relating to biodiversity	<ul style="list-style-type: none"> • Number of public institutes and registered environmental organizations concerned with biodiversity in city • Potential data sources: data and reports published by the city 	
	Indicator III-3, Proportion of schools which adopt biodiversity-related curriculum	<ul style="list-style-type: none"> • Number of (schools using 'Environmental story of Suwon tree frogs' (Elementary) + schools adopting environment subject in curriculum (Middle)) / Total number of elementary & middle schools in city • Potential data sources: data and reports published by the city 	
	Indicator III-4 and others to be added	<ul style="list-style-type: none"> ※ Determine the additional indicators through discussions or research 	

2. Strengthening Biodiversity Governance and Participation

1 Formation and Operation of Suwon LAB Planning Committee

- The Suwon LAB Planning Committee was formed and worked to tap into the experiences, expertise

and demands of major players related to the local community's biodiversity, and to reflect them in Suwon LAB Project, laying a foundation for a network of cooperation to support biodiversity in Suwon.

- The committee is composed of those in charge of administration and civil activities for biodiversity from Suwon City, relevant experts and personnel from project operators as outlined in the table below.
 - Some committee members have participated in the working group, supported planning and implementation of detailed stages and have periodically provided consultation throughout the entire project period.

< Name of members from Suwon LAB Planning Committee >

<p>Civil society</p> <p>Jonga Park, Secretary-Director of the Council for Suwon Agenda 21 Sangsun Kim, Assistant administrator of the Council for Suwon Agenda 21 Hyunhee Kim, Head of the Biodiversity Subcommittee of the Council for Suwon Agenda 21 Hyunsang Ryu, Head of the Suwon Educational Center for Ecological Environmental Experience Seongwoo Kim, Secretary General of the Suwon Center for Environmental Action</p>	<p>Experts of local and national institutes/orgnnizations</p> <p>Hyuntae Heo, Director of Urban Environment Research Group at Suwon Research Institute Eunyoung Kim, Research Fellow at Suwon Research Institute Gyesuk Lee, President of the Marine Environment Educational Center Suk-kyung Shim, Vice Chairperson of UNESCO MAB National Committee of Republic of Korea</p>
<p>Suwon City Government</p> <p>Jeongsu Yoo, Head of the Natural Environment Team Jeonghye Park, Assistant Officer of the Natural Environment Team</p>	<p>ICLEI Korea Office</p> <p>Yeonhee Park, Director of the ICLEI Korea Office Hyunmin Shim, Program manager of prgram management Dept. Yoonjin Cho, Program officer of prgram management Dept.</p>

- The planning committee provides consultation and discusses detailed progress and results of the LAB project such as the status of Suwon's biodiversity, major issues, workshop plans and the selection of action plans for biodiversity. It also promotes the participation and cooperation of other local organizations and public institutions.



< Major activities of the Suwon LAB Planning Committee >

	Date/Venue	Major Activities
1 st Planning Meeting	Jul 7 / ICLEI Korea Office	Discussion on and determination of detailed plans and schedule of the Suwon LAB project
Working-group Meeting	Aug 3 / ICLEI Korea Office	Discussion of the 1st workshop program and how to proceed with and promote it, and division of roles
1 st Workshop	Aug 27 / Jangan-Gu Office, Suwon	Implementation of activities by each group
2 nd Planning Meeting	Oct 19 / ICLEI Korea Office	Discussion of results from the 1st workshop and how to use them, and suggestion of a direction to draw up action plans for biodiversity
Consultation Meeting	Oct 19 / ICLEI Korea Office	Discussions on Suwon's history, culture and CBI to be reflected in action plans for biodiversity
2 nd Workshop	Nov 18 / Hwaseong Museum in Suwon	Drafting of a roadmap of Suwon's action plans for biodiversity and discussions on how to proceed with priority tasks

- There is a need to continuously utilize the Suwon LAB Planning Committee as a useful public-private partnership for the conservation of biodiversity in Suwon for functions such as the implementation of actions plans for biodiversity suggested in this project.

2 Suwon LAB Workshops

- The purposes of the LAB workshops which were held twice were to garner and develop ideas for actions plans and to raise awareness regarding biodiversity among interested parties from concerned civic organizations in the local community.

	Date / Venue	Main purpose and outcome
1 st Workshop	Aug 27 (THU) 14:00~17:00 Main conference room of the Jangan-Gu Office in Suwon	<ul style="list-style-type: none"> • To raise awareness among major stakeholders like citizens and public servants regarding the biodiversity status and tasks • To collect opinions on Suwon's biodiversity status and ideas for various action plans • To lay the foundation for a network of cooperation in the local community, to support Suwon's project for biodiversity
2 nd Workshop	Nov 18 (THU) 14:00~16:30 Training room at Hwaseong Museum in Suwon	<ul style="list-style-type: none"> • To review the draft of the action-plan roadmap for Suwon's biodiversity • To consult and gather opinions regarding the appropriateness of priority tasks and consider how to proceed

[1] 1st Workshop



- By holding the 1st workshop at the early stage of the project, a wide range of ideas regarding tasks for biodiversity and action plans were collected.
- Forty-eight participants attended, including fifteen from local civic groups, two from local academic research institutes, six public officers and city councilors from Suwon City Hall and university students as well as interested parties from other regions.
- With the participation of public officers and civic groups from various sectors concerned with biodiversity, including urban eco-farming, river areas, climate change and green landscape as well as the natural environment, the workshop aimed to raise the awareness of biodiversity and move the project's agenda forward by associating biodiversity with the activities of various organizations (biodiversity mainstreaming).

- The workshop program was as follows.
 - A survey of Suwon's major habitats, places for biodiversity education, and priority species to be protected
 - Presentations on biodiversity policies and status of Suwon by a government officer of Suwon City Hall and a project operator)
 - Presentations on the activities on species protection, vegetable gardens in parks, river basins, urban farming and ecological network as well as the suggested biodiversity actions relating their own activities by 5 civic groups and research institute
 - Selection of 5 priority actions for Suwon biodiversity and suggestions of expected benefits by 6 groups
- Survey results regarding biodiversity status of Suwon
 - To the question that asked "Where is the most important place for habitats in Suwon (your community)?", the largest number of respondents said Mt. Gwanggyo and Mt. Chilbo, followed by rivers, rice paddies and parks.
 - Mt. Gwanggyo and Mt. Chilbo topped the list as "the most suitable place to educate about biodiversity in Suwon (your community)", followed by rivers.
 - As for "biological species that you think should be protected above anything in Suwon (your community)", Suwon tree frogs were the first choice, followed by fireflies, narrow-mouthed toads and white herons.
 - Given the survey results, it was concluded that greater effort should be made to conserve and maintain Mt. Gwanggyo and Mt. Chilbo, Suwon's biodiversity hot spots, to reinforce educational activities for biodiversity and to work for the protection of Suwon tree frogs that are part of the city's identity and an object of attention.
- Priority tasks for local biodiversity conservation include stronger policies and regulations, the monitoring of biological species, education and public promotion, conservation of habitats and biological species and other activities related to agriculture, parks and vegetable gardens.
 - Stronger policies and regulations: Creation of manuals and measures for conservation of biological species, preparation of legal support such as ordinances and budgets to promote habitats supporting biodiversity
 - Monitoring living creatures: Operation of a group to monitor biological species in the community, nurturing of experts on monitoring and the establishment of monitoring system
 - Education/Public promotion: Education and public promotion focusing on the eight flagship species and operation of citizen volunteer groups
 - Habitats and conservation of biological species: Preservation of rice paddy wetlands; studies on the state of biological species in Suwon; selection of protected species; conservation and expansion of the original habitats for important species like Suwon tree frogs; and restoration of a vertical ecological axis by connecting the streams of the four major rivers

- Other activities: Creation of shelters in an urban park area like wetlands, a bird watering fountain and bird house; development of a crop selection and rotation system for urban farming that contributes to the conservation of biodiversity and eco-friendly agriculture guidelines; a pilot project to restore an ecological axis in neighborhoods near mountains and rivers; and creation of an public eco-park on the site which previously was occupied by a military airport.

[2] 2st Workshop



- The second workshop, which doubled as a final project briefing meeting, was a get-together to share opinions and discuss the draft of the action plan for Suwon's biodiversity drawn from the processes mentioned above and how to proceed with the priority action plans selected herein.
 - The workshop was attended by 17 people including research experts from the National Institute of Ecology, the National Institute of Forest Science and the Seoul Institute; experts from other regions' ecological environmental organizations; professionals from river-related organizations in Suwon; members of the Suwon LAB Planning Committee; Suwon's public officers and people in charge from the project operator.
- The second workshop was carried out as follows:
 - Explanation and discussion on the 2015 Suwon LAB Project and the drafting of Suwon's action-plan roadmap for biodiversity
 - Panel and plenary discussions on 'monitoring and establishment of a data system for the integrated management of biodiversity data' and 'development of a city management policy for biodiversity conservation' following from the priority action plans
- Major discussions on biodiversity data and monitoring
 - The establishment of a biodiversity data system and citizen monitoring are complementary elements in the system to pursue biodiversity, but they should be pushed forward separately.

- The biodiversity database established should be used to accumulate data through periodical scientific study; and that data should be reflected in policy decisions. Citizen monitoring should be included under the framework of participation/cooperation projects, and it should be a continuing activity that will attract interest and increased participation, not a one-time event for show.
- Major discussions on city management policy for biodiversity conservation
 - Various urban care projects related to biodiversity are ongoing in Suwon, separately operated by different organizations. Efforts to make biodiversity a main stream agenda item are needed, enlisting the cooperation of the concerned departments of Suwon City Hall such as urban planning, climate change and river management. An opportunity should be provided to raise the awareness of biodiversity in administrative bodies and the city council.
 - Efforts should be made to collaborate with the cultural arts (i.e. include the theme of biodiversity in local festivals) and to associate biodiversity with the community's restoration movement (i.e. community cooperative regarding the ecosystem), in order to give biodiversity a place in the main stream of the civic society. Materials like an urban care guidebook that helps residents to look after the area in front of their homes, and throughout the community and the city can be provided and actively promoted.

3 International Cooperation and Public Promotion

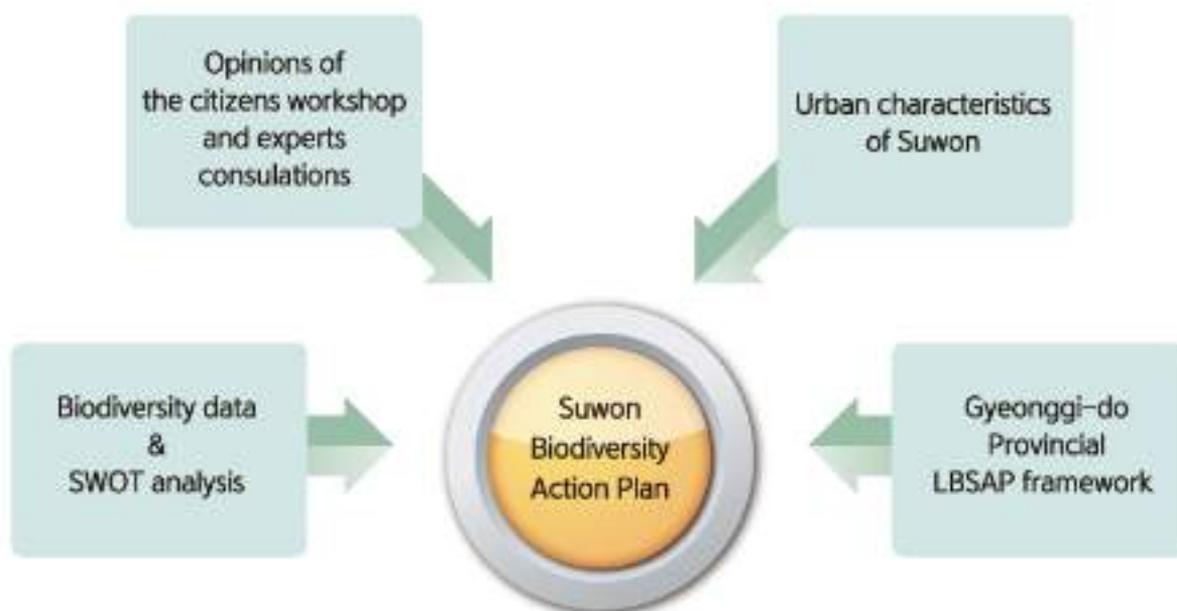
- Suwon, as a member city of ICLEI, has actively participated in activities under sustainability agendas such as eco-mobility and climate change. It has signed also the Durban Commitment of the local governments for biodiversity during the 2015 ICLEI World Congress held in Seoul in April 2015, which paved the way to the launch of the Suwon LAB project toward a BiodiverCity.
- Thanks to the international cooperation through a global ICLEI network, Suwon City has improved the framework to share and learn experiences and information on biodiversity and ecosystem services with other global cities.
 - In particular, Suwon City, characterized with rapid urban development and high population density, can be developed into an international model of BiodiverCity by expanding urban ecosystem services by enhancing urban biodiversity and biodiversity mainstreaming.
- The ICLEI Cities Biodiversity Center (CBC) that provides international support for the LAB programs has provided information and data about cases of overseas cities that are applicable to Suwon's LAB Project.
- The executive summary that puts together the outcome of the LAB Project and a guiding leaflet about the LAB city will be issued in English, posted on ICLEI's website and introduced and distributed at events of international organizations such as ICLEI and the Secretariat of the CBD.

- In particular, Suwon LAB Project and its activities for biodiversity will be used as a portion of the base data during the local government events, such as the 13th Conference of the Parties to the Convention of Biological Diversity (CBD COP 13) in Cancun, Mexico.

3. Development of Biodiversity Action Plan

1 Suwon Biodiversity Action Plan

- The Suwon Biodiversity Action Plan has been developed, mainly reflecting: (i) the results of SWOT analysis on biodiversity conservation, (ii) opinions and demands of related main local actors (LAB workshops, other discussions and activity reports, etc.), (iii) an approach according to the urban characteristics of the city, (iv) corresponding to the framework of the Biodiversity Strategies and Local Action of the Gyeonggi-do Province, and (v) experts consultations.



[Approach according to the urban characteristics of the city]

- Suwon is a highly populated municipality and its densely developed areas comprise approximately half of the city's land area, in the absence of any large habitats of high conservation value. The city, therefore, has to explore various ways to conserve biodiversity and enhance ecosystem services within a limited natural environment.
- A mid- and long- term policies are requested to be devised to manage and restore the remaining major ecosystems and protect important species, and try to promote the public awareness and support for the efforts.
- Inhabitable (or restorable) space within the residential districts such as small lots in parks and neighborhoods need be actively utilized for biodiversity conservation.
- Using social and economic resources from various civic groups, specialized agencies, educational institutes and enterprises in the city, many creative projects could be developed and implemented with the initiatives of citizens.
- Ecosystem services should be managed and expanded to give benefits to citizens' life and welfare by reflecting the biodiversity agenda in other urban planning and management policies.

[Corresponding to the framework of the Biodiversity Strategies and Local Action of the Gyeonggi-do Province]

- A local government's biodiversity policies can be more relevant and powerful by associating the policies with the biodiversity objectives and action plans of the national or provincial governments. Vice versa, local governments can contribute to biodiversity conservation efforts of provinces, central governments and ultimately the international community.
- The strategic objectives of the Gyeonggi-do Provincial Government were reviewed in the process of developing Suwon biodiversity action plan, and the objectives of which relevances to Suwon are high were identified.
- The 2020 Gyeonggi-do provincial biodiversity vision and 6 strategic objectives were indicated as an outcome of the Gyeonggi LAB project, which was conducted by the ICLEI Korea Office in 2014. They have not been officially adopted yet.
- The six strategic objectives are:
 - (1) Establishment of a provincial conservation and management system (6 implementation objectives)
 - (2) Enhancement of awareness and participation of various actors (3 implementation objectives)
 - (3) Conservation and management of urban biodiversity (3 implementation objectives)
 - (4) Reduction in ecosystem degrading elements (2 implementation objectives)

- (5) Improvement and management of ecosystem service values (4 implementation objectives)
- (6) North–South Korean and international cooperation for biodiversity (5 implementation objectives)
- Reviewing the relevant information and implications from the sources above and in discussions and consultations with experts, particularly at a consultation meeting on 19 October and the 2nd workshop on 18 November, 10 actions under the 3 biodiversity objectives for Suwon City have been drawn up as follows:

< Overview of the Suwon Biodiversity Action Plan >

Vision for Suwon biodiversity	A healthy city where history and nature thrive		
Objectives	Actions	Duration	Key actors & partners
<p style="text-align: center;">1</p> <p>Establishing systems and institutions for biodiversity conservation</p>	<p>★1. Enactment of the ordinances on conservation and use of biodiversity of Suwon City</p>	Short term	Suwon City Hall (environmental policy division), Suwon City Council, Suwon Agenda 21
	<p>★2. Establishment and use of a biodiversity database including update of the Suwon' biotope maps</p>	Mid term	Research institutes such as Suwon Research Institute Suwon City Hall (environmental policy and urban planning divisions, etc.)
	<p>3. Strengthening policies and regulations to minimize impacts of development projects on ecosystems</p>	Mid term	Suwon City Hall (environmental policy and urban planning divisions, etc.), Suwon City Council, Relevant experts
	<p>4. Development and use of Suwon CBI for evaluation of biodiversity conservation efforts and awareness raising</p>	Short term	ICLEI Korea Office, Suwon Research Institute, Suwon Agenda 21, Relevant experts
	<p>★5. Development and support of an urban management policies for biodiversity conservation</p>	Short term	Suwon Agenda 21, Local organizations, Residents' associations, Suwon City Hall (parks & landscape, urban planning divisions)
<p style="text-align: center;">2</p> <p>Creating a city that nature and humans are healthy</p>	<p>6. Expansion of rice paddy wetlands and eco-friendly farms for enhancing agricultural biodiversity and ecosystem services</p>	Mid term	Suwon City Hall (life industry and environmental policy divisions), Agricultural Technology Center, Suwon Urban Eco-Farming Network

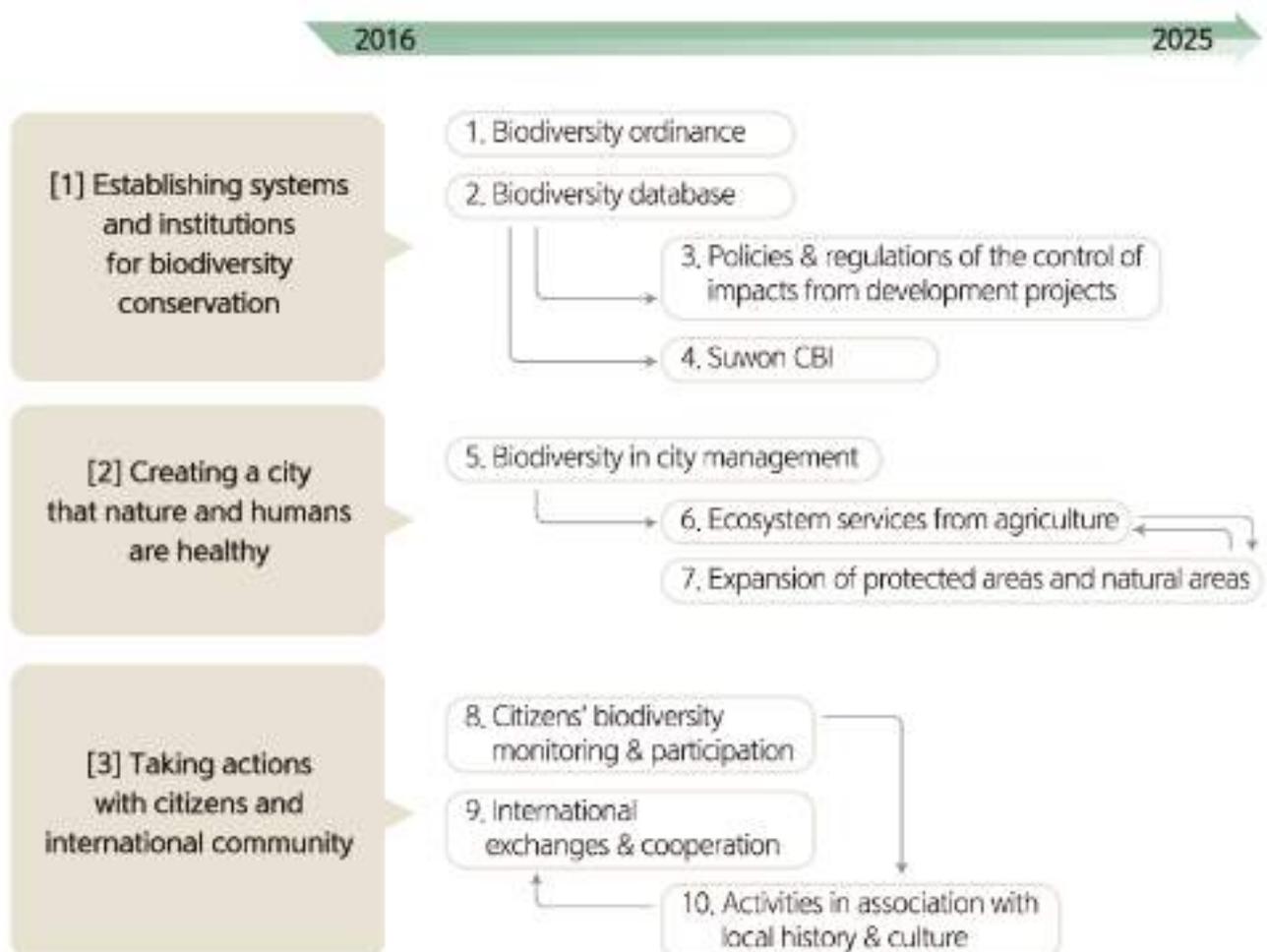
Objectives	Actions	Duration	Key actors & partners
	7. Expansion of protected areas and natural areas for various species habitats and ecological education sites	Long term	Suwon City Hall (environmental policy division), Suwon Research Institute, Regional civic organizations, Gyeonggi-do
3 Taking actions with citizens and international community	*8. Establishment and expansion of a system for biodiversity monitoring and educational programmes based on citizen science	Short term	Suwon Agenda 21, local organizations, Suwon Research Institute, relevant departments at universities in the city
	9. Exchanges and cooperation with international organizations and overseas local governments for capacity building and experience sharing of Suwon	Short term	ICLEI Korea Office, Suwon Agenda 21, local organizations, overseas member cities of ICLEI
	10. Development and implementation of culture and activities on biodiversity conservation in daily lives in association with Suwon's local history and culture	Mid term	Relevant environment, history and cultural organizations and citizens' associations in Suwon

★: Priority actions

- Vision: "A healthy city where history and nature thrive" reflects the city's identity and citizens' pride on the city as a historical city and connects it with natural aspect (biodiversity). It also incorporates many citizens' expectation for the city's future identity, that is, a healthy city, which was identified from the public poll in October 2015.
- Three objectives
 - 1 Establishing systems and institutions for biodiversity conservation: biodiversity conservation and management, governance
 - 2 Creating a city that nature and humans are healthy: enhancement of ecosystem services, biodiversity mainstreaming
 - 3 Taking actions with citizens and international community: citizen participation, local actions, international cooperation
- Ten actions: The duration of each actions (short-, mid- or long- term) and main actors and partners are indicated. Some of actions have been submitted to the Suwon City Government for 2016 project proposals.

2 Project Proposals for Priority Actions

- Out of ten actions above, the four actions (No. 1, 2, 5, and 8) have been selected as priority actions in discussion with the LAB Planning Committee and a responsible department of the Suwon City Hall. Suggestions on how to implement them are provided as project proposals, which can be referred from the separate project report (full version).
- The overview of a roadmap for actions is as follows:
 - In the roadmap, the duration of each actions, priority actions and actions that are closely related each other are indicated.



III. Conclusion

- Suwon has carried out domestic and overseas initiatives for an environmental and sustainable city, such as a priority policy of environmental capital, an active leading role in ICLEI's global network.
- Suwon began the LAB project in 2015 to realize a BiodiverCity, one of the ICLEI's ten agendas, following activities on transportation, energy and climate change agendas.
- Among local authorities in Republic of Korea, Suwon is one of the first cities which take part in the LAB programme along with Ansan City.
- While the Suwon LAB Project is based on the standard format of the LAB pioneer project¹⁾, which consists of 5 steps over the course of 3 years, it had to also adapt to the specific conditions such as project period, project budget and requirements of the local government. As a result, Suwon LAB Project has been implemented in a condensed way, focusing on the rapid biodiversity assessment, creation of local biodiversity network and the drawing up of the biodiversity action plan.
- Key outcomes of the project are summed up as follows:
 - The need of integrating the objectives of many policies and projects that are carried out separately in the areas other than natural environment, such as urban agriculture, parks and greens, rivers, ect. was shared by the relevant local actors. And various measures to achieve it were discussed and suggested.
 - Local actors of civic organizations, administrative officers, researchers and city councilors from different sectors increased their awareness on local biodiversity status, and made a basic foundation for broader participation of citizens.
 - Suwon biodiversity action plan were developed and project proposals of some priority actions were provided, in order to strengthen the biodiversity policy system. Theses will help local biodiversity policies to be more influential by contributing to the Suwon citizens' well-being and quality of life.
 - The Suwon LAB Planning Committee, comprised of public, private and academic actors representatives relating to local biodiversity, discussed, reviewed and operated the activities of the Suwon LAB Project. The committee has been also very effectful in reflecting opinions of other local actors and their participations in the project.

1) Refer to the front cover page of the report.

| Executive Summary |

2015 Suwon LAB Project

Toward a city that history and nature thrive

LAB-KOREA SERIES ② Suwon, Republic of Korea

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