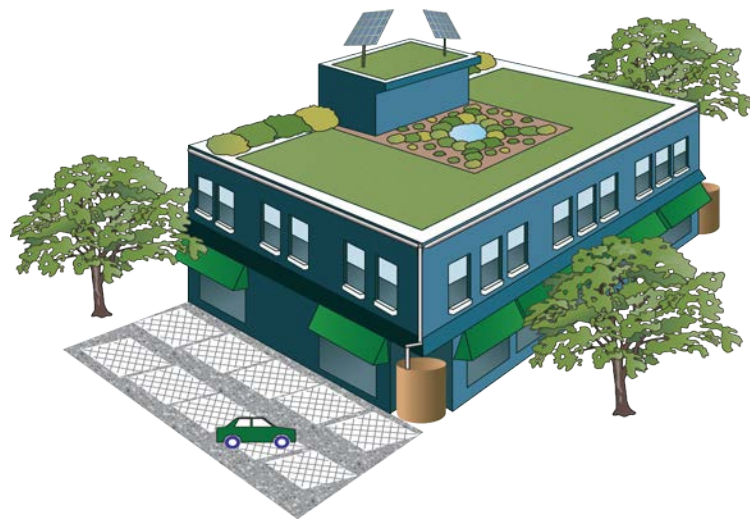




## REPORT

# EXPLORING OPPORTUNITIES AND CHALLENGES FOR JOINT CREDITING MECHANISM PROJECTS FOR DEVELOPMENT OF LOW-CARBON SOCIETY IN VIETNAM



Hanoi, Vietnam, January 24<sup>th</sup>, 2015



## **REPORT**

# **EXPLORING OPPORTUNITIES AND CHALLENGES FOR JOINT CREDITING MECHANISM PROJECTS FOR DEVELOPMENT OF LOW-CARBON SOCIETY IN VIETNAM**

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Hanoi, Vietnam, January 24<sup>th</sup>, 2015

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## **Overview of domestic network building activities**

### **Potential needs for Joint Crediting Mechanism (JCM)**

Climate change is occurring faster than our predicted, and causes major impacts on fluctuation of temperature and precipitation, sea level rise, increasing the extreme weather events and disasters (i.e., tropical typhoon and storm). Climate change is a major factor that increases the vulnerability of the natural and social systems, threatens the resilience, food security, and sustainability of human being.

In order to prevent serious effects of climate change by reducing greenhouse gas (GHG) emissions in half from current levels by 2050, it is imperative to create low-carbon societies by implementing effective means, including Joint Crediting Mechanism (JCM). The JCM is proposed by Japan government with a goal to facilitate 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. The JCM will contribute to not only reduce greenhouse gases emission but also increase our awareness about low-carbon development and green growth as well as building a sustainable society.

Several priority sectors can be jointed to develop the JCM projects, including energy efficient appliances, low-carbon waste management projects (waste reduction and best disposal method), transportation infrastructure development and effective use, development of low-carbon societies.

For promoting the JCM projects in Vietnam, it is urgently needed to establish an organization, playing as One-Stop service. The One-Stop service should play as the main researcher within the academic community of the host country to promote JCM projects and to maintain the domestic network. The One-Stop service should receive requests from Japanese businesses/local governments for projects, communication with relevant domestic individuals, businesses, and/or government, and assistance in collection of basic data.

### **Progress of activities to promote the JCM in Vietnam**

A research team of Vietnam National University (here after VNU team) has been established and led by Prof. Dr. Mai Trong Nhuan for acting as One-Stop service and promoting the JCM in Vietnam. The VNU team consisted of three lecturers and five researchers of VNU-University of Science.

The first meeting between researchers of Integrated Research System for Sustainability Science (IR3S), The University of Tokyo, Japan and the VNU team was taken place on November 28<sup>th</sup> 2014. In this meeting, both sides have gone to make agreements on the time, venue, and content of a study workshop to promote the JCM in Vietnam. Both sides

have agreed to hold the workshop on January 24<sup>th</sup> 2015 at VNU-Hanoi University of Science.

The VNU team has conducted many activities for promoting the study workshop in Vietnam. Among those activities the VNU team has held several meetings with academic institutions, policymakers, stakeholders, and business sectors in Vietnam to get supports and advice on the JCM workshop. The VNU team has received supports from Rector of VNU University of Science, Vietnamese Joint Committee, Department of Hydrology, Meteorology and Climate Change, Ministry of Natural resources and Environment, VNU Hanoi School of Business, and other institutions.

The results of those activities have strongly indicated that it is imperative to create low-carbon societies by implementing effective means, such as Joint Crediting Mechanism (JCM) in Vietnam. The JCM mechanism will contribute to not only reduce greenhouse gases (GHG) emission but also increase our awareness about low-carbon development and green growth as well as building a sustainable society. However, the JCM is a new mechanism with almost enterprises, companies, and academic institutes in Vietnam. Thus, the JCM workshop is among initiative activities to facilitate the JCM mechanism to a broad social scale in Vietnam. Moreover, we also emphasized that this workshop will provide an interactive platform for researchers, policymakers, stakeholders, and communities to discuss and examine opportunities and challenges for this mechanism and development of low-carbon society in Vietnam and strengthen collaboration among social and economical sectors as well as cooperation between VNU University of Science, Vietnam and the IR3S, The University of Tokyo.

## **Summary of the study workshop**

The JCM is a new mechanism with almost enterprises, companies, and academic institutes in Vietnam. Thus, it is needed to increase the awareness of the stakeholders and communities on the JCM by organization of the study workshop. The major aim of this workshop is to provide an interactive platform for researchers, policymakers, business sector, communities and other stakeholders (shortly stakeholders) to discuss and examine opportunities and challenges of JCM projects and development of low-carbon society in Vietnam. The objectives of the study workshop are:

- To update the participants about the latest strategic orientation for sustainable development including ecosystems, environmental issues, and energy/greenhouse gas emissions in Vietnam.
- To give an introduction to Energy-Environment-Ecosystem (3E) nexus, JCM and their latest developments.

- To explore opportunities and challenges for JCM projects for sustainable development in Vietnam.

### The workshop programme

| Time          | Description   |
|---------------|---|
| 8:30 – 9:00   | Registration  |
| 9:00 – 9:10   | Opening and welcome remarks<br><i>Prof. Dr. Phan Tuan Nghia, Vice Rector of VNU University of Science</i>   |
| 9:10 – 9:20   | Workshop introductory remarks<br><i>Prof. Dr. Mai Trong Nhuan VNU University of Science</i>   |
| 9:20 – 9:35   | Evolution of climate change policies and the Vietnam Panel on Climate Change<br><i>Presented by Dr. Luong Quang Huy, Department of Hydrology, Meteorology and Climate Change</i>  |
| 9:35 – 10:05  | <ul style="list-style-type: none"> <li>- Energy, Environment and Ecosystems (3E) Nexus Initiative</li> <li>- Joint Crediting Mechanism (JCM) projects for sustainable low carbon development in Asia- Pacific region</li> </ul> <i>Presented by Dr. Geetha Mohan, The University of Tokyo</i>   |
| 10:05 – 10:20 | Opportunities and challenges for JCM projects in Vietnam<br><i>Presented by Mr. Le Ngoc Tuan - Department of Hydrology, Meteorology and Climate Change</i>  |
| 10:20 – 10:40 | Coffee break  |
| 10:40 – 11:10 | Roundtable discussion in 3 groups – Group 1: Fascinated by Dr. Pham Van Tan; Group 2: Fascinated by Assoc. Dr. Hoang Dinh Phi; Group 3: Fascinated by Dr. Nguyen Tai Tue. Each group will discuss on the topics: <ul style="list-style-type: none"> <li>- Opportunities and challenges for JCM projects in Vietnam.</li> <li>- Future collaborations for developing JCM projects</li> </ul> |
| 11:10 – 11:20 | Report of group 1<br><i>Dr. Pham Van Tan, Department of Hydrology, Meteorology and Climate Change</i>   |
| 11:20 – 11:30 | Report of group 2<br><i>Assoc. Dr. Hoang Dinh Phi, VNU Hanoi School of Business</i>   |
| 11:30 – 11:40 | Report of group 3<br><i>Dr. Nguyen Tai Tue, VNU University of Science</i>   |
| 11:40 – 11:50 | Q & A and Suggestions   |
| 11:50 – 12:00 | Conclusions and wrap-up<br><i>Prof. Dr. Mai Trong Nhuan</i>   |
| 12:00 – 13:00 | Lunch   |

## Welcome speech by Prof. Dr. Phan Tuan Nghia, Vice Rector of VNU University of Science

Dear Professors and researchers,

Distinguished guests,

Ladies and gentlemen,

First of all, On behalf of the VNU Hanoi University of Science, co-organizer of the workshop, I would like to warmly welcome distinguished guests, participants to the international workshop on **“EXPLORING OPPORTUNITIES AND CHALLENGES FOR JOINT CREDITING MECHANISM PROJECTS FOR DEVELOPMENT OF LOW-CARBON SOCIETY IN VIETNAM”**.

Climate change is occurring faster than our predicted, and causes major impacts on fluctuation of temperature and precipitation, sea level rise, increasing the extreme weather events and disasters (i.e., tropical typhoon and storm). Climate change is a major factor that increases the vulnerability of the natural and social systems, threatens the resilience, food security, and sustainability of human being.

In order to prevent serious effects of climate change by reducing greenhouse gas emissions in half from current levels by 2050, it is imperative to create low-carbon societies by implementing an effective mean, such as Joint Crediting Mechanism (JCM). The JCM mechanism is proposed by Japan government with a goal to facilitate 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. The JCM mechanism will contribute to not only reduce greenhouse gases emission but also increase our awareness about low carbon development and green growth as well as building a sustainable society. However, the JCM is a new mechanism with almost enterprises, companies, and academic institutes in Vietnam. Thus, this workshop is among initiative activities to facilitate the JCM to a broad social scale.

I think that this workshop will provide an interactive platform for researchers, policymakers, stakeholders, and communities to discuss and examine opportunities and challenges for this mechanism and development of low-carbon society in Vietnam and strengthen collaboration among social and economical sectors as well as cooperation between VNU University of Science, Vietnam and The University of Tokyo.

I believe that this workshop is not only a valuable opportunity to discuss, to share but also to explore cooperative opportunities between counter partners of Japan and Vietnam.

I would like to wish you all good health and our workshop a great success.

Thank you for your kind attention.

### Workshop outcomes

The JCM workshop in Vietnam was held on January 24<sup>th</sup>, 2015 at the VNU Hanoi University of Science. Total 66 participants attended the workshop. The participants come from academic, business, and industrial sectors, and policymakers (Fig. 1).

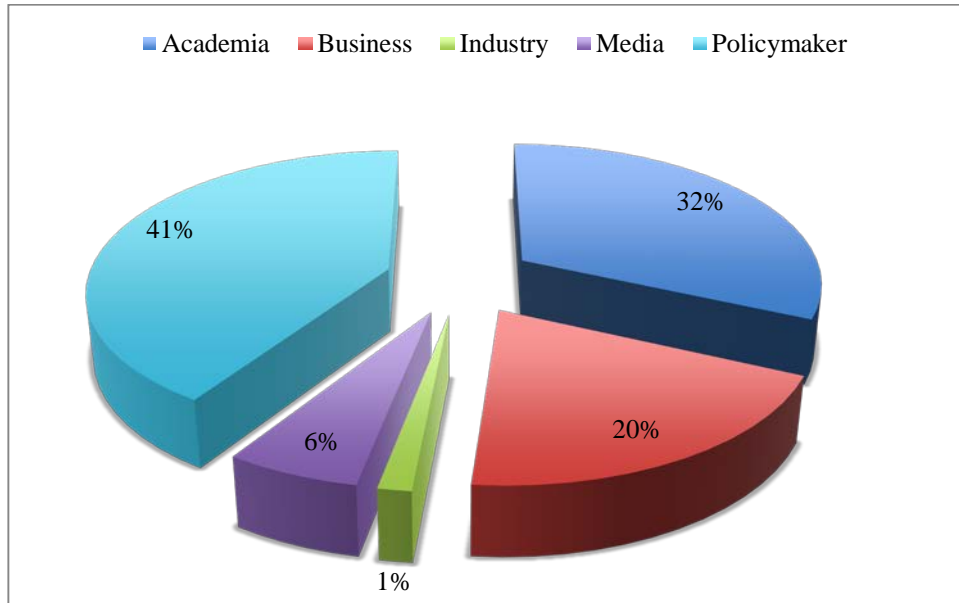


Fig. 1. The proportion of participants attended in the study workshop in Vietnam National University.

In the workshop, researchers from Vietnam and Japan have presented five presentations. The summary of each presentation is shown as follows:

### Workshop introductory remarks

Prof. Dr. Mai Trong Nhuan presented an overview about the development of low-carbon society in Vietnam. He showed that Vietnam need to develop low-carbon society for reducing greenhouse gases (GHG) emissions. The development of low carbon-society requires implementing many measures and solutions such as green growth, low carbon activities, low carbon life, and low waste life. These measures aim to building up a nature harmonious society. He emphasized that one of solutions for developing low-carbon society is the JCM. However, the JCM is a new mechanism in Vietnam, thus, the objectives of the workshop is to bring all participants from different disciplines to discuss about the opportunities, challenges and measures for promoting and developing JCM projects in Vietnam (Fig. 2).





Fig. 2. The JCM workshop objectives are indicated in presentation of Prof. Dr. Mai Trong Nhuan

### Evolution of climate change policies and the Vietnam Panel on Climate Change

The evolution of climate change policies was presented by Dr. Luong Quang Huy, Department of Hydrology, Meteorology and Climate Change (MONRE, Vietnam). In his presentation, plans for GHG emission management and carbon market development (Decision 1775/QD-TTG by Vietnam Prime Minister) are major orientations for developing National Action Plan on Climate Change and National Action Plan on Green Growth. From these action plans, Vietnam Government has established two important strategies, consisting of National Climate Change Strategy in 2011 and National Green Growth Strategy in 2012. Currently, many laws and legal documents related to the response to climate change have been issued in Vietnam, consisting of Law on Mining activities (2010), Land Law (2013), Law on Environmental Protection (2005), Law on Biodiversity (2008), Law on Water Resources (2012), Law on Natural Disaster Risk Prevention and Reduction (2013), Law on Environmental Protection (2014), and Law on Meteorology and Hydrology (draft). He also emphasized that the ratio of CO<sub>2</sub> emission per GDP in Vietnam is growing at a fast rate in comparison with that of other countries in the Asia-Pacific region. Following the prediction of the BAU scenarios, the CO<sub>2</sub> emission in Vietnam will range from approximate 600 to over 700 MtCO<sub>2</sub>e. He concluded that Vietnam would experience sharp growth in both the economy and GHG emission in several next decades. Thus, Vietnam and other developing countries need to put more effort into reducing emissions, use the opportunity to change economic development path and integrate into “globalized climate change mitigation”. For Vietnam’s pledges on GHG

emission reduction, he showed that Vietnam need to reduce total amount of GHG emissions by 8 – 10% from 2011 to 2020 in comparison with year 2010. From 2020 – 2030, and towards 2050, the reduced rate of the GHG emission should be from 1.5 – 2.0%/year. For reducing GHG emission in next several decades as proposed target, Vietnam need to implement and develop cooperation and bilateral mechanisms with other nations in some fields such as green technology, low carbon technology, low carbon development etc.

### **Energy, Environment and Ecosystems (3E) Nexus Initiative**

The third presentation entitled “Energy, Environment and Ecosystems (3E) nexus initiative for sustainable development” was presented by Dr. Geetha Mohan from Integrated Research System for Sustainability Science (IR3S), The University of Tokyo, Japan. Dr. Geetha Mohan said that the 3E Nexus project aims to advance mitigation action by facilitating the diffusion of advanced low-carbon technologies, products, systems, services and infrastructures in line with the Japanese Joint Credit Mechanism (JCM). The goals of the 3E nexus are (1) to promote awareness of national/local government and local business on the JCM and advanced technology, (2) recognize local requirements and similar with advanced technologies in order to understand co-benefits, (3) to assist Japanese business to develop the JCM project, and (4) to create enabling environment for advanced low carbon technologies. The 3E nexus also aims to enhance regional research network on low-carbon development in Asia-Pacific countries and academic activities such as workshop and training and technical aspects such as GHG emission reduction project and measuring, reporting and verification (MRV) methodologies of the JCM projects. The 3E nexus network is currently joining by 17 countries: Bangladesh, Cambodia, China, Fiji, India, Indonesia, Japan, Laos PDR, Malaysia, Mongolia, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, and Vietnam. The 3E nexus consortium is shown in Fig. 3 and consisted of three levels of institutions, consisting of the Head Quarters located in IR3S at the University of Tokyo, Japan, and the One Stop Service located in the participated countries. The One Stop Service is to act as the main researcher to connect the academic institutions, governments, stakeholders, and communities within the participated country with the Head Quarters (Fig. 3).

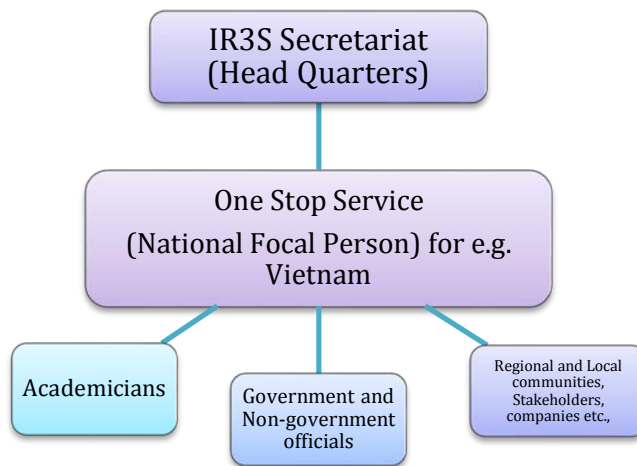


Fig. 3. The 3E nexus network consortium

### Joint Crediting Mechanism (JCM) projects for sustainable low carbon development in Asia- Pacific region

Dr. Geetha Mohan continued to give his talk on the Joint Crediting Mechanism (JCM) projects for sustainable low-carbon development in Asia- Pacific region. He showed that both developed and developing countries should achieve low-carbon growth all around the world by fully mobilizing technology, markets and finance in order to successfully address the issue of climate change. In which, extensive use of advanced low-carbon technologies and products in various fields including renewable energy, highly efficient power generation, home electronics, low-emission vehicles, and energy-savings in factories must be accelerated. Thus, the JCM aims to facilitate 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 (Fig. 4).

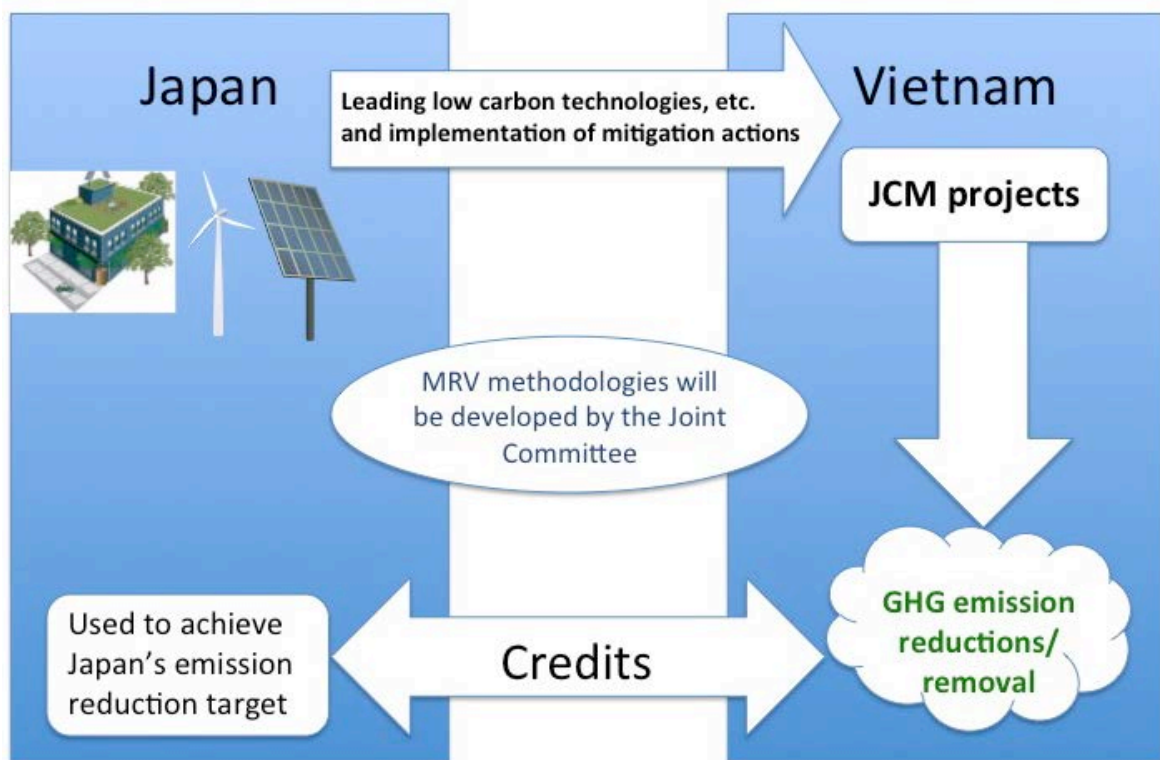


Fig. 4. Scheme of the JCM mechanism

The overall goal of the JCM is to create a leapfrog development in developing countries to avoid a high energy lock-in type development (Fig. 5). In which, developing countries need to implement low-carbon development for reducing carbon emission per capita. The platform to support leapfrog development in developing countries is established three sub-platforms, consisting of business, local government and research platform. The business platform aims to provide a One-Stop service to support business, to share information, local regulations, and the needs, to match partnership among companies. The local business platform has a function as promotion of city-to-city environment cooperation, and support for Japanese companies to disseminate low carbon technologies. The research platform plays important roles in support for cooperation between researchers and policymaker, support for low carbon plan in countries/cities and promotion of joint research between Japanese institutions and counterpart in host countries.

The JCM should be designed and implemented, taking into account the following:

- Ensuring the robust methodologies, transparency and the environmental integrity;
- Maintaining simplicity and practicality based on the rules and guidelines;
- Promoting concrete actions for global GHG emission reductions or removals;
- Preventing uses of any mitigation projects registered under the JCM for the purpose of any other international climate mitigation mechanisms to avoid double counting on GHG emission reductions or removals.

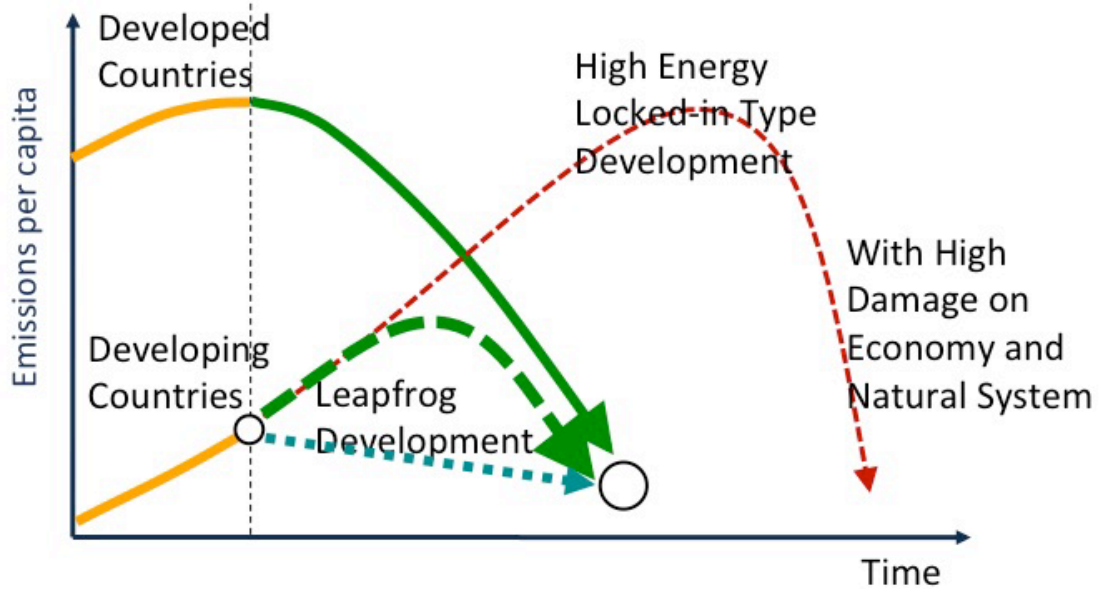


Fig. 5. Modeling sustainable clean and low-carbon Asia

The JCM has four major features:

- The JCM starts its operation as the non-tradable credit type mechanism.
- Both Governments continue consultation for the transition to the tradable credit type mechanism and reach a conclusion at the earliest possible timing, taking account of implementation of the JCM.
- The JCM aims for concrete contributions to assisting adaptation efforts of developing countries after the JCM is converted to the tradable credit type mechanism.
- The JCM covers the period until a possible coming into effect of a new international framework under the UNFCCC.

The methodology of JCM project should be established to reduce emission based on the follow criteria:

- To accelerate the deployment of low carbon technologies, products and services, which will contribute to achieving net emission reductions;
- To facilitate the nationally appropriate mitigation actions (NAMAs) in host countries.



Fig. 6. Procedure of Project Cycle of the JCM

The procedure of JCM projects should be implemented follows in Fig. 6. The project participants should submit the proposed methodology to the Joint Committee of Japan and host countries. The Joint Committee will consider the proposed methodology for approving. Based on the decision of Joint Committee, the project participants will develop the Project Design Document (PDD). Then the third party entities will make validation and Joint Committee can register the results. The project participants continue to monitor the project results and one again the third party entities will make verify the carbon emission reduction and issue the carbon credits for the JCM project.

The PDD of JCM project must contained the followed contents:

Project description with host countries

- Title of the JCM project
- General description of project and applied technologies and/or measures
- Location of project, including coordinates
- Name of project participants
- Duration
- Contribution from developed countries

Application of an approved JCM methodology(ies)

- Selection of JCM methodology(ies)
- Explanation of how the project meets eligibility criteria of the approved methodology

Calculation of emission reductions

- All emission sources and their associated greenhouse gases relevant to the JCM project
- Figure of all emission sources and monitoring points relevant to the JCM project
- Estimated emissions reductions in each year

#### Environmental impact assessment

- Local Stakeholder consultation
- Solicitation of comments from local stakeholders
- Summary of comments received and their consideration

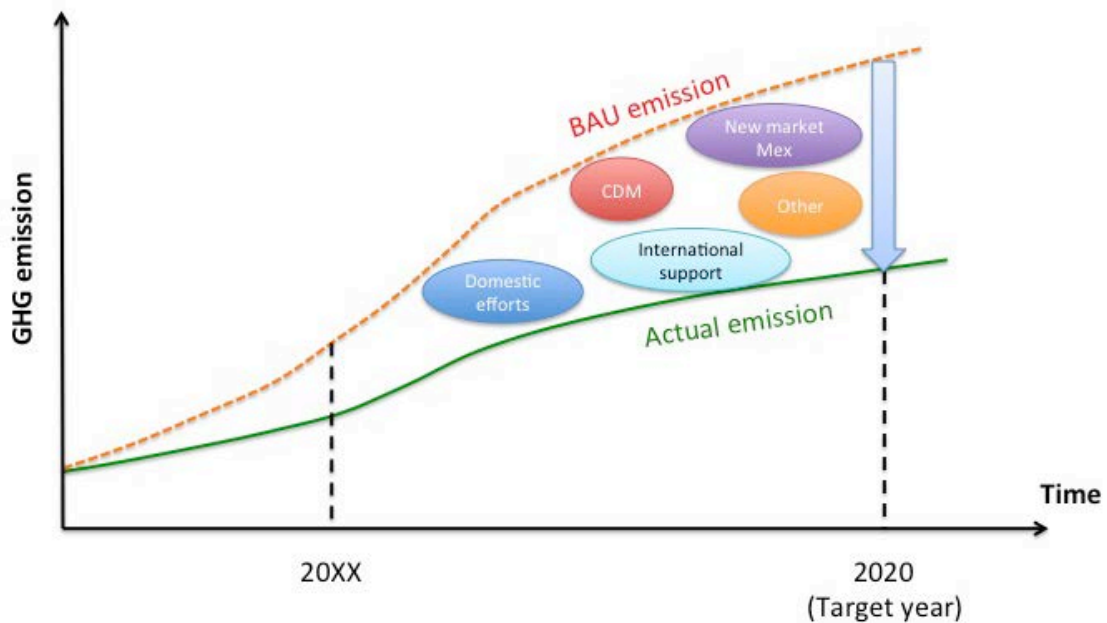


Fig. 7. Background of the mitigation action for GHG emission reduction

Monitoring (M), Reporting (R) and Verification (V) (MRV) is a concept that integrates three independent processes: Measuring or Monitoring (M), Reporting (R) and Verification (V). The term MRV originally came from the Bali Action Plan, the negotiating text of the UNFCCC (UNFCCC, 2007) in Bali, Indonesia at the end of 2007. The MRV can be defined “the basic understanding of the Bali Action Plan is that climate change mitigation actions – mainly GHG emissions reductions – shall be implemented in a “measurable, reportable and verifiable” manner, and this idea has brought significant implications for international negotiations since then”. In the context of mitigation actions of NAMAs, the MRVs can be described as the amount of emission reduction by domestic and international actions (Fig. 7).

#### **Basic Concept for Crediting under the JCM**

In the JCM, emission reductions to be credited are defined as the difference between “reference emissions” and project emissions. The reference emissions are calculated below

business-as-usual (BaU) emissions, which represent plausible emissions in providing the same outputs or service level of the proposed JCM project in the host country (Fig. 8). This crediting approach will ensure a net decrease and/or avoidance of GHG emissions.

Reference emissions are calculated by multiplying a “crediting threshold” which is typically expressed as GHG emissions per unit of output with total outputs. A crediting threshold should be established ex ante in the methodology applicable for the same project type in the host country. It should also be established conservatively in order to calculate reference emissions below BaU emissions.

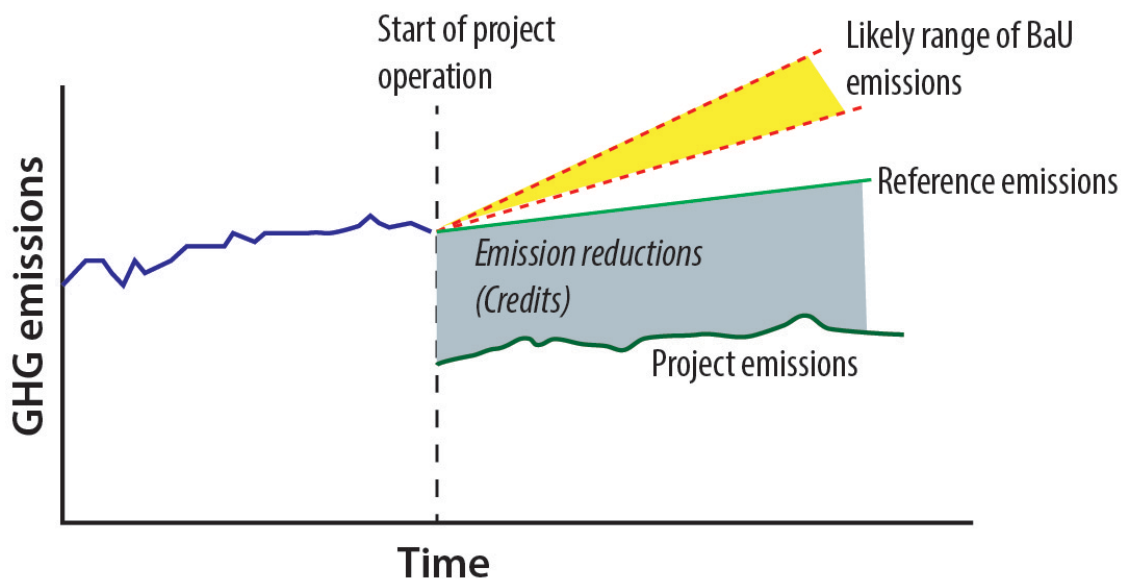


Fig. 8. Basic concept for Crediting under the JCM

This standardized approach will greatly reduce the burden of analyzing many hypothetical scenarios for demonstrating additionality of the proposed project such as under the CDM, while increasing transparency for calculating GHG emission reductions.

A net decrease and/or avoidance of GHG emissions can be realized in alternative way, instead of calculating the reference emissions below BaU emissions (Fig. 9). Using conservative default values in parameters to calculate project emissions instead of measuring actual values will lead calculated project emissions larger than actual project emissions. This approach will also ensure a net decrease and/or avoidance of GHG emissions, as well as reduce burdens of monitoring.



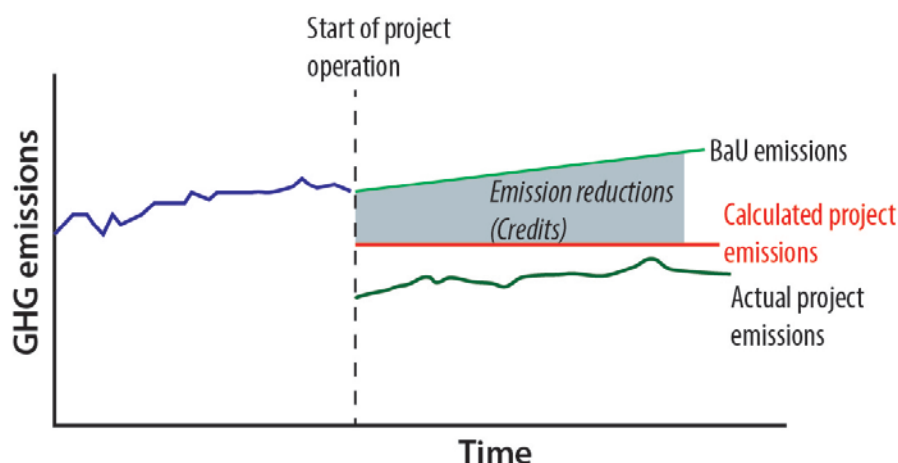


Fig. 9. Scheme of the additional ways to realize net reduction

For conclusions of his presentation, Dr. Geetha Mohan has shown several lessons learned and way forward to develop the JCM projects:

- Several MOEJ’s JCM Model Projects and Studies have been undertaken, and more JCM projects need to be developed utilizing the Study Programmes (GEC, 2014).
- The MOEJ’s Financing programme have worked as a strong initiate for sustainable low carbon development, but the good understanding of co-financiers on JCM is also the key for achievement (GEC, 2014).
- MRV methodologies have been simultaneously developed to reduce the burden for MRV activities. Various data for setting default values and reference scenarios needs to be systematically collected (GEC, 2014).
- Efforts under the co-benefits approach initiative include identification of technologies, development of evaluation tools, and piloting climate mitigation measures with co-benefits (MOEJ, 2012).
- Several the JCM projects have been implemented in Vietnam in 2014 are shown in Table 1.

Table 1. JCM projects in Vietnam in 2014

| Category | Name of the Project   | Expected Emission Reductions (tCO <sub>2</sub> /Year) | GHG | Location                         |
|----------|---|---|-----|----------------------------------|
| Model    | Anaerobic Digestion of Organic Waste for Biogas Utilization at Market | 3,355   |     | Ho Chi Minh City                 |
| Model    | Eco-driving by Utilizing Digital Tachograph System                    | 310   |     | Binh Duong Province & Hanoi City |

| Category    | Name of the Project  | Expected Emission Reductions (tCO <sub>2</sub> /Year) | GHG | Location         |
|-------------|--|---|-----|------------------|
| Planning    | Introduction of Energy from Waste Project in Ho Chi Minh City                | 42,000  |     | Ho Chi Minh City |
| Feasibility | Energy Saving for Irrigation Facility by Introducing High-efficiency Pumps   | 162   |     | Hanoi City       |
| Feasibility | Recovery and Utilization of Biogas from Mixed-treatment of Waste and Septage | 21,800  |     | Hanoi City       |
| Feasibility | 40MW-scale Hydro Power Generation in Lao Cai Province                        | 98,144  |     | Lao Cai Province |
| Feasibility | Introduction of Co-generation System Using Bagasse in Sugar Factory          | 92,199  |     | Nghe An Province |

### Opportunities and challenges for JCM projects in Vietnam

The last presentation was presented by Mr. Le Ngoc Tuan from Department of Hydrology, Meteorology and Climate Change (MONRE), entitled “Opportunities and challenges for JCM projects in Vietnam”. He summarized several aspects of the JCM and several JCM projects implementing in Vietnam (Table 1). He showed that many economical, industrial, and agricultural sectors could be participated to develop the JCM projects. He emphasized that the JCM can provide many benefits for Vietnamese enterprises such as financial and technological supports from Japan government, promotion of technological renewal toward low-carbon society, contribution to reconstruct sustainability of economy, environmental protection and GHG emission reduction. The opportunities of the JCM in Vietnam are very large with the greater priority support from Vietnam government for developing mechanism of GHG emission reduction while the carbon price declining in the CDM market. For Vietnamese enterprises, they will receive financial and technical support from Japan government for low-carbon development. However, he also showed many challenges of the JCM in Vietnam such as the JCM is a new mechanism in Vietnam, lack of guideline for developing the JCM projects, and crediting share between Vietnam and Japan is not clear and crediting share transfer to international market is difficult because the JCM has not been accepted by international communities. Additionally, Vietnamese enterprises still lack of information related to MRV and PDD in the JCM. He proposed that

both Vietnam and Japan should cooperate to revise and complete the procedures and financial mechanisms for JCM projects. Vietnam needs to establish decision and guideline related to implement JCM project, to establish consultant organization for JCM, to promote JCM through workshop and seminar in the academic, business, industrial and other social sectors.

### **Workshop discussions**

The workshop's in-depth discussions are guided by Prof. Dr. Mai Trong Nhuan to follow three major topics related to the JCM projects. He guided the participants in the workshop to discuss on three major topics/questions: (1) The opportunities of the JCM projects for Vietnamese institutions? (2) The challenges of the JCM projects for Vietnamese institutions? And (3) The potential development of the JCM projects in Vietnam?

Three representatives of the business sector, academic sector, and policymaker sector are invited to answer the above topics.

### **Representative of business sector**

Assoc. Dr. Hoang Dinh Phi (Hanoi School of Business) represented for the business sector to give his opinion on the JCM projects. He showed that the JCM is a new mechanism for many his business friends and students who are working for Vietnamese enterprises and companies. However, business participants recognize the JCM is a good opportunity for developing clean technology. He said that Vietnamese Joint Committee should create a JCM website in Vietnamese and English to provide information on the JCM and a simple guideline for developing JCM projects. He emphasized that the JCM guideline should consist of three points: amount of investment, time consuming, and cost benefits. He thought that the JCM could provide several benefits for Vietnamese enterprises such as financial and technical supports from Japanese government, and the JCM project will increase awareness of Vietnamese enterprises and companies in the fields of environmental protection and GHG emission reduction. These benefits of JCM projects will contribute to green growth and low carbon society in Vietnam. He concluded that he would use the content of JCM workshop to his lectures and consultants for graduate students and business sectors in his institution and business sector.

### **Representative of academic sector**

Assoc. Dr. Hoang Xuan Co from Faculty of Environmental Science, VNU University of Science represented for the academic sector to give his comments about the JCM. He talked that the JCM provides many opportunities for Vietnam to develop the low carbon society and to promote the green growth. However, the leading low carbon technologies, products, systems, and infrastructure could be very difficult in using and maintaining at Vietnamese enterprises. Because, there are lack of maintaining services and supports. Both

Japanese and Vietnamese JCM participants need to establish consultant and maintaining services for implementing JCM projects in Vietnam. He thought that it is very difficult in measuring carbon credits, and the cost-benefit in the JCM projects is not very clear. His conclusions emphasized that academic institution in Vietnam should perform researches to explore more the potential JCM projects in the future, and need to collaborate with the business sectors to propose methodologies of the JCM, and to increase awareness on the low-carbon development in Vietnam. In addition, it is needed to invest to academic institution to develop the MRV methods of the JCM projects.

### **Representative of policymakers**

Dr. Pham Van Tan from Department of Hydrology, Meteorology and Climate Change (MONRE) represented for the policymaker group to give his opinions on how the policymakers think about the opportunities and challenges of development the JCM project in Vietnam. He agreed that JCM project would provide financial and technical support for Vietnamese enterprises to produce “low carbon” product. The JCM will contribute a significant mean for developing the low carbon society. The Vietnamese Joint Committee will create a website to provide more information on JCM for communities, especially for business sectors. He also emphasized that it is needed to conduct workshops and seminars to increase awareness of participants on the JCM, and if business sectors join the JCM they will have many benefits to develop their companies and factories and contribute to green economy. However, he showed that the crediting share still exist as a major problem for promote JCM project between Japan and Vietnam. Additionally, how the crediting share will be accepted by international market? Because the JCM has not been widely developed by international communities.

### **Questions and answers**

The discussion section was very interactive with many questions from participants. Almost participants recognized that JCM would provide many opportunities for Vietnamese enterprises to transform the technology and to develop low-carbon society. Several participants from construction companies said that the JCM is a new mechanism in Vietnam and they need more information through workshops and seminar. Vietnam should have a JCM website and all information of JCM should be published for communities.

### **Future activities of the One-Stop service**

According to the workshop contents, questions and answers from presenters and participants, the opportunities, challenges, and solutions for developing JCM projects in Vietnam are shown as following:

## Opportunities

The JCM projects would meet requirements of the Development Orient of Vietnam Government for green growth, for cooperation with international communities to offset climate change. The JCM will provide many opportunities to renovate technology and increase the competitive ability for enterprises; to develop science and technology and innovative enterprises; to develop academic institutions; and to promote public-private-partnership cooperation.

## Challenges

The JCM is a new mechanism for reducing GHG emissions in Vietnam. However, the JCM may have lower cost-benefits in comparison to the high carbon technology for many enterprises. There are inadequate policy mechanism and weak responsibility of enterprises and business in low carbon development. Additionally, the policy system of low carbon development and adaptive with climate change are somewhat complicated for enterprises and businesses. In Vietnam, there is lack of policy and obligation for the enterprises to develop the green technology. Moreover, the advanced technology is strongly dependent on the international providers and markets.

## Roles of domestic network in Vietnam in promoting JCM projects

The domestic network will be constructed from four major organizations, consisting of One-Stop service, academicians, policymakers, regional and local communities (Fig. 9). In which, the One-Stop service will play as a central organization to collaborate: (1) with academicians for developing and transferring scientific results in the MRV, (2) with policymakers for cooperating in political consultancy on proposing and developing JCM projects, and (3) with stakeholders, enterprises, and companies in developing JCM projects. Moreover, the domestic network will maintain the contact and collaboration with Japanese head quarters (IR3S secretariat) and stakeholders (Japanese companies and businesses) (Fig. 9) for developing the education, training, and developing the JCM projects. The One-Stop service organization will include reception of requests from Japanese businesses/local governments for projects, communication with relevant domestic individuals, businesses, and/or government, and assistance in collection of basic data. Moreover, it is needed to promote the development of capacities in low-carbon society development, 3E nexus and JCM projects. The One-Stop service should be supported to promote the education and researches and to implement knowledge transfer based on these researches.

For promoting JCM, Vietnam needs to establish JCM consultancy, to support science and technology based on low-carbon development, and green growth. The consultancy and academic institutions need to provide information and training on the JCM and low-carbon development. Vietnam needs to create an innovative policy to ensure the cost-benefits of jointed entities in JCM project, to regulate implemented mechanism and financial support

in clear and easy manner. The science and technology sectors need to conduct researches to develop low-carbon technology, green technology and waste management and treatment. Both Japan and Vietnam organizations need to increase awareness of communities on the JCM by implementing study workshop and seminar.

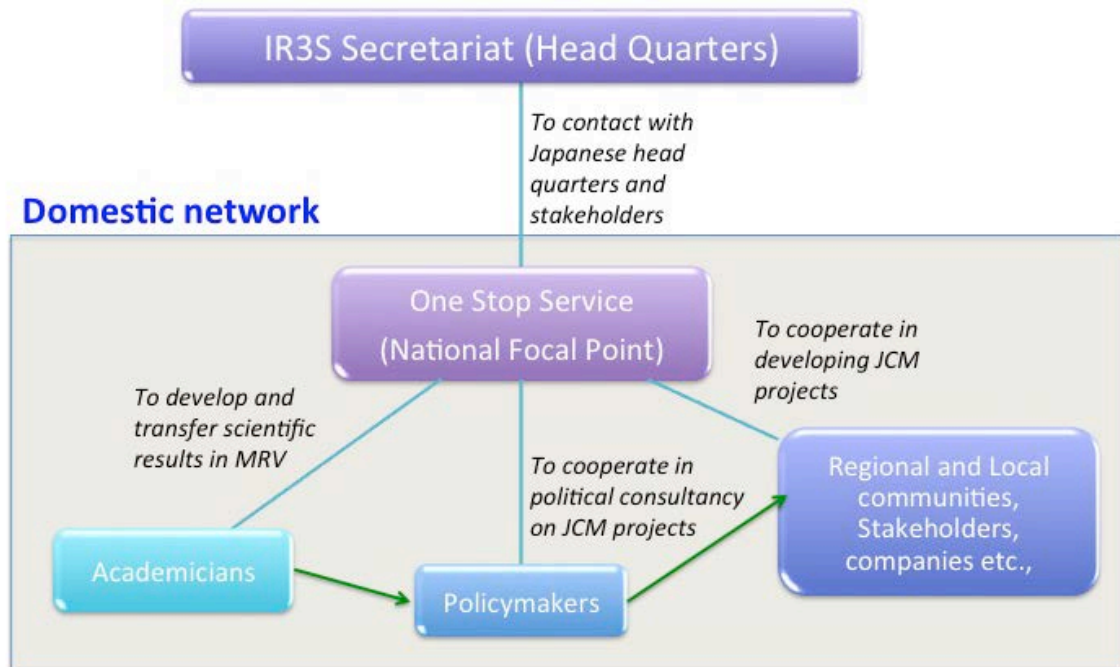


Fig. 9. The structure of domestic network to promote JCM projects in Vietnam

## Appendices

### List of participants of the first workshop on January 24<sup>th</sup> 2015

| No | Participant              | Organization  | Sector/Remarks  |
|----|--------------------------|---|---|
| 1  | Prof. Mai Trong Nhuan    | Vietnam National University   | Academia/Distinguished National Experts                 |
| 2  | Dr. Nguyen Tai Tue       | VNU University of Science   | Academia/Lecturer                                       |
| 3  | Dr. Tran Dang Quy        | VNU University of Science   | Academia/Lecturer                                       |
| 4  | Dr. Nguyen Thi Hoang Ha  | VNU University of Science   | Academia/Lecturer                                       |
| 5  | Mrs. Nguyen Thi Hong Hue | Sea & Islands Research Center   | Academia/Researcher                                     |
| 6  | Mr. Le Ngoc Tuan         | Department of Hydrology, Meteorology and Climate Change               | Policymaker/Member of Vietnamese Joint Committee        |
| 7  | Dr. Luong Quang Huy      | Department of Hydrology, Meteorology and Climate Change               | Policymaker   |
| 8  | Dr. Pham Van Tan         | Department of Hydrology, Meteorology and Climate Change               | Policymaker/Vice Co-chair of Vietnamese Joint Committee |
| 9  | Dr. Hoang Dinh Phi       | VNU Hanoi School of Business  | Business/Dean of Hanoi School of Business               |
| 10 | Dr. Nguyen Thanh Nam     | Faculty of Biology, VNU University of Science                         | Academia/Lecturer                                       |
| 11 | Dr. Nguyen Lanh          | Institute of Strategy and Policy on Natural Resources and Environment | Policymaker   |
| 12 | Dr. Nguyen Trung Hieu    | VPI-Exploration and Production Center                                 | Academia/Researcher                                     |
| 13 | Dr. Nguyen Khac Hieu     | Department of Meteorology, Hydrology and Climate Change,              | Policymaker/ Member of Vietnamese Joint Committee       |

| No | Participant         | Organization  | Sector/Remarks  |
|----|---------------------|---|---|
|    |                     | Ministry of Natural Resources and Environment   |   |
| 14 | Dr. Tran Hong Ha    | Ministry of Natural Resources and Environment   | Policymaker/ Vice Minister, Chair of Vietnamese Joint Committee |
| 15 | Dr. Nguyen Tuan Anh | Department for Science, Education, Natural Resources and Environment, Ministry of Planning and Investment | Policymaker/ Member of Vietnamese Joint Committee               |
| 16 | Dr. Nguyen Van Tue  | Department of Hydrology, Meteorology and Climate Change   | Policymaker/Director  |
| 17 | Nong Thi Hong Hanh  | Official Development Assistance   | Policymaker   |
| 18 | Chu Manh Hung       | Ministry of Transportation  | Policymaker   |
| 19 | Tran Van Luong      | Ministry of Industry & Trade  | Policymaker   |
| 20 | Hoang Van Tam       | Ministry of Industry & Trade  | Policymaker   |
| 21 | Nguyen Van Minh     | Department of Meteorology, Hydrology and Climate Change, Ministry of Natural Resources and Environment    | Policymaker   |
| 22 | Nguyen Nam Phuong   | WWF   | Policymaker   |
| 23 | Koos Nefjes         | UNDP  | Policymaker/NGO   |
| 24 | Tran Son Tung       | Centre for Environmental Monitoring, Vietnam Environment Administration (VEA)                             | Policymaker/Researcher  |
| 25 | Nguyen Bich Ngoc    | Bac Ha Investment Hydraulic Joint Stock   | Industry  |



| No | Participant                 | Organization  | Sector/Remarks                                     |
|----|-----------------------------|---|--|
|    |                             | Company   |  |
| 26 | Giang Phong                 | Nhan Dan Newspaper  | Media/Reporter                                     |
| 27 | Duong Nam Hoang             | Tin Tuc Newspaper   | Media/Reporter                                     |
| 28 | Dr. Nguyen Thi Hong Lieu    | Department of Waste Management and Environment Promotion, VEA                       | Policymaker  |
| 29 | Tran Duy Hien               | Department of Science and Technology, Ministry of Natural Resources and Environment | Policymaker  |
| 30 | Vu Thi Sinh                 | Communication and Public Relations Centre, Vietnam National University              | Media  |
| 31 | Dr. Quach Duc Tin           | General Department of Geology and Minerals of Vietnam                               | Academia/Researcher                                |
| 32 | Assoc. Dr. Do Minh Duc      | VNU University of Science   | Academia/Lecturer, Vice Dean of Faculty of Geology |
| 33 | Assoc. Dr. Nguyen Van Vuong | VNU University of Science   | Academia/Lecturer, Dean of Faculty of Geology      |
| 34 | Assoc. Dr. Nguyen Van Noi   | VNU University of Science   | Academia<br>Rector of VNU University of Science    |
| 35 | Nguyen Van Thinh            | Fecon Co. Ltd.  | Business   |
| 36 | Do Trung Dung               | Department of Science and Technology, Phu Tho Province                              | Policymaker  |
| 37 | Nguyen Thanh Phuong         | Ministry of Agriculture and Rural Development                                       | Policymaker  |
| 38 | Vu Hoai Bac                 | GHC consultant company  | Business   |
| 39 | Tran Thi Le Hang            | Construction and Environmental consultant and investment company                    | Business   |

| No | Participant          | Organization  | Sector/Remarks                     |
|----|----------------------|---|------------------------------------|
| 40 | Bui Xuan Nang        | Joint Stock Company of investment and development of Gas City | Business                           |
| 41 | Nguyen Anh Duc       | Shide Joint Stock company, Vietnam                            | Business                           |
| 42 | Duong Hoang Tuan Anh | Shide Joint stock company, Vietnam                            | Business                           |
| 43 | Nguyen Hoang Hai     | Ran water treatment Co.Ltd.                                   | Business                           |
| 44 | Pham Manh Hiep       | Quang Khanh Co. Ltd.  | Business                           |
| 45 | Ngo Quang Dung       | Quang Khanh Co. Ltd.  | Business                           |
| 46 | Tran Duc Minh        | Chairman of the board 307CONS                                 | Business                           |
| 47 | Nguyen Thi Nhu Quynh | Department of Waste Management and Environment Promotion      | Policymaker                        |
| 48 | Do Xuan Thuan        | Vietnam Environmental protection fund                         | Policymaker                        |
| 49 | Tran Son Tung        | Vietnam Environmental Protection Agency                       | Policymaker                        |
| 50 | Phan Tuan Nghia      | VNU University of Science                                     | Academia/Vice Rector               |
| 51 | Nguyen Anh Duy       | Vietnam Environmental protection fund                         | Policymaker                        |
| 52 | Hoang Thi Quy        | VNU University of Science                                     | Academia/Reporter                  |
| 53 | Pham Thi Thu Ha      | VNU University of Science                                     | Academia/Lecturer                  |
| 54 | Mac Hanh             | Shide Joint Stock Company                                     | Business                           |
| 55 | Hoang Van Cuong      | Directorate of Fisheries                                      | Policymaker                        |
| 56 | Tran Quoc Binh       | VNU University of   | Academia/Department of Science and |

| No | Participant          | Organization                     | Sector/Remarks         |
|----|----------------------|----------------------------------|------------------------|
|    |                      | Science                          | Technology Development |
| 57 | Ngo Van Dung         | VNU Hanoi School of Business     | Academia               |
| 58 | Pham Thi Ngoc Diep   | Directorate of Fisheries         | Policymaker            |
| 59 | Nguyen Thi Thao      | Ministry of Industry and Trade   | Policymaker            |
| 60 | Hoang Xuan Co        | VNU University of Science        | Academia/Lecturer      |
| 61 | Thai Thi Hoang Giang | VNU Sea & Island Research Center | Academia/Researcher    |
| 62 | Nguyen Thi Mai Ngan  | VNU Sea & Island Research Center | Academia/Researcher    |
| 63 | Quach Manh Dat       | VNU Sea & Island Research Center | Academia/Researcher    |
| 64 | Nguyen Thi Hao       | VNU Sea & Island Research Center | Academia/Researcher    |
| 65 | Ho Quoc Phong        | VNU Sea & Island Research Center | Academia/Researcher    |
| 66 | Nguyen Ngoc Van      | An Gia Tien company              | Business               |

## Workshop photos



**Photo 1:** Representative participants in the JCM workshop at VNU University of Science



**Photo 2:** Prof. Dr. Phan Tuan Nghia - Vice Rector of VNU University of Science is giving opening and welcome remarks



**Photo 3:** Prof. Dr. Mai Trong Nhuan is giving workshop introductory remarks



**Photo 4:** Dr. Luong Quang Huy is presenting the evolution of climate change policy in Vietnam



**Photo 5:** Dr. Geetha Mohan is presenting the Energy, Environment and Ecosystem (3E) Nexus Initiative.



**Photo 6:** Dr. Le Ngoc Tuan is presenting Opportunities and challenges for JCM projects in Vietnam



**Photo 7.** Assoc. Dr. Hoang Dinh Phi is giving discussion on the Opportunities and challenges for JCM projects in Vietnam



**Photo 8.** Assoc. Dr. Hoang Xuan Co is giving discussion on the opportunities and challenges for JCM projects in Vietnam



**Photo 9.** Dr. Pham Van Tan is giving discussion on the opportunities and challenges for JCM projects in Vietnam



**Photo 10.** Questions and answers sections between presenters and participants



**Photo 11.** Questions and answers sections between presenters and participants