A Proposal from East Asia Low Carbon Growth Partnership Dialogue

- Transformation to Low Carbon Growth -

Ministry of Foreign Affairs of Japan

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- Transformation to Low Carbon Growth (Key Findings) -

Countries participating in the East Asia Summit (EAS) have been in discussion since 2012 — through the East Asia Low Carbon Growth Dialogue— focusing on how to realise low-carbon growth in this region which, as well as being at the centre of the world's growth, also has the largest greenhouse gas (GHG) emissions. The government of Japan here puts forth a proposal based on the three following 'pillars' identified through the Dialogues as keys for realising low-carbon growth.

Directions for realizing low-carbon growth:

1. **Development and Implementation of Each Country's Low Carbon Growth Strategy**

   - Under an overarching basic strategies provided by their national governments, local governments and industrial communities play a main role in the realization of low carbon growth; involve various actors, such as citizens, local business sectors, NGOs, researchers in local universities and research institutes; and develop and implement low-carbon growth plans well-suited for their local characteristics.
   - In order to develop low-carbon growth strategies, it is indispensable that researchers who understand actual conditions of their countries and local areas provide scientific knowledge to policymakers.
   - Strengthening of fostering human resources for developing and implementing low-carbon growth strategies and plans is necessary.

2. **Utilisation of technologies and market mechanisms**

   - In order to effectively promote low-carbon growth, it is important to disseminate appropriate technologies in sectors which possess high potential for reducing GHG emissions.
   - In order to disseminate low-carbon technologies, cooperation with private sectors, which possess excellent technologies, should be strengthened.
   - City-to-city collaboration should be enhanced for technology dissemination and capacity building.
   - In order to promote private investment in low-carbon growth, there needs to be better economic incentives and a stable policy framework, as well as increased maintenance of investment and business environments.
   - Countries need to understand the importance of investment in high-quality infrastructure taking into account environmental and social considerations, as well as bringing in infrastructure that makes full use of low-carbon technologies.

3. **Development of Effective Networks among Various Stakeholders**

   - Global partnerships among all stakeholders, including national and local governments, international organisations, private companies, research institutes and NGOs, will be developed, with stakeholders cooperating and collaborating among themselves.
   - Utilizing existing networks, such as the East Asia Low Carbon Growth Knowledge Platform, should be further activated.
   - Different actors promote sharing knowledge among themselves, and creation of new ideas through resonance of knowledge among the different actors will be enhanced.

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1. Introduction

a. What is the East Asia Low Carbon Growth Partnership Dialogue?

The East Asia Low Carbon Growth Partnership Dialogue is an international conference established in 2011 under the East Asia Summit (EAS) through a Japanese initiative. Since 2012, outputs from this annual Dialogues—in effect ministerial and high-level official meetings–have been reported to the EAS. Past meetings have provided updates on the efforts of participating countries aimed at low carbon growth through government-business-academia cooperation. Good practices and comments on low carbon growth are also shared between participants. The Dialogue has confirmed the following three pillars as directions of cooperation for the EAS toward low carbon growth:

a. Development and Implementation of Each Country's Low Carbon Growth Strategy

b. Utilisation of Technologies and Market Mechanisms

c. Development of Effective Networks among Various Stakeholders

(*) EAS: ASEAN (Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam), Australia, China, India, Japan, New Zealand, Republic of Korea, Russia, United States of America.

b. Purpose of this Proposal

The total CO_2 emissions of the 18 countries participating in the EAS accounted for 63% of global CO_2 emissions as of 2012. As such countries include China, India and ASEAN, which all anticipate strong economic growth into the future, emissions can only increase unless appropriate countermeasures are put into place. Climate change issues can only be effectively tackled if cooperation towards low carbon growth takes place in this region.

So far, many countries and stakeholder in the EAS region have also implemented activities for realising low carbon growth. However, greenhouse gas (GHG) emissions have been increasing year by year. The fifth IPCC Assessment Report states that it is necessary to reduce anthropogenic GHG emission to zero within a few decades to achieve 2℃ target. Therefore, it is required to enhance activities towards low carbon societies under the new international framework expected to be adopted in COP21. Such movements are spreading all over the world. For example, the Lima-Paris Action Agenda (LPAA) was launched at the 20th Conference of the Parties (COP20) under the United Nations Framework Convention on Climate Change (UNFCCC) held in Lima in December, 2014, which registered action commitments from municipalities, regions, business sectors, investors and so on.

The LPAA aims at promoting achievement of the new legally binding agreement to be adopted in COP21 by inviting non-state actors to make action commitments on climate change issues. The LPAA underscored the roles of non-state actors, particularly in the need for cooperation with private business sectors, as they will be the main impetus for technological innovation. In addition, local governments' activities for low carbon growth, come to be key to actually reduce GHG emissions in the future.

In order to accelerate activities for low carbon societies in the EAS region, this proposal reflects results of the East Asia Low Carbon Growth Partnership Dialogue meetings to date, including the three pillars, and additional research on low carbon growth; assembles and analyses good practices and their challenges in the EAS region obtained through the additional research; and proposes suggestions for future improvement and directions for the EAS to proceed, identified by analysing the good practices and challenges.

2. Toward Practical Actions for Realising the Three Pillars

The East Asia Low Carbon Growth Partnership Dialogue has held three meetings (April 2012, May 2013 and October 2014) with participants from governments, including minister-level officials of 18 EAS member countries, and representatives from relevant international organisations. Below gives key aspects and directions for each of the three pillars, based on outputs from the Dialogue to date and results from research in low carbon growth:

a. Development and implementation of each country's low carbon growth strategy
    i. Development and implementation of low carbon growth strategies and plans by public-private partnership among state and non-state actors
    ii. Development of low carbon growth strategies and plans based on scientific knowledge via government-academia cooperation
    iii. Provision of capacity building
b. Utilisation of Technologies and Market Mechanisms
    i. Selection and dissemination of appropriate technologies possessing high reduction potentials and well-suited to local needs
    ii. Enhancement of cooperation with private sectors possessing superior technologies
        - Utilisation of market mechanisms
    iii. City-to-city collaboration for technology dissemination and capacity enhancement
        - Improvement of environment for investment and business through city-to-city collaboration
    iv. Utilisation of economic incentives for technology dissemination
c. Development of effective networks among various stakeholders
    i. Development of and cooperation in global partnerships with a focus on the same actor
    ii. Experience sharing and capacity building through network activities
    iii. Creation of new ideas through resonance of knowledge among different actors

The next section introduces existing concrete good practices relevant to the elements and directions mentioned above.

3. Practical Actions for Realising the Three Pillars:
a. Development and Implementation of Each Country's Low Carbon Growth Strategy

With respect to the first pillar "development and implementation of each country's low carbon growth strategy", the following point became clear through the East Asia Low Carbon Growth Dialogue:

- Importance of individual countries in developing and implementing their own low carbon growth strategies; specifically, via mobilising finance, human and intellectual resources to aid such developing countries

As shown by the progress in INDCs* and NAMAs**, EAS member countries, regardless of developmental level, have developed and implemented low carbon strategies and policies.

On the other hand, as measures for addressing global warming, not only activities by national government but also those by non-state actors are important. To that end, it comes to be necessary that the non-state actors develop and implement their own detailed plans for low carbon growth well-suited to their local characteristics and industrial structures.

Based on the points mentioned above, this section introduces good practices along the following lines:

i. Development and implementation of low carbon growth strategies and plans through cooperation among nations and non-state actors
ii. Development of low carbon growth strategies and plans based on scientific knowledge via government-academia cooperation
iii. Provision of capacity building

* Intended Nationally Determined Contribution (INDC) was defined by Decision 1/CP.19 to invite all Parties to outline what post-2020 climate actions they intend to take under a new international agreement to be adopted in COP21.

** Nationally Appropriate Mitigation Actions (NAMAs) by developing country Parties were defined by Decision 2/CP.18 to invite the developing country Parties to take any actions that reduce emissions in developing countries and are prepared under the umbrella of a national governmental initiative.

i. Development and implementation of low carbon growth strategies and plans through cooperation among nations and non-state actors

By 2050, three quarter of the world population is expected to live in urban areas, and importance of activities in urban and municipal areas for realising low carbon growth is increasing. In order to realise successful low carbon growth over the long term, it is necessary that local governments and industrial communities play a main role in the realization of low carbon growth under an overarching basic strategies provided by their national governments; involve various actors, such as citizens, local business sectors, NGOs, researchers in local universities and research institutes; and develop and implement low-carbon growth plans well-suited for their local characteristics.

Strength of municipal governments is that they can develop and implement strategies and plans well-suited to local needs and contexts, in a community-based manner. They can also better communicate, via various administrative services, with their local citizens, thus can involve various local actors, such as citizens local business sectors, NGOs, and researchers in local universities and research institutes, and implement low carbon growth plans as solutions to problems in their home towns. Kitakyushu city is a good example of successful multi-actor involvement and problem resolution in this regard.

The heavy chemical industry that developed in Kitakyushu city—one of the top 4 industrial areas in Japan—formed part of Japan's industrialisation and modernisation after the WWII and led to high economic growth. One of its outcomes, however, was pollution, which peaked in the 1960s. In this era, no effective legal measures for addressing pollution existed. Under this circumstances, many pollution sources postponed solving the problems in order to save costs for pollution prevention. However, in Kitakyushu city, the local government, citizens, private companies, researchers actively tackled the pollution problems in an integrated manner in order to solve the problems. The multi-actor cooperation for addressing pollution control achieved environmental restoration in the 1980s, and Kitakyushu returned blue skies and seas. In addition, through the multi-actor activities, a relationship of trust was fostered among citizens, private companies, local government, and researchers. Afterwards, such multi-actor cooperation has continued in the same vein ever since in Kitakyushu, with activities now focused on the 3Rs (reduce, reuse and recycle) and low carbon city development.

When pursuing low carbon growth, it is important to understand "local-specific needs and situations" and to develop detailed plans well-suited thereto. This is because local needs and situations in urban and rural areas substantially differ. For example, enhancing energy efficiency for large-scale commercial buildings and public transportation systems is effective in advancing low carbon growth in urban areas, while utilisation of biomass energy, reduction of methane emissions from paddy fields, and bolstering the function of forest sinks are suitable for rural areas.

In addition, industrial communities are also indispensable for realising low carbon growth. It is also effective for large-scale industry sectors, such as energy, to develop core low carbon growth strategies that all within the sector adhere to; and likewise, for each company to develop its own concrete plans according to the specific strategy of its sector. Effective promotion of low carbon growth can be expected if the technologies and know-how designed for low carbon growth are shared within the industrial communities.

In this section, the following three practices are introduced as good practices to which every country can refer for its domestic measures:

（1） Low Carbon City Development Plans under the Low Carbon City Act

（2） Local Initiatives on Climate Change Adaptation-Mitigation

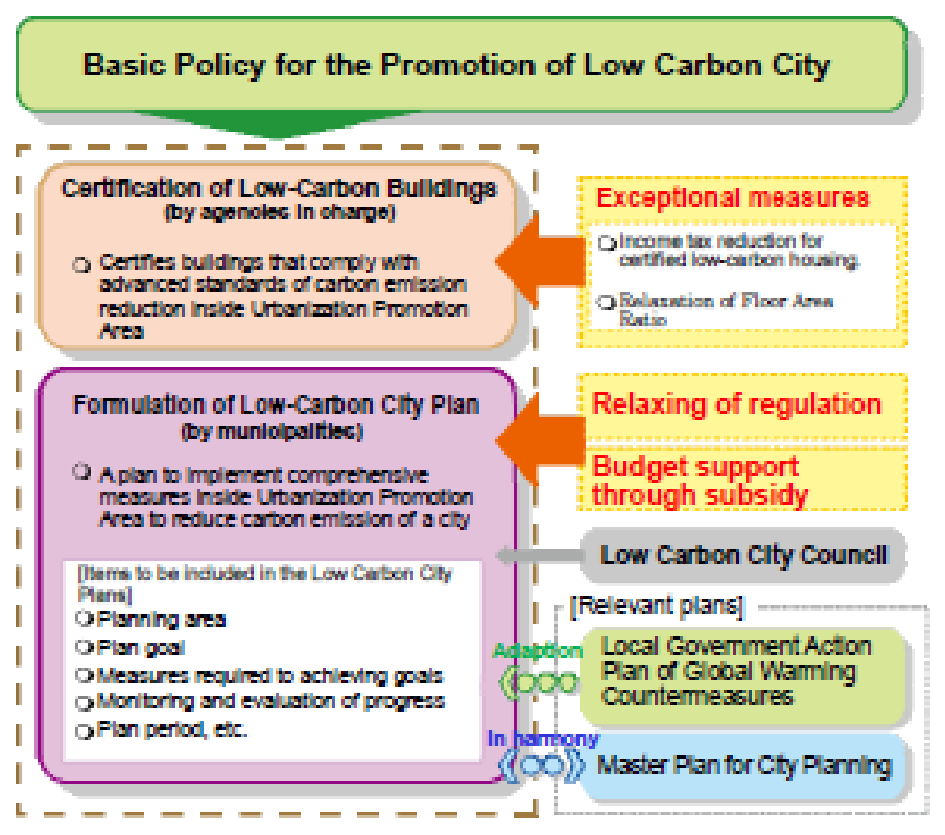
（3） Commitment to a Low Carbon Society by Industrial Associations

Development of Low Carbon Growth Strategies (1): <Japan> Low Carbon City Development Plans under the Low Carbon City Act

In order to deal with the increasingly severe problem of global warming, declines in the domestic population and birth rate, growing proportion of the elderly as well as rising costs of local administration, it is necessary to develop cities as more compact and enhance public awareness on environmental issues. Given such context, the Low Carbon City Act is legislation aimed at allowing municipal governments to introduce new concepts, such as eco-friendly lifestyles and livable community well-suited for the situation with fewer children and an aging society into city development, as well as tackle compact city development along with citizens and private business sectors. Under this legislation, municipal governments will be subjected to relaxed regulations and will receive budgetary support via subsidies upon developing Low-Carbon City Plans. They can also expect increased private investment within their borders.

There are three salient features of Low-Carbon City Plans:

- New initiative—integrates city planning and public transport policies, enabling streamlined execution of comprehensive measures
- New cooperative framework—encourages more input from private sector and citizens, with support from municipalities
- Flexibly adaptable to cities according to size and population



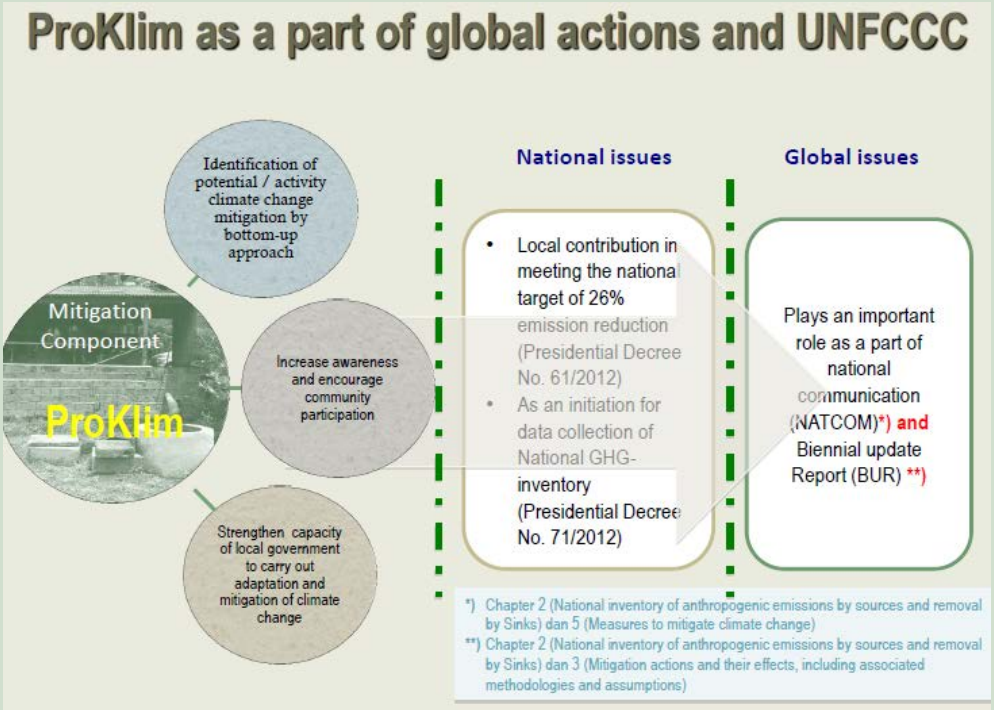
Source: http://www.mlit.go.jp/common/001048781.pdf
http://www.mlit.go.jp/toshi/city_plan/eco-city.html

Development of Low Carbon Growth Strategies (2): <Indonesia> Local Initiatives on Climate Change Adaptation-Mitigation (ProKlim)

ProKlim is a certificated programme initiated by the Government of Indonesia to increase the participation of local communities in implementing actions in the field of climate change mitigation and adaptation—specifically, those that contribute to attaining the national greenhouse gas reduction target and raising community resilience to climate change impacts.

Under this initiative, the Government of Indonesia sets the criteria for climate change mitigation and adaptation activities and respective local communities develop and implement mitigation and adaptation measures in response. Communities judged as successful by the government are certified as a Climate Village (*Kampung Iklim*) and receive a token reward. This programme is designed to raise local awareness of climate change issues and encourage local implementation of mitigation and adaptation measures.

Between 2012 and 2014, the Government of Indonesia received 412 Climate Village nominations, 322 of which were successful. The certified communities also receive favourable treatment from other institutions and obtain technical guidance on financing.



Source: http://www-gio.nies.go.jp/wgia/wg13/pdf/0_2_Opening_K.pdf
http://lcs-rnet.org/pdf/lcs_rnet_presentations/6th/P2.D-2_Suryanti.pdf
http://202.124.205.40/proklim/ (Indonesian)

Development of Low Carbon Growth Strategies (3): <Japan> Keidanren's Commitment to a Low Carbon Society

The Japan Business Federation (Keidanren), a comprehensive economic organisation, was established to draw upon the vitality of corporations, individuals and local communities in support of corporate activities contributing to the self-sustaining development of Japan's economy, as well as improvements in the quality of life for its population. It is comprised of 1,329 representative companies of Japan, 109 nationwide industrial associations and 47 regional economic organisations (as of June 2, 2015).

Keidanren implemented a "Keidanren Action Plan on the Environment" from June 1997, before the Kyoto Protocol was adopted in COP3, in order to promote independently-minded and proactive efforts against global warming. As a result, over the Kyoto Protocol's first commitment period (FY2008 to FY2012), 34 business types in industry and energy conversion sectors among 61 business types participating in the Plan produced a significant result that they achieved 12.1% reduction of CO_2 emissions compared to FY1990 levels (the 34 business types accounted for 44.3% of Japan's total CO_2 emissions in FY1990).

In order to promote global and long-term measures for addressing global warming continuously after the first commitment period of the Kyoto Protocol, Keidanren launched a "Commitment to a Low Carbon Society" developed from the Keidanren Action Plan on the Environment, and has promoted the following activities under this Commitment:

(1) Establish CO_2 reduction targets for domestic business operations for the year 2020,
(2) Strengthen co-operation with consumers, customers, and other interested groups (contribution by products),
(3) Contribute at the international level, including in the promotion of technology transfers to developing countries,
(4) Develop innovative technologies.

In the process of implementing efforts in line with the four points mentioned above, Keidanren also implements a Plan-Do-Check-Act-cycle (PDCA cycle) consisting of:

- Plan: establish goals for the Commitment
- Do: implement activities for achieving the goals
- Check: follow up on progress of the activities
- Act: provide feedback to top executives and employees of companies participating in the Commitment

When implementing the PDCA cycle, Keidanren undergoes assessment by a third-party committee to enhance transparency and reliability.

Source: http://www.keidanren.or.jp/en/policy/2014/107.html

ii. Development of low carbon growth strategies and plans based on scientific knowledge via government-academia cooperation

Low carbon growth strategies and plans need to be developed based on scientific knowledge so that they can actually contribute to reduce GHG emissions and increase CO_2 removals. This means that we need to estimate emissions and removals scientifically, analyse future trends, and develop policy systems for realising low carbon societies based on such.

Policymakers need to incorporate information provided by researchers familiar with the actual conditions in the countries and localities concerned to develop policies for low carbon societies.

This section introduces good practices for developing local-government-level low carbon growth strategies in the cities of Iskandar and Putrajaya in Malaysia, and for designing low carbon promotion support systems for the cities of Bogor and Bandung in Indonesia. The support systems of Bogor and Bandung reflect local characteristics, obtained via the GHG emission monitoring systems in the two cities.

Development of Low Carbon Growth Strategies (4):
<Malaysia> Creating a scenario for future local-government-level low carbon growth strategies in Iskandar

Iskandar Development Area is a special economic zone located in Johor Bahru, north of Singapore, and is Malaysia's second largest financial centre. The project, delivered by SATREPS (Science and Technology Research Partnership for Sustainable Development) under the Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST), is implemented in Iskandar by Universiti Teknologi Malaysia (UTM), Iskandar Regional Development Authority (IRDA), Kyoto University, Okayama University and National Institute for Environmental Studies (NIES), and tasked with preparing a scenario vision for developing future local-government-level low carbon growth strategies in Iskandar. Scenario development made use of the Asia-Pacific Integrated Model (AIM), which resulted in a blueprint and action plan for realising low carbon society as a policy roadmap. The blueprint and action plan were officially accepted and are currently being implemented in Iskandar. One output from the project—an education programme on low carbon elementary schools—was selected as a Regional Centre of Expertise on Environmentally Sustainable Development (RCE), promoted by the United Nations University.

Source: http://www.jst.go.jp/global/english/kadai/h2204_malaysia.html
http://www.env.go.jp/earth/coop/eco-csrjapan/en/dr-ho.html
http://www.utm.my/partners/satreps-lcs/

Development of Low Carbon Growth Strategies (5):
<Malaysia> Preparation of a scenario for a future vision for developing local-government-level low carbon growth strategies in Putrajaya

Putrajaya city, in cooperation with UTM, Kyoto University, Okayama University and NIES, developed a plan named "Putrajaya Green City 2025", designed to reduce the 2025 GHG emissions by 60% compared with the Business as Usual emission level. As an implementing activity, Putrajaya established the Green City Unit and assigned a staff to run it. Putrajaya compiles GHG inventories every year and updates its system for monitoring GHG emissions and removals. In cooperation with Tokyo Metropolitan Government it has also developed a system for reporting GHG emissions and energy consumption on a city-building level, via use of the Tokyo Carbon Reduction Reporting Programme for small and medium-sized facilities. By referring to the Tokyo's system for reporting energy consumptions and GHG emissions from each building in Tokyo, which is a foundation for reduction in overall GHG emission and Tokyo Cap-and-Trade Program on GHG emissions, Putrajaya instigated development of the reporting system by modifying the Tokyo model to fit Putrajaya's local characteristics.

Source: http://2050.nies.go.jp/LCS/eng/asia_city.html
https://www.nies.go.jp/event/cop/cop20/sideevents/20141209-e.html

Development of Low Carbon Growth Strategies (6):
<Bogor, Bandung, Indonesia> Advancement of low-carbon technologies, including measurement, reporting and verification (MRV), in Indonesia to promote the Joint Crediting Mechanism (JCM)

This project selects test areas for leading area-wide low carbon societies, sets systems for monitoring GHG emissions in the areas, and develops and proposes low carbon promotion support systems well-suited to the local characteristics. It has also actually introduced such support systems into the areas, used them to select appropriate low carbon technologies for the localities, and promoted introduction of the selected technologies. A further aim of the project is to develop an MRV method for monitoring and verifying, via the GOSAT-2 satellite, the GHG emissions reductions effect of the introduced technologies. Bogor and Bandung were selected as the test areas for implementing the activities mentioned above.

Source: http://lcs-rnet.org/pdf/locarnet_meetings/2015/4th_annual%20meeting/day2/BS6-5.pdf

iii. Provision of Capacity Building

It is important that municipal governments develop and implement low carbon growth plans; however, not all municipal governments possess capacities sufficient to develop and implement such plans. In such a case, utilizing capacity building through international cooperation is effective. This sub-section introduces two good practices for such capacity building.

Development of Low Carbon Growth Strategies (6):
<Viet Nam> Project to support the planning and implementation of NAMA in a MRV manner

This project is implemented by JICA in order to enhance capacities of state and non-state actors in charge of NAMA development and implementation in Viet Nam.

It is characterised in that it covers the whole range of support—from upstream policymaking and legislation relevant to mitigation at the national government level to actual implementation of NAMA and mitigation measures—as well as development and implementation of MRV systems in major directly controlled cities, which are the main actors in actual implementation.

The project is anticipated to develop the following measures as its concrete outputs.

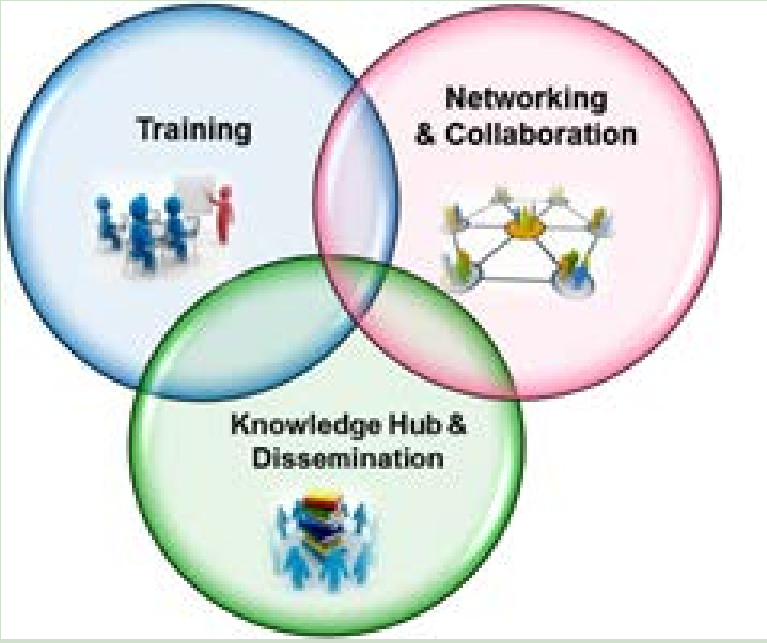
National Level	Municipal Level (Ho Chi Minh City)
Roadmap for minimising GHG emissions	Modalities of MRV at policy and project levels
National MRV policy	Guidelines and textbooks for municipal MRV
Guidelines for operating a national NAMA registry (platform for registering information on domestic projects)	Municipal GHG inventories

Source:
http://gwweb.jica.go.jp/km/ProjectView.nsf/4f3700b697729bb649256bf300087d02/345e8f282f75725149257d020079deba?OpenDocument (Japanese)

Development of Low Carbon Growth Strategies (7): <Thailand> Climate Change International Technical and Training Centre (CITC) (South-south cooperation)

The Climate Change International Technical and Training Centre (CITC), which was established in 2014 by the Thailand Greenhouse Gas Management Organisation (TGO) with JICA technical cooperation, provides training for climate change issues. It plans to provide various services related to capacity building for climate change to stakeholders (national governments, local governments, private sectors and so on) not only in Thailand but also in other ASEAN countries. Concrete activities provided by CITC are as follows:

(1) Training for climate change
(2) Networking and cooperation for climate change
(3) Development of knowledge hub and dissemination of information on climate change



Within one year since its establishment, CITC had trained over 530 personnel from Thai national and local governments, via nine training courses. Training courses tailored to the local characteristics of other ASEAN countries are also under development, which involves interviews and convening workshops on training needs assessments with the countries concerned. These courses are slated to be available from 2016. CITC aims to expand its activities to include acting as a platform for exchanging information and opinions among regional climate change training centers and relevant stakeholders.

Source: http://citc.in.th/index.php/en/about-citc-menu-en

As mentioned in the good practices described above, development and implementation of low carbon growth strategies in each country have started, and capacity building activities for the development and implementation have also implemented. However, challenges still remain as mentioned below.

- Strengthening of fostering human resources for developing and implementing low carbon growth strategies and plans

Municipal governments have just started developing and implementing low carbon growth strategies and plans. However, human resources capable of developing and implementing such strategies and plans are in short supply in local governments. Especially, in developing countries, such human resources lack in both national and municipal governments. This means that external experts are often called in, which in some cases can lead to knowledge and know-how linked to strategy development and implementation accumulating outside the countries concerned, as well as dependency on such external experts over time. Therefore, fostering human resources is necessary in developing countries so that the countries can address low carbon growth autonomously in each country or region.

3. Practical Actions for Realizing the Three Pillars:
b. Utilisation of Technologies and Market Mechanisms

With respect to the second pillar “utilisation of technologies and market mechanisms”, the following point became clear through the East Asia Low Carbon Growth Dialogue:

- Technologies: In order to realise low carbon growth, dissemination of low carbon technologies in the EAS region is indispensable—and especially in sectors with high GHG emissions reducing potential, where selection of appropriate technology is vital.
- Dissemination of technologies: cooperation between national and local governments and, in particular, between governments and private sectors, as the latter possess the superior technologies key to reducing GHG emissions, needs to be strengthened. We also need to mobilise every available policy tool, including market mechanisms, as tools for promoting dissemination of low carbon technologies.
- Public-private cooperation for technology dissemination: To realise low carbon growth, perspectives of private sectors are important. Economic incentives and stable policy frameworks are also necessary for promoting private investment. Disseminating effective low carbon technologies, attracting investment and improving the business environment in the EAS region requires enhanced public-private cooperation.

Based on the points mentioned above, this section introduces good practices on the following points:

i. Selection and dissemination of appropriate technologies possessing high reduction potentials and well-suited to local needs

ii. Enhancement of cooperation with private sectors possessing superior technologies
   - Utilisation of market mechanisms

iii. City-to-city collaboration for technology dissemination and capacity enhancement
   - Improvement of environment for investment and business through city-to-city collaboration

iv. Utilization of economic incentive for technology dissemination

i. Selection and dissemination of appropriate technologies possessing high reduction potentials and well-suited to local needs

With respect to the transfer of actual technologies between companies, it is necessary to transfer appropriate technologies well-suited to the needs of each local company or industrial community. To that end, we need to select low carbon technologies well-suited to local needs from existing technologies. An example of a good practice for such selection is the Japan Iron and Steel Federation, described below.

Preparation of lists on appropriate technologies: <Japan>

- **Public and Private Collaborative Meeting between Indian and Japanese Iron and Steel Industry**
- **ASEAN-Japan Steel Initiative**

The Japan Iron and Steel Federation (JISF) is a nationwide representative body for the Japanese steel industry, and consists of Japan's major iron and steel producers, trading companies and organisations engaged in steel distribution. The JISF, in cooperation with the Ministry of Economy, Trade and Industry of Japan, established public-private cooperation networks with India and ASEAN countries to enhance GHG emission reduction and energy efficiency in the iron and steel industry. Through these networks, the JISF selects appropriate steel technologies well-suited to local needs of India and ASEAN countries from the Japanese steel technologies and provide information on the selected appropriate technologies. Based on these activities, the JISF has prepared "Technologies Customized Lists" which include information on suitable environmental and energy-efficient steel technologies for each country.

Source: http://www.jisf.or.jp/en/activity/climate/Technologies/index.html

ii. Enhancement of cooperation with private sectors possessing superior technologies

In order to realise low carbon growth, dissemination of low carbon technologies is indispensable, and private sectors possessing superior low carbon technologies take an important role for the dissemination. National governments are required to mobilise all available policy tools, including market mechanisms, as well as an improved environment for investment and business.

As a good example of utilising market mechanisms, this sub-section introduces the Joint Marketing Mechanism in the next page.

Utilisation of market mechanisms: Joint Crediting Mechanism (JCM)

Basic concept of the Joint Crediting Mechanism (JCM)

(1) Facilitating diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
(2) Appropriately evaluating contributions from Japan to GHG emission reductions or removals in a quantitative manner and use them to achieve Japan's emission reduction target.
(3) Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals.

Japan establishes and implements the JCM in order both to appropriately evaluate contributions from Japan to GHG emission reductions or removals in a quantitative manner achieved through the diffusion of low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions in developing countries, and to use them to achieve Japan's emission reduction target.

As of November 2015, Japan has started the JCM with 16 partner countries (Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar and Thailand).

Seven projects with assumed issuance of credits have been implemented.

Source: https://www.jcm.go.jp/
http://www.mmechanisms.org/e/initiatives/jcm.html
http://www.mmechanisms.org/document/20150929_JCM_goj_e_rev.pdf

iii. City-to-city collaboration for technology dissemination and capacity enhancement

The role of municipal governments in realising low carbon growth will increase, which means the accumulated experiences and know-how for formulating low carbon societies from all municipalities are of significant importance. Sharing such knowledge via city-to-city collaboration is an effective way for enhancing capacities of municipal governments themselves. As a good practice therefore, this subsection introduces feasibility studies for large-scale JCM project development.

City-to-city collaboration for technology dissemination and capacity enhancement: <Japan> Feasibility studies for large scale JCM project development

These feasibility studies, supported by the Ministry of the Environment of Japan, aim at "whole-city decarbonisation" through formulating projects expected to promote spatial deployment and ongoing reductions in energy-oriented CO_2 emissions in various municipality sectors via the JCM. The studies are implemented based on city-to-city collaboration between Japanese municipal governments, which possess experience and know-how on formulation of low carbon societies, and the municipal governments of the host countries.

Under the feasibility studies, Japanese municipal governments, in cooperation with research institutes, private companies and universities, tweak their superior low carbon technologies and administrative systems for disseminating the technologies in accordance with local characteristics of each host country's municipality, and provide support for the host countries' municipal governments to establish systems for operating and maintaining the administrative systems for disseminating the technologies. The city-to-city collaboration supports feasibility studies capable to cover various low carbon growth activities as a package in each municipality, to promote spatial deployment of low carbon technologies.

Through these feasibility studies, municipal governments, research institutes and universities and private companies perform each role as part of mutual cooperation. Concretely speaking, municipal governments provide the knowledge on municipal administration systems for formulating low carbon cities; research institutes and universities support selection of specific low carbon technologies necessary for each municipality based on scientific knowledge; and private companies cooperate to disseminate the actual technologies. A list of concrete feasibility studies are shown in the next page. For further information on the feasibility studies, see Annex in this proposal.

Source: http://www.env.go.jp/earth/coop/lowcarbon-asia/english/project/data/jcm_pamphlet_02.pdf
http://www.env.go.jp/earth/coop/lowcarbon-asia/english/project/index.html
http://www.iges.or.jp/isap/2014/PDF/pl11/pl11_04_kino.pdf

- List of the feasibility studies for large scale JCM project development

Municipalities in charge		Name of feasibility studies for the city-to-city collaboration
Cambodia		
Siem Reap	Kanagawa	Project for developing low-carbon tourism cities through the Joint Crediting Mechanism in Siem Reap
India		
Bengaluru	Yokohama (Y-PORT Center)	Promotion of low carbon city by properly developing material recycling systems in Bengaluru City
Indonesia		
Batam	Yokohama (Y-PORT Center)	Project for developing JCM projects under city-to-city collaboration between Yokohama city and Batam city
Bandung	Kawasaki	Project for low carbon society development under collaboration between Bandung City and City of Kawasaki
Surabaya and East Java	Kitakyushu (Kitakyushu Asian Center for Low Carbon Society)	Establishment of base for low-carbon project expansion in Surabaya
Lao PDR		
Vientiane	Kyoto	Programme for the establishment of low-carbon historic city in Vientiane, based on city-to-city cooperation between Vientiane Capital and Kyoto City
Malaysia		
Iskandar (Pasig Dunn)	Kitakyushu (Kitakyushu Asian Center for Low Carbon Society)	Establishment of base for low-carbon project expansion in Iskandar
Myanmar		
Pathein	Fukushima	Study for building a sustainable low carbon city around the industrial zone in Pathein City
Yangon	Kawasaki	JCM project formulation study through city-to-city collaboration in Yangon
Thailand		
Bangkok	Yokohama (Y-PORT Center)	JCM projects development (energy efficiency, and waste and waste water) under the Bangkok Master Plan on Climate Change, and study on financial and other facilitation schemes for introducing low carbon technologies
Rayong	Kitakyushu (Kitakyushu Asian Center for Low Carbon Society)	Promotion of decarbonizing of municipal waste management and ecological industrial town in Rayong Prefecture
Viet Nam		
Da Nang	Yokohama (Y-PORT Center)	JCM Feasibility Study in Da Nang through "Technical Cooperation for Sustainable Urban Development" with Yokohama City
Hai Phong	Kitakyushu (Kitakyushu Asian Center for Low Carbon Society)	The whole city low carbonization in Hai Phong City
Ho Chi Minh	Osaka	Ho Chi Minh City – Osaka City cooperation programme for developing low carbon city

In order to induce private investment to contribute to low carbon growth, national and local governments need to improve the environment for investment and business. To do this, one of the methods is that municipalities develop a master plan for formulating a low carbon city, including policies for improving the environment for investment and business; implement such policies according to the master plan; and formulate a basis for promoting private investment. Below we provide a good example of city-to-city collaboration briefly introduced in the previous subsection, which involves Bangkok Metropolitan Administration and Yokohama city.

Improvement of Environment for Investment and Business:
<Bangkok Metropolitan Area, Thailand> Project for Bangkok Master Plan on Climate Change 2013-2023

The Bangkok Metropolitan Administration (BMA) has been proactive in reducing GHG emissions and is an advanced municipal government with its own action plan for coping with climate change. BMA aimed at reducing its GHG emissions by at least 15% compared to business as usual projections in 2012, developed its Action Plan on Global Warming Mitigation 2007–2012 in cooperation with JICA and Yokohama city, and implemented measures in five sectors: (1) expansion of mass transportation systems, (2) promotion of energy saving and renewable energy utilisation, (3) increased energy saving and efficiency of buildings, (4) enhancement of efficiency in waste management and sewage disposal, and (5) enhancement of urban greening. BMA evaluated the Action Plan and further developed a comprehensive long term master plan covering 2013 to 2023 (“Master Plan” hereafter), which includes adaptation in addition to the five sectors, in ongoing cooperation with JICA and Yokohama city.

JICA, in cooperation with Yokohama city, provided a project for enhancing BMA’s capacities in order for it to institute a plan consistent with the national-level policies in sectors subject to the Master Plan, develop a cooperative relationship with relevant non-BMA organisations, and implement the Master Plan.

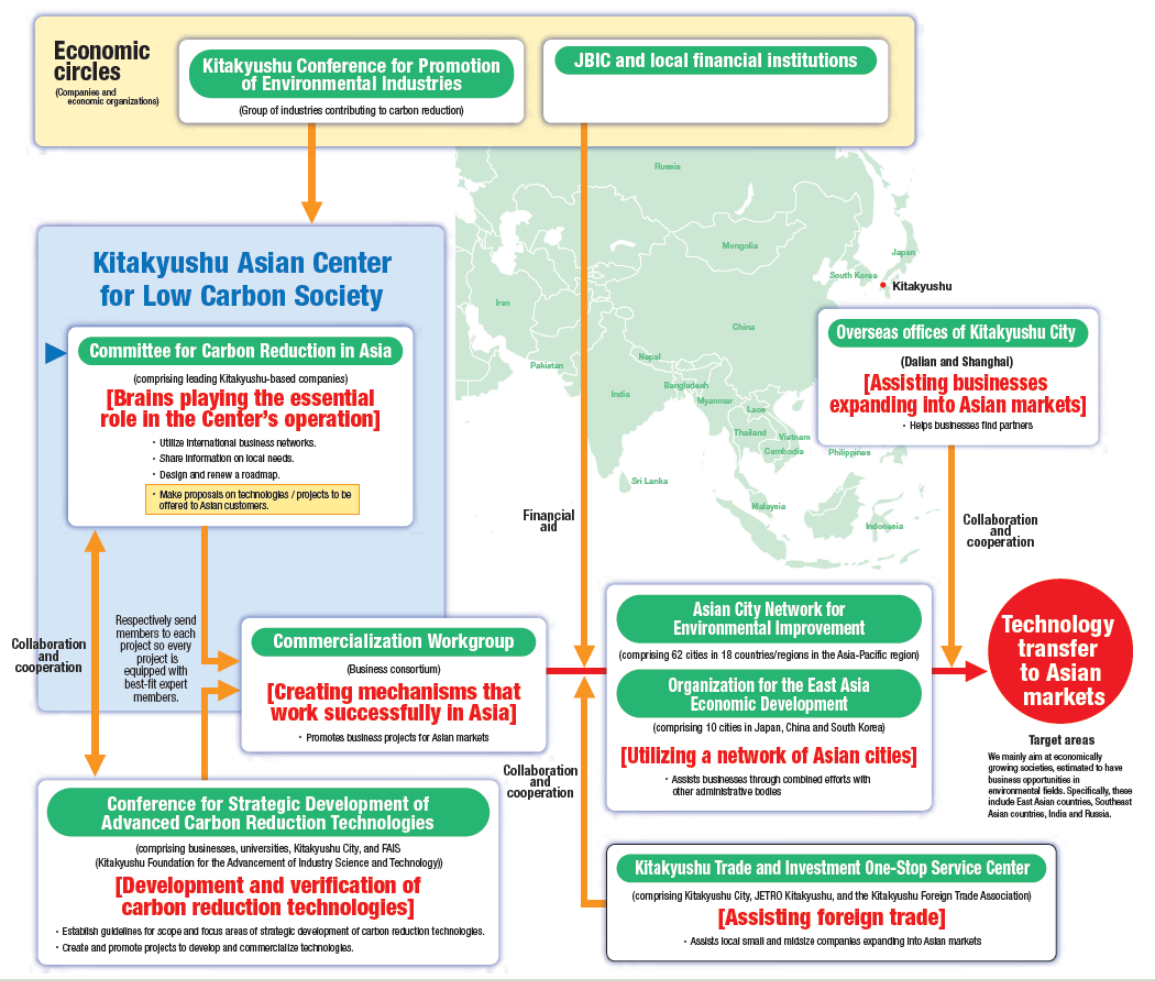
Moreover, Bangkok and Yokohama have concluded a memorandum of understanding for mutual cooperation in developing an environmentally sustainable city. Presently, Yokohama has taken steps to provide actual technologies under the Master Plan. For example, Yokohama supports resolution of urban problems in emerging countries and overseas expansion of Japanese companies through the Yokohama Partnership of Resources and Technologies (Y-PORT). Through the activities of Y-PORT, in cooperation with the JCM provided by the Government of Japan, Yokohama implements business matching activities between Thai companies and Japanese companies, the latter of which possess advanced technologies for energy saving, waste management and sewage disposal needed by BMA to implement its Master Plan.

Source: http://www.jica.go.jp/project/english/thailand/016/outline/index.html
http://www.city.yokohama.lg.jp/kokusai/yport/pdf/2014ydayzip/2014ydaya3-jica2.pdf

Some companies—specifically, small and medium-sized enterprises—possess superior low carbon technologies but have little experience in globalising their business activities, i.e., sharing their technology. In order to enhance the dissemination of such technology worldwide, an effective method is for municipal organisations to support such companies through international cooperation. This section explains some good practices in this regard.

Assisting companies with little experience in international deployment (1): <Kitakyushu city, Japan> Kitakyushu Asian Center for Low Carbon Society

In order to consolidate the environmental technologies of Kitakyushu, and more broadly those of Japan, as well as promote low-carbonisation in Asia by means of environmental business, Kitakyushu city established the Kitakyushu Asian Center for Low Carbon Society. Using the Center, the city establishes wide-ranging business models for technological transfer—from customised technology packages to financial services—and supports private companies in exporting low carbon technologies.



Source: http://asiangreencamp.net/eng/
http://asiangreencamp.net/eng/func1.html

Assisting companies with little experience in international deployment (2): <Yokohama city, Japan> Yokohama Y-PORT Center

The Y-PORT Project is a one based on public-private partnership, using Yokohama's resources and technologies, and aimed at international technical cooperation. In emerging countries in Asia as well as elsewhere, urban development issues have occurred, including rising GHG emissions. The Y-PORT Project is designed to address these issues and strengthen partnerships in order to promote international technical cooperation. This cooperation utilises the know-how related to the environmental technologies of Yokohama's private enterprises as well as the city's urban development to date.

Activities carried out by the Y-PORT Center are as follows:

(1) Formulating the market for environmental technologies through institutional development in emerging economies

Support in formulating master plans for cities in collaboration with international aid agencies and developing valid regulations and human resources in cities by utilising Yokohama's past experiences in urban development

(2) Creating smart urban solutions through co-creation among cities and private firms

Proposing "best available solutions" for cities through "co-creation" among cities, international agencies, private firms and partner cities

(3) Ascertaining emerging urban needs and providing information for technical development and assistance

Providing support for institutional arrangements through assisting in development of partner city master plans, ascertaining the needs of the cities, providing local information on the cities to private companies and support in matching-up appropriate private company technology and local needs in the partner cities

(4) Introducing privately owned technology to cities in emerging economies

Introducing the technologies owned by private firms in Yokohama to cities in emerging economies through Y-PORT co-creation workshops, joint city visits, surveys and other workshops, and establishing a showcase for urban smart solutions in collaboration with private firms

(5) Establishing Yokohama as a city valued for urban solutions and contributions to global society

Raising the profile of the "Yokohama" brand as an environmental city through ongoing information dissemination, accruing awards for cities and strengthening city-to-city networks via the Asia Smart City Conference

Source: http://www.city.yokohama.lg.jp/kokusai/yport/en/about/yportcenter.html

iv. Utilisation of economic incentive for technology dissemination

The right technologies must be disseminated in order to enable low carbon growth. Specifically for Asia, the extent to the low carbon growth that can be achieved in the next few decades—and by extension the degree by which we can reduce GHG emissions—will depend on whether investment in technology can match the pace of rapid economic development. Therefore, we need to imagine the state two decades into the future in order to plan today how to use economic incentives and investment in advanced low carbon technologies.

A good way to speed up penetration of suitable low carbon technologies is to comprehensively review the low carbon growth strategies and plans of each country, identify technology areas for funding and then inject funds into such areas. The Support Programme to Respond to Climate Change (SPRCC) in Viet Nam is an example of a good practice in this regard, and is introduced further below.

Promoting dissemination will also need the support of a financial system, to enable investment in low carbon technologies. An example of a financial good practice is the Global action for Reconciling Economic growth and Environmental preservation (GREEN), introduced in this section.

However, investing in high cost, advanced low carbon technologies can be prohibitively expensive. In order to overcome this financial barrier, economic incentives are necessary, and an example of a good practice in this regard is the support programme for JCM projects enabling “leapfrog” development (ADB fund).

Utilisation of economic incentives for technology dissemination (1): <Japan, France, Australia, Canada, Republic of Korea and World Bank> Support Programme to Respond to Climate Change (SPRCC) in Viet Nam

Programme loans are intended for policy development related to improving and promoting policies and institutional arrangements based on recipient country economic and social development plans, while project loans support actual projects, such as power plant construction and port improvement.

SPRCC, as a programme loan, supports the Ministry of Finance of Viet Nam in promoting the country’s climate change response measures and is based on the National Target Programme to Respond to Climate Change (NTP-RCC), co-funded by Japan International Cooperation Agency (JICA), Agence Française de Développement (AFD), World Bank, Australian Agency for International Development (AusAID), Canadian International Development Agency (CIDA) and Export-Import Bank of Korea. In the SPRCC process, donor agencies implement policy dialogues with the government of Viet Nam on the country’s climate change policies, set concrete policy actions, monitor the state policy action of implementation and provide funds.

Source:
http://www.afd.fr/lang/en/home/pays/asie/geo-asie/afd-vietnam/cac-du-an-cua-afd-tai-viet-nam/energie-et-climat-1/support-programme-to-respond-to-climate-change-in-vietnam-sprcc
http://www.mmechanisms.org/document/cop18_sideevent/121126_presentation3_monre2.pdf

Utilisation of economic incentives for technology dissemination (2): <Japan> Global Action for Reconciling Economic Growth and Environmental Preservation (GREEN)

Since March 2010, the Japan Bank for International Cooperation (JBIC) has expanded its support for projects undertaken in developing countries that demonstrate favorable impact on preserving the global environment, such as in the development of photovoltaic generation facilities and highly energy-efficient power plants that rely on advanced environmental technologies, as well as installation of energy-saving equipment. In other words, it supports projects that will drastically reduce GHG emissions by focusing on the effects of environmental conservation. JBIC does this by mobilising private funds with loan, investment and guarantee functions—part of the process of which involves consideration given to disseminating advanced Japanese technologies, which are highly regarded worldwide (Global Action for Reconciling Economic Growth and Environmental Preservation [GREEN]).

Projects subject to GREEN need to fulfill the following two conditions:

(1) Favorable impact on preservation of the global environment, such as a significant reduction in GHG emissions

(2) Measurable impact (via measuring by the project proponent (Measurement)), as well as reporting thereof (Reporting)—allowing JBIC or a JBIC-retained third party entity to verify the results (Verification).

When providing loans, investments and guarantees under GREEN, JBIC draws on its Untied Loan and Equity Participation methodology while seeking to mobilise private funds. Below are some examples of JBIC financing under GREEN:

(1) Co-financing with or guarantee for private financial institutions

JBIC extends loans co-financed by private financial institutions, or provides guarantees for the co-financed portion, in support of projects with significant GHG emissions reduction potential—such as in developing photovoltaic and highly energy-efficient power plants.

(2) Co-financing with multilateral financial institutions

When a multilateral financial institution extends a loan for a project in a developing country that is expected to significantly reduce GHG emissions, JBIC assists this institution by participating in co-financing, i.e., the loan is co-financed with the private financial institution.

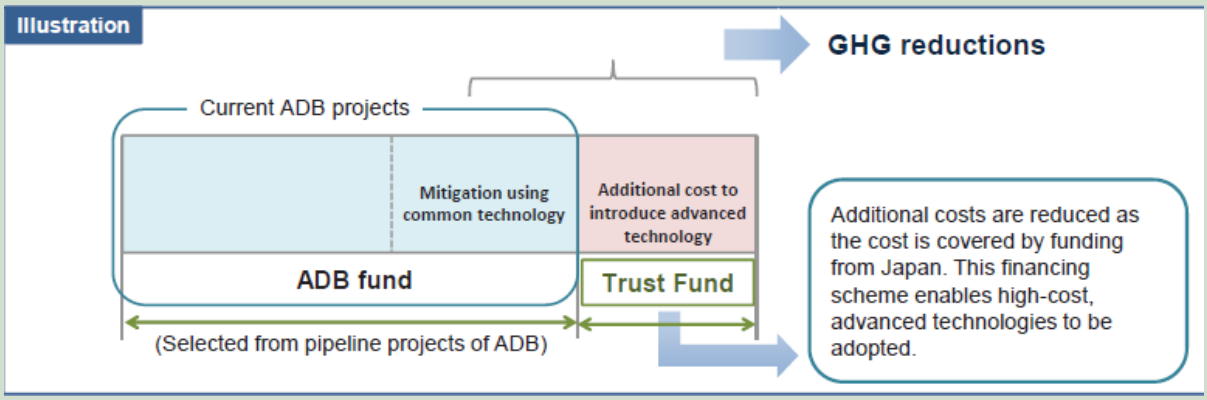
(3) Equity participation in funds established by foreign companies and multilateral institutions

Given the significance of efforts by the international community for preserving the global environment, JBIC makes equity investments in funds established by foreign firms and multilateral institutions targeted at reducing GHG emissions.

Source: http://www.jbic.go.jp/en/information/news/news-2010/0427-2171

Utilisation of economic incentives for technology dissemination (3): Support programme for JCM projects enabling "Leapfrog" development (ADB fund) (JCM-ADB)

In order to enable to apply superior, advanced and unaffordable low-carbon technologies to projects, this support programme relieves the cost by mobilising a fund trusted to the Asian Development Bank. Through this finance scheme, assistance provided to developing countries from ADB will lead to "leapfrog" development, and allow Japan to acquire credits using the JCM.



Source: http://www.iges.or.jp/isap/2014/PDF/pl11/pl11_04_kino.pdf

As mentioned in the good practices described above, actions such as utilisation of technologies and market mechanisms have already started. However, challenges still remain, as follows:

- How to strengthen economic incentives for promoting private investment contributing to low carbon growth, as well as develop a stable policy framework whilst improving the investment and business environment to enhance private investment
- How to relay the importance of investing in and introducing the Quality Infrastructure developed using low carbon technologies

Quality Infrastructure may at first appear costly. However, it is actually cost-effective in the long run due to its ease of use, durability, low environmental burden and disaster resilience. When introducing infrastructure, it is important not only to consider the short-term costs but also ensure full consideration is given to the impacts on society and the environment.

Concomitant with the rapid pace of development in Asia is the speed at which infrastructure is being laid. It is therefore important that the right sort of investment takes place and that development and implementation of the most advanced low carbon technologies available be accelerated. Infrastructure life needs to be stressed as the foundation for sustaining low carbon growth. To that end, buyers of infrastructure need to be aware of the dangers of prioritising 'short term' and 'low cost', to avoid heavy impacts on society and the environment.

3. Practical Actions for Realising the Three Pillars:

C. Development of Effective Networks among Various Stakeholders

With respect to the third pillar “development of effective networks among various stakeholders”, the following two points became clear through the East Asia Low Carbon Growth Dialogue:

- The various stakeholders, such as national and local governments, international organisations, universities, research institutes, private companies and NGOs need to cooperate among themselves. This will require developing and using open, multi-layered and flexible networks to share experiences and lessons learnt that are relevant to low carbon growth and adaptation, the results of which can be plugged into policy formation processes.
- The networking capacity for implementing cooperative activities needs enhancing, so that local governments, citizens, local private companies, local research institutes, such as universities, and NGOs can cooperate among themselves and promote activities for low carbon growth.

Based on the points mentioned above, this section introduces good practices on the following points.

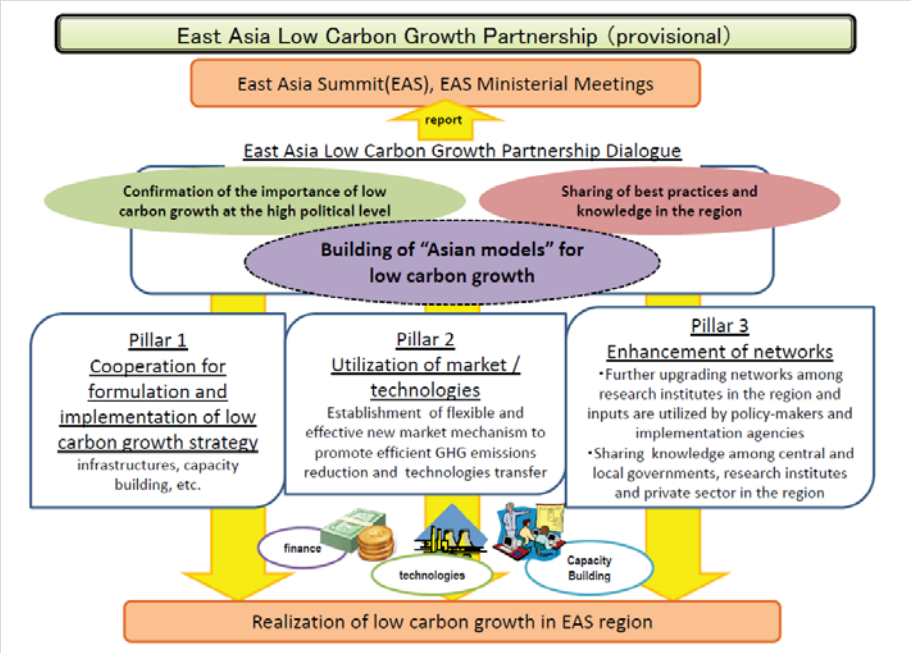
i. Development of and cooperation in global partnerships with a focus on the same actor
ii. Experience sharing and capacity development through network activities
iii. Creation of new ideas through resonance of knowledge among different actors

i. Development of and cooperation in global partnerships with a focus on the same actor

In order to realise low carbon growth, it is important that all actors, including national and local governments, international organisations, private companies, research institutes and NGOs, develop their respective global partnerships, and cooperate and collaborate with each other. As a good practice in forming partners, this section introduces the East Asia Low Carbon Growth Partnership Dialogue, High-level Seminars on Environmentally Sustainable Cities and the ASEAN Environmentally Sustainable Cities Model Cities Programme, as per below:

National-level network: East Asia Low Carbon Growth Partnership Dialogue

The East Asia Low Carbon Growth Partnership Dialogue is an international conference established in 2011 under the East Asia Summit (EAS), and led by the Government of Japan as a key focus for promoting regional cooperation in the EAS region—the world's economic growth centre and the largest greenhouse gas emissions area—in order to realise low carbon growth in the region. Under this dialogue, the EAS participating countries, including Japan, share information on innovative approaches, experiences and environmental technologies; promote regional cooperation for combatting climate change to supplement the UN systems; and aim to develop low carbon growth models which can balance global warming measures with economic growth. In the dialogue, representatives of ministers, administrative officials, international organisations, local governments and private companies meet, exchange opinions and form a common understanding on low carbon growth under the EAS.



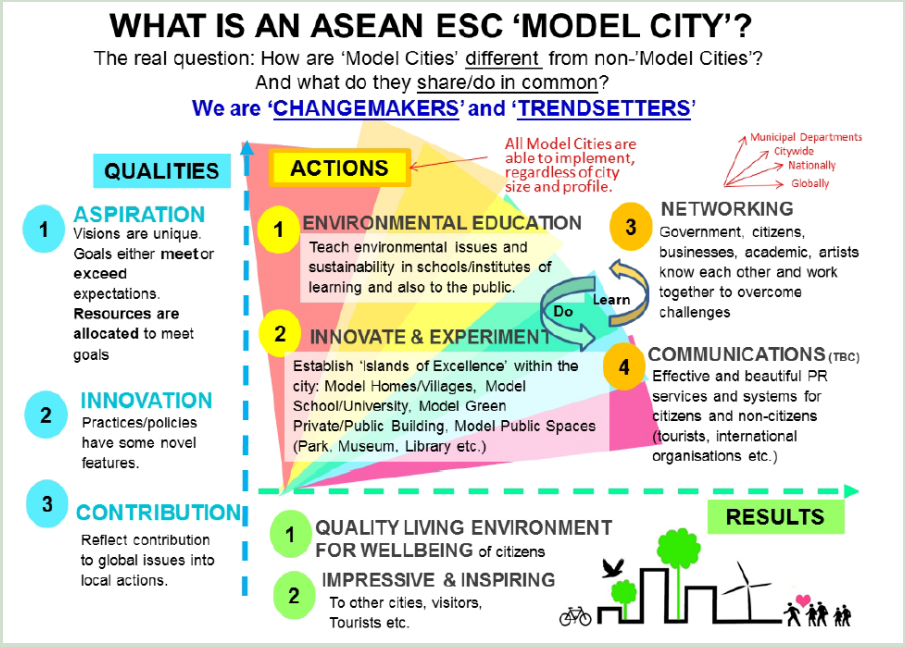
Source: http://www.mofa.go.jp/policy/environment/warm/cop/ealcgpd_1204/index.html
http://www.mofa.go.jp/policy/environment/warm/cop/ealcgpd_1204/pdfs/initiative.pdf

Municipal-level network:

- **High-level Seminars on Environmentally Sustainable Cities**
- **ASEAN Environmentally Sustainable Cities (ESC) Model Cities Programme**

The High Level Seminars network is aimed at sharing knowledge, exemplary policy measures and activities on environmental model cities among representatives of national and local governments, international organisations, donor agencies, research institutes, NGOs and others. Since March 2010, a total of six Seminars have been convened, which have promoted activities for establishing environmentally sustainable cities (ESCs) in 18 countries participating in the EAS in the region. The Seminars function as a key forum for information exchange among wide-ranging stakeholders in the EAS region and for developing cooperative relationships.

The third example of good practises, the ASEAN Environmentally Sustainable Cities (ESC) Model Cities Programme, was implemented in conjunction with the High-level Seminars. The Programme, implemented in eight ASEAN countries via Japan-ASEAN Integration Fund (JAIF) support, has selected 14 ESC Model Cities. These Model Cities utilise seed funds provided by the Programme and implement activities to achieve their respective environmental targets.



Source: https://www.env.go.jp/earth/coop/coop/english/cai/factsheet/ESC_e.pdf
http://modelcities.hls-esc.org/

Scientific knowledge is necessary for developing low carbon growth plans. In order to enhance the skills of scientists providing the scientific knowledge, information sharing via networking at the research institution level is effective. As good examples of such networking, this section introduces the Low Carbon Asia Research Network (LoCARNet) and the Monsoon Asia Agro-Environmental Research Consortium (MARCO).

Research-institution-level network (1):
Low Carbon Asia Research Network (LoCARNet)

LoCARNet is an open network aimed at low carbon growth in the Asian region. It provides up-to-date information on research results to researchers, policymakers and relevant stakeholders to enable discussion, formulation and implementation of science-based policies.

The network was proposed at the ASEAN+3 Environment Ministers Meeting held in Cambodia in October 2011, and was officially established at the East Asia Low Carbon Growth Partnership Dialogue convened in April 2012. Since then, the network has reported progress of its network activities to the ASEAN +3 Environment Minister Meetings every year.

Activities of the network cover three main themes: implementation of capacity building for scientists in the ASEAN region (such as capacity-building workshops for Cambodia, Lao PDR and Myanmar); implementation of policy dialogues among scientists and policymakers (such as policy dialogues in Indonesia, Thailand, Malaysia, Viet Nam and Cambodia); and implementation of knowledge sharing in Asia (such as LoCARNet annual meetings). Through these activities, LoCARNet aims to enhance research capacities in the Asian region based on south-south cooperation.

Source: http://lcs-rnet.org/about_locarnet/

Research-institution-level network (2):
Monsoon Asia Agro-Environmental Research Consortium (MARCO)

The Monsoon Asia Agro-Environmental Research Consortium (MARCO) was established by researchers to solve various agro-environmental issues in the East, South-east, and South Asia regions, such as environmental changes caused by global warming, land-use changes resulting from economic development and population growth, invasion of alien species due to trade globalisation, cropland pollution by chemicals from industrial activities, and water pollution due to overuse of chemical fertilisers and agricultural chemicals. Under this network, researchers in the monsoon Asia region cooperate with each other to tackle the issues.

The network is active in:

(1) Providing opportunities for the researchers to meet periodically, such as international symposiums, in order to share information on their research
(2) Maintaining a website as a place to share information on the consortium
(3) Improving the human resources capable of taking on activities under the consortium

Source: http://www.niaes.affrc.go.jp/marco/index.html

It is important that private sectors see low carbon growth as a business opportunity, regard de-carbonisation as the precondition for future economic activities and adopt actions aimed at building sustainable low carbon societies. In order to promote a mindset focused on low-carbon society, it is effective that private companies will be networked to air their individual commitments and actions. As a good practice, Japan Climate Leaders' Partnership is introduced here.

Private-company-level network:
Japan Climate Leaders' Partnership (Japan-CLP)

The Japan Climate Leaders' Partnership (Japan-CLP) was established in 2009 as a unique Japanese business coalition premised on the belief that industry should be more proactive on the issue of climate change. Japan-CLP consists of private companies that posit transitioning to a sustainable low carbon society as a business opportunity for development in the next generation. It provides forums for dialogues among the member companies, policymakers, industrial communities, citizens and others, and deploys activities with a central focus on Japan and Asian countries.

Source: http://japan-clp.jp/p_pdf/japan-clp_en.pdf

ii. Experience sharing and capacity building through networking

In order to enable low carbon growth at the national level, it is effective to implement low carbon strategies and plans based on quantified data provided by national greenhouse gas inventories. If countries need further capacity building to prepare the inventories, networks will be beneficial to support the capacity building.

Experience sharing and capacity building through networking (1):
Workshop on Greenhouse Gas Inventories in Asia (WGIA)

The Workshop on Greenhouse Gas Inventories in Asia (WGIA) is a network for practitioners, including administrative officials and researchers, in charge of preparing national greenhouse gas inventories, and aims to build the capacity of practitioners preparing the inventories—which are themselves key to developing policies for realising low carbon growth. The WGIA has been held annually since 2003, and participating countries are Brunei, Cambodia, China, India, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand and Viet Nam. The main activities of WGIA are as follows:

- Sharing information on the inventories and other topics relevant to measurement, reporting and verification (MRV)
- Developing a network of MRV experts
- Providing opportunities to participating countries for mutual learning concerning the inventories

Source: http://www-gio.nies.go.jp/wgia/wgiaindex-e.html

In order to enable low carbon growth at the municipal level, it is effective to develop and implement policies based on quantified data. However, as the UNFCCC provides no international standard for MRV at the municipal level, it is effective to utilise NGO networks which support municipal governments to develop the quantified data for realising low carbon growth.

Experience sharing and capacity building through networking (2): carbonn Climate Registry

The carbonn Climate Registry (cCR) is a platform by which municipalities throughout the world voluntarily register and report their targets, activities and achievements through an online system. The cCR was launched at the World Mayors Summit on Climate in Mexico City (just before COP16 in Cancun in 2010), when the Global Cities Covenant on Climate (Mexico City Pact) endorsed at the Summit officially mandated municipalities to actively promote measures against climate change and report and publish their achievements. ICLEI-Local Governments for Sustainability develops and operates the cCR platform, periodically aggregates data provided by the member municipalities, and reports the aggregated data from time to time, such as at the COPs under the UNFCCC.

The Registry applies the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), which is an international standard co-developed by ICLEI, the World Resource Institute (WRI), the C40 Cities Climate Leadership Group (C40), the World Bank, the United Nations Environmental Programme (UNEP) and the United Nations Human Settlements Programme (UN-Habitat) for member municipalities to estimate and report their GHG emissions.

Source: http://carbonn.org/
http://www.iclei.org/our-activities/our-agendas/low-carbon-city/gpc.html

iii. Creation of new ideas through resonance of knowledge among different actors

In order to promote further low carbon growth, it is important not only to share knowledge among the same actors but also to create new ideas through resonance of knowledge among different actors.

Network among different actors (1): East Asia Low Carbon Growth Knowledge Platform

The 1st Low Carbon Growth Dialogue, held in April 2012, recognised the importance of cooperation among various stakeholders, such as national and local governments, international organisations, universities, research institutes, private companies and NGOs. As a result, the East Asia Low Carbon Growth Knowledge Platform was launched as an open, multi-layered and flexible network for sharing experiences and lessons learnt related to low carbon growth for plugging into policy formation processes.

To that end, participating institutes and organisations agreeing to this platform aim at formulating the multi-layered network through information sharing and opinion exchanged on low carbon growth, in order to advance low carbon growth in the EAS region.

Source: http://www.mofa.go.jp/policy/environment/warm/cop/ealcnp_1208/about.html

Network among different actors (2): Innovation for Cool Earth Forum (ICEF)

Launch of the Innovation for Cool Earth Forum (ICEF) was advocated by Japan's Prime Minister Abe as an "energy and environment technology version of the World Economic Forum", and it is designed to operate as an international platform for promoting discussion and cooperation among world academia, industrial communities and governmental officials to solve climate change issues via innovation in the energy and environment sectors.

The Forum aims to accelerate promotion of innovation through a combination of annual forums and full-year discussions on its website. It also establishes a steering committee to make decisions regarding agenda and programmes that reflect the wide-ranging views of the international community in order to ensure international neutrality.

The Forum started in 2014; the second one, held over 7–8 October 2015, attracted over 1,000 participants from around 70 countries, and the third will be held in Tokyo over 5–6 November 2016.

At the second forum, in order to realise a path for significantly reducing GHG emissions, the steering committee made proposals on the following three points:

(1) Implementation of policies to promote research, development and dissemination of innovative technologies
(2) Establishment of concrete action plans based on a shared vision of the future
(3) Promotion of technology transfer to developing countries by means of various financial mechanisms

Source: http://www.icef-forum.org/

Network among different actors (3): Japan Public-Private Platform for REDD+ for changing the world through forests

According to the IPCC 5th Assessment Report (IPCC-AR5), GHG emissions due to deforestation and forest degradation in developing countries accounts for 10% of the world total GHG emissions. Moreover, reducing emissions from deforestation and forest degradation, promoting sustainable forest management and conserving and enhancing forest carbon stocks (REDD+) have a high potential to contribute to climate change mitigation. Hence, discussion on establishing the REDD+ mechanism have proceeded under the UNFCCC. The Japan Public-Private Platform for REDD+ was established on 7 November, 2014 for promoting the REDD+ activities through public-private cooperation among various actors, such as private companies, civil organisations, national and local governments, research institutes, and relevant ministries and agencies. Under this Platform, the following activities are implemented:

(1) Domestic and overseas promotion of understanding of (i) trends of international societies, (ii) importance of forest conservation activities in developing countries, (iii) structure of REDD+, and (iv) areas of activities of member organisations
(2) Sharing of information, knowledge and experiences necessary for implementing and promoting forest conservation activities, including REDD+, by the member organisations, and promotion of technology cooperation among the member organisations
(3) Combination of public support and private finance for forest conservation activities, including REDD+, consideration of private business models contributing to forest conservation, and proposals of concepts for policy and legal systems and public support systems

Source: http://www.jica.go.jp/english/our_work/thematic_issues/environment/c8h0vm0000011kf3-att/PPP_leaflet.pdf

With respect to developing effective networks among various stakeholders, many networking activities are implemented, as mentioned in the good practices described above. However, the following challenges still remain:

- Strengthening cooperation among various actors

When we obtain long-term successful results from low carbon growth projects, cooperation is needed between various actors, such as local governments, civil societies, NGOs and intellectuals, in addition to public-private cooperation between national administrative organisations and private sectors. However, two kinds of actors exist; one kind is accustomed to cooperating with various actors and promoting low carbon growth activities, whereas the other kind is not accustomed to such activities. To that end, existing networks must be further utilised to deepen exchanges between the various actors and to enhance information sharing in order to find concrete solutions.

- Strengthened cooperation with donors in overcoming issues

There are many findings on the kinds of support necessary to solve concrete issues in low carbon growth through sharing information via networking activities. Therefore, systems for strengthening and supporting cooperative networks with bilateral and multilateral donors, enhancing donor awareness of actual situations on the ground, and providing international support on-site are needed.

- Development of a one-stop platform coalescing all available information on networks and their activities

Many of the meetings, networks and groups exist as simple gatherings, but each plays an active role in accordance with its mission. However, information on all such activities is embedded in disparate information sources, which makes finding it difficult. Therefore, from the perspective of strengthening cooperation among networks, development of a platform or consolidation of information is expected for providing one-stop access to information on the various networks.

4. Conclusion: A Proposal from the East Asia Low Carbon Growth Partnership Dialogues – Transformation to Low Carbon Growth -

We need to aim at low carbon growth in order to reduce increasing anthropogenic GHG emissions and achieve zero emissions in the future. In order to accelerate activities for low carbon growth in the EAS region after COP21 and realise low carbon growth, the following directions need to be taken:

1. Development and Implementation of Each Country's Low Carbon Growth Strategy

- **Under an overarching basic strategies provided by their national governments, local governments and industrial communities play a main role in the realization of low carbon growth; involve various actors, such as citizens, local business sectors, NGOs, researchers in local universities and research institutes; and develop and implement low-carbon growth plans well-suited for their local characteristics.**

- **In order to develop low-carbon growth strategies, it is indispensable that researchers who understand actual conditions of their countries and local areas provide scientific knowledge to policymakers.**

- **Strengthening of fostering human resources for developing and implementing low-carbon growth strategies and plans is necessary.**

Development and implementation of low carbon strategies by local governments has just started, and human resources capable of developing and implementing such strategies are in short supply within local governments. Especially, in developing countries, such human resources lack in both national and municipal governments. This means that external experts are often called in, which in some cases can lead to knowledge and know-how linked to strategy development and implementation accumulating outside the countries concerned, as well as dependency on such external experts over time. Human resources located within the countries concerned and capable of developing and implementing strategies and plans—especially in developing countries—therefore need to be fostered.

2. Utilisation of technologies and market mechanisms

- **In order to effectively promote low-carbon growth, it is important to disseminate appropriate technologies in sectors which possess high potential for reducing GHG emissions.**

- **In order to disseminate low-carbon technologies, cooperation with private sectors, which possess excellent technologies, should be strengthened.**

National governments must mobilise all policy tools, including market mechanisms, to enable private companies to introduce low carbon technologies.

- **City-to-city collaboration should be enhanced for technology dissemination and capacity building.**

The role of municipal governments in realising low carbon growth will increase, which means the accumulated experiences and know-how for formulating low carbon societies from all municipalities are of significant importance. To that end, an approach combining technology transfer with capacity building by means of city-to-city collaboration is effective for introducing and disseminating low carbon technologies.

- **In order to promote private investment in low-carbon growth, there needs to be better economic incentives and a stable policy framework, as well as increased maintenance of investment and business environments.**

- **Countries need to understand the importance of investment in high-quality infrastructure taking into account environmental and social considerations, as well as bringing in infrastructure that makes full use of low-carbon technologies.**

When we introduce infrastructure, it is important to introduce high-quality infrastructure that not only considers short-term costs but also its impacts on society and the environment and life cycle costs with long-term perspectives

3. Development of Effective Networks among Various Stakeholders

- **Global partnerships among all stakeholders, including national and local governments, international organisations, private companies, research institutes and NGOs, will be developed, with stakeholders cooperating and collaborating among themselves.**

In order to realise low carbon growth, the cooperation of wide-ranging actors, such as national and local governments, private companies, NGOs and citizens, is necessary. Communication between actors is necessary to enhance such cooperation; however, opportunities for communications among different actors are not sufficient, and the opportunities are limited to particular actors. As a result, opportunities for enhancing communications among different actors are not enough.. To that end, it is important to strengthen cooperation among actors through, for example, developing new networks for enhancing opportunities for communications.

- **Utilizing existing networks, such as the East Asia Low Carbon Growth Knowledge Platform, should be further activated.**

As mentioned in this proposal, various networks exist, including the East Asia Low Carbon Growth Knowledge Platform. It is important to bolster these networks, to strengthen cooperation among actors.

- **Different actors promote sharing knowledge among themselves, and creation of new ideas through resonance of knowledge among the different actors will be enhanced.**

To create new ideas through knowledge resonance, it is important to increase opportunities for different actors to communicate with each other, and boost such communication.

Climate change is a key issue at the very foundation of human survival. It's also an issue that needs to be addressed with a sense of urgency due to the need to swiftly and drastically reduce anthropogenic GHG emissions in order to achieve the 2°C target. Hence, the issue is at a critical juncture. To that end, GHG emission reduction in the EAS region is indispensable, making it necessary to continue to discuss this issue within the EAS framework.

*The 2°C target is a long-term target with a view to reducing global greenhouse gas emissions so as to hold the increase in global average temperature below 2°C above preindustrial levels in order to avoid the consequences of global warming. This target was stated in the Cancun Agreement in COP16 in 2010 as a non-legally-binding agreement. In COP21 this year, making this target a legally-binding agreement is being considered.

In addition, the following directions are also necessary for networking activities.

- Through the networking activities of each actor, national and local governments need to foster the human resources necessary for developing respective low carbon growth strategies well-suited to national and local characteristics.

Scientific knowledge is key to enabling national and local governments to develop low carbon growth strategies well-suited to national and local characteristics. In order to enhance the skills of researchers providing the scientific knowledge, implementing information sharing and capacity building through networking activities at the research institute level and fostering researchers capable of developing low carbon strategies and plans will help.

Moreover, when local governments take a central role in implementing policies for low carbon growth, they will need officials capable of developing policies that can realise a higher level of low carbon growth than at present. In order to foster such officials, capacity building using municipal-level networks is effective.

- The private business sector will understand that low carbon growth provides a business opportunity well into the future, and proactively redirect business endeavours into developing and disseminating low carbon technologies.

It is also important for the private business sector to understand that low carbon growth provides a business opportunity into the future, and proactively alter its course towards developing and disseminating low carbon technologies. As a catalyst for instigating such change in behavior, it is important that governments provide incentives and improve the environment for investment and business. Moreover, it is also important for private companies themselves to be aware of the global situation and alter their actions accordingly. To that end, networks between private companies are effective to create a shared vision towards sustainable low-carbon societies in which each company lays out its commitment and initiates actions.

- Cooperation with donors will be enhanced for creating chances to receive solutions to concrete issues.

There are many findings on the kinds of support necessary to solve concrete issues in low carbon growth through sharing information via networking activities. Therefore, systems for strengthening and supporting cooperative networks with bilateral and multilateral donors, enhancing donor awareness of actual situations on the ground, and providing international support on-site are needed.

- Consolidation of information in a platform is expected for enabling to share information on the various networks in an integrated manner.

Information on the various networks and their activities comes from many sources, meaning each source has to be checked in turn in order to obtain the necessary information. Therefore, consolidation of information in a platform is expected for enabling to share information on the various networks in an integrated manner.

5. Annex: city-to-city collaboration for technology dissemination and capacity building: overview of feasibility studies for large scale JCM project development

Municipalities in charge		Name of feasibility studies for the city-to-city collaboration
Cambodia		
Siem Reap	Kanagawa	Siem Reap province supports JCM feasibility studies and project development in introducing facilities for renewable energy and energy efficiency which are implemented by Kanagawa prefecture, as well as private companies, in order to promote developing "low carbon tourism-based city development". In exchange, Kanagawa prefecture supports Siem Reap province by introducing policies in relevant sectors to the province, as well as suitable organisations. On 5th November, 2015, Siem Reap and Kanagawa concluded a memorandum of understanding on technology cooperation for developing low carbon tourism-based cities.
India		
Bengaluru	Yokohama (Y-PORT Center)	Based on a city-to-city collaboration between Yokohama and Bengaluru, Yokohama supports Bengaluru's appropriate waste management and formulates projects on waste-to-energy and introduction of refuse derived fuel (RDF). Through the project on waste-to-energy, Bengaluru will reduce its GHG emissions resulting from using fossil fuels. Yokohama also supports Bengaluru to promote GHG emission reduction by reducing municipal waste.
Indonesia		
Batam	Yokohama (Y-PORT Center)	Based on a memorandum of understanding on technology cooperation for developing sustainable cities between Batam and Yokohama, Batam, in cooperation with Yokohama concluded on 27th May, 2015, aims to develop JCM projects. Concretely, Batam aims to introduce an energy efficiency operation system into terminal buildings of Hang Nadim International Airport, systems to process sludge containing palm oil and produce biomass fuels into palm oil production plants, and high-efficiency technology within sludge dehydration systems.
Bandung	Kawasaki	Kawasaki city, which has long enjoyed friendly relations with Bandung city, utilises its innovative environmental technologies and know-how accumulated through its experiences in overcoming pollution and supports Bandung to overcome various environmental and energy problems emerging in the city and to develop a sustainable low carbon city. Concretely, Kawasaki supports wide deployment of JCM projects that effectively reduce GHG emissions, based on city-to-city collaboration and public-private partnership—such as in upgrading power-feeding systems within Bandung's commercial facilities to direct-current power-feeding systems.

Municipalities in charge		Name of feasibility studies for the city-to-city collaboration
Indonesia		
Surabaya and East Java	Kitakyushu (Kitakyushu Asian Center for Low Carbon Society)	Within the energy and waste sectors in Surabaya city—a sister city of Kitakyushu city—Kitakyushu city develops model projects for low carbon growth using its know-how and technologies. Kitakyushu also provides developmental support to Surabaya for promoting spatial deployment of JCM projects, via JCM cooperation and an awards programme for enlightening green construction as well as in formulating projects in cooperation with a chain of hotels.
Lao PDR		
Vientiane	Kyoto	Vientiane city has a rich and varied historical and cultural heritage and implements efforts for formulating a low carbon historical city in cooperation with Kyoto city, its alliance partner. Concretely, Vientiane and Kyoto together work towards realising low-carbonisation of the former, and introduce advanced technologies via implementing JCM feasibility studies of biomass energy projects in cooperation with private companies. Furthermore, Vientiane promotes capacity building for waste management in cooperation with Kyoto in order to solve its undeniable waste problems, which have resulted from increased urbanisation.
Malaysia		
Iskandar (Pasig Dunn)	Kitakyushu (Kitakyushu Asian Center for Low Carbon Society)	Iskandar area, in cooperation with Kitakyushu city, aims to formulate JCM projects to promote waste heat recovery, cogeneration and energy efficiency in industrial complexes, as well as recycling of industrial waste and waste-to-energy of municipal waste. Kitakyushu also supports Iskandar area to develop bases for expansion of low carbon projects in the area by proposing systems for low carbon growth.
Myanmar		
Pathein	Fukushima	Pathein city, in cooperation with Fukushima city, research institutes and private companies, together examine the possibility of formulating JCM projects in energy and waste sectors in targeted areas within industrial zones. In the energy sector, Pathein considers introduction of independent decentralised renewable energy systems, such as mega solar power plants. In the waste sector, it considers low-carbon waste management, such as bio gasification. Fukushima supports Pathein in formulating a low carbon city in cooperation with research institutes and private companies.
Yangon	Kawasaki	Yangon city, in cooperation with Kawasaki city, develops low carbon development policies and formulates JCM projects based on the technologies and experiences of Kawasaki in its low carbon city development. Yangon also formulates projects for low carbon growth in cooperation with the Kawasaki Green Innovation Cluster, developed by Kawasaki.

Municipalities in charge		Name of feasibility studies for the city-to-city collaboration
Thailand		
Bangkok	Yokohama (Y-PORT Center)	Based on a memorandum of understanding on technology cooperation for developing sustainable cities between Bangkok Metropolitan Area and Yokohama city, Bangkok , in cooperation with Yokohama city, aims to formulate JCM projects for implementing the Bangkok Master Plan on Climate Change 2013–2023. Concretely, Bangkok aims to introduce energy saving systems into public and commercial buildings and waste-to-energy power plants
Rayong	Kitakyushu (Kitakyushu Asian Center for Low Carbon Society)	Rayong Province, in cooperation with Kitakyushu, aims to convert its waste incineration plants to waste-to-energy plants and realise a model for reducing CO_2 emissions as well as obtaining revenue via electric power sales. Rayong also aims at low carbonisation by promoting total waste management, energy saving and water saving in two industrial zones undergoing transformation into eco-industrial towns.
Viet Nam		
Da Nang	Yokohama (Y-PORT Center)	Based on a memorandum of understanding on technology cooperation for developing sustainable cities between Da Nang city and Yokohama city, Da Nang, in cooperation with Yokohama, aims to formulate JCM projects in the sectors of water supply and energy saving. Concretely, Da Nang will implement needs assessments on introduction of energy-saving pumps for water supply, and energy saving and introduction of energy-saving equipment in private sectors, such as hotels and industrial complexes.
Hai Phong	Kitakyushu (Kitakyushu Asian Center for Low Carbon Society)	In order to promote low carbonisation in Hai Phong city as a whole, Hai Phong and Kitakyushu city aim to implement JCM projects in five areas (energy, Catba island, integration of energy and waste, waste-to-energy via sludge RDF and co-incineration of municipal waste, and follow-up of green growth promotion plan) and reduce GHG emission drastically.
Ho Chi Minh	Osaka	Ho Chi Minh City, in cooperation with Osaka City, develops its plan for implementing climate change measures from 2016 to 2020 and implements projects, such as the JCM, in 10 sectors, including energy, transportation and waste management. Osaka City, in cooperation with private companies and research institutes, supports Ho Chi Minh City to formulate a low carbon city.

- Source: http://www.env.go.jp/earth/coop/lowcarbon-asia/english/project/index.html

6. Reference Materials: List of Supporting Activities for East Asia Low Carbon Growth

1. Supporting activities for Low Carbon Growth Strategies

Activity
Climate Change International Training Centre, Thai Greenhouse Gas Management Organization http://citc.in.th/index.php/en/
Efforts in Various Areas: Climate Change https://www.env.go.jp/earth/coop/coop/english/efforts/climate.html
The Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) http://www.iclei.org/activities/our-agendas/low-carbon-city/gpc.html
Japan's Assistance to Developing Countries on Climate Change (March, 2014) http://www.mofa.go.jp/files/000035081.pdf
JICA's cooperation on climate change (FY2014) http://www.jica.go.jp/english/our_work/climate_change/c8h0vm000001378k-att/cooperation09.pdf
Project of Capacity Development for Climate Change Strategies in Indonesia http://www.greenclimateproject.org/home/en/
Science and Technology Research Partnership for Sustainable Development (SATREPS) http://www.jst.go.jp/global/english/about.html

2. Supporting activities for Technology transfer and market and non-market mechanism

Activity
Basic Concept of the JCM http://www.mmechanisms.org/e/initiatives/jcm.html
Climate Technology Centre & Network http://ctc-n.org/
List of Selected Projects and Studies under JCM Support Programme http://www.mmechanisms.org/e/support/adoption.html
Cases and Projects on the JCM Projects towards Environmentally Sustainable Cities in Asia http://www.env.go.jp/earth/coop/lowcarbon-asia/english/project/index.html
Progress of Financing Programme for JCM Model Projects and Feasibility Studies for JCM Projects http://gec.jp/jcm/publications/index.html
Kitaskyushu Asian Center for Low Carbon Society http://asiangreencamp.net/eng/
Yokohama partnership of Resources and Technologies (Y-PORT) http://www.city.yokohama.lg.jp/kokusai/yport/en/

3. Supporting activities by enhancing networking

Activity
ASEAN Environmentally Sustainable Cities (ESC) Model Cities Programme http://modelcities.hls-esc.org/
Asian Co-benefits Partnership (ACP) http://www.cobenefit.org/
Asia-Pacific Network for Global Change Research http://www.apn-gcr.org/
carbonn ® Climate Registry http://carbonn.org/
Clean Asia Initiative (CAI) http://www.env.go.jp/earth/coop/coop/english/cai/about.html
Compact of Mayors: the world's largest coalition of city leaders addressing climate change http://www.compactofmayors.org/
East Asia Low Carbon Growth Partnership Dialogue http://www.mofa.go.jp/policy/environment/warm/cop/ealcgpd_1204/index.html
Japan Climate Leaders Partnership http://japan-clp.jp/index.html (Japanese)
Innovation for Cool Earth Forum (ICEF) http://www.icef-forum.org/
Low Carbon Asia Research Network (LoCARNet) http://lcs-rnet.org/about_locarnet/
The Monsoon Asia Agro-Environmental Research Consortium (MARCO) http://www.niaes.affrc.go.jp/marco/index.html
Transformative Actions Program (TAP): networks of local and subnational governments to accelerate implementation of climate actions http://tap-potential.org/about-tap/
Workshop on Greenhouse Gas Inventories in Asia (WGIA) http://www-gio.nies.go.jp/wgia/wgiaindex-e.html

4. Information Platforms

Platform
Asia Low-Carbon Development Collaboration Platform http://lowcarbon-asia.org/english/portal.html
Asia Low-Carbon Cities Platform http://lowcarbon-asia.org/english/city.html
Business Collaboration Support Platform for Low-Carbon Development in Asia http://lowcarbon-asia.org/english/index.html
Climate Change: toward a low-carbon society resilient to climate change risk (Japan International Cooperation Agency) http://www.jica.go.jp/english/our_work/climate_change/
East Asia Knowledge Platform for Low Carbon Growth http://www.mofa.go.jp/policy/environment/warm/cop/ealcnp_1208/index.html
Green Climate Cities Program: A pathway to urban low-carbon development http://www.iclei.org/our-activities/our-agendas/low-carbon-city/gcc.html
The Joint Crediting Mechanism https://www.jcm.go.jp/
JCM: The Joint Crediting Mechanism http://gec.jp/jcm/index.html
Low Carbon City http://www.iclei.org/activities/our-agendas/low-carbon-city.html
New Mechanisms Information Platform http://www.mmechanisms.org/e/index.html
REDD+ Platform http://www.reddplus-platform.jp/ (Japanese)
Web Portal for Low Carbon Development in Asia http://www.env.go.jp/earth/coop/lowcarbon-asia/english/index.html

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WB, "Cities and Climate Change: An Urgent Agenda" (2010)
WB, "Cities and Climate Change: Responding to an Urgent Agenda" (2011)
WB, "Climate Change: Context"
WB, "Climate Change: Strategy"
WB, "Climate Change: Results"
WB, "Climate-Smart Development: Adding up the Benefits of Actions that Help Build Prosperity, End Poverty and Combat Climate Change" (2014)
WB, "East Asia's Changing Urban Landscape: Measuring a Decade of Spatial Growth" (January, 2015)

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