Workshop Proceedings

Exploring Potential for Low Carbon Society in Vietnam

May 31, 2012

Grand Plaza Hotel, Hanoi

Co-organized by Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE), Ministry of Natural Resource and Environment (MONRE) in the Government of Vietnam, and Japan International Cooperation Agency (JICA), National Institute for Environmental Studies (NIES), Kyoto University, and International Research Network for Low Carbon Societies (LCS-RNet) Secretariat/Institute of Global Environment Strategies (IGES)

Proceedings

Workshop on Exploring Potential for Low Carbon Society in Vietnam

Preface

Vietnam is among the countries most seriously affected by climate change. The government has developed the National Climate Change Strategy to encourage all sectors to deal with the challenges. The government is preparing the Green Growth Strategy to restructure the economy to overcome the economic crisis as well as to support the implementation of National Climate Change Strategy. The efforts of the Government of Vietnam have received support from international communities, both in term of financial and knowledge resources.

A Workshop on **Exploring Potential for Low Carbon Society in Vietnam** was organized by the Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE) with support of Japan International Cooperation Agency (JICA), National Institute for Environmental Studies (NIES), Kyoto University, and Institute for Global Environmental Strategies (IGES) at the Grand Plaza Hotel, Hanoi, on May 31, 2012. The workshop aimed to introduce the LCS methodology developed by the AIM team in Japan and increasingly applied in Asian countries; and also discussed a suitable approach for an LCS study in Vietnam. With the participation of key stakeholders from relevant areas, this workshop represented a valuable opportunity to promote information-sharing and cooperation among agencies working on or are interested in low carbon initiatives.

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Workshop on Exploring Potential for Low Carbon Society in Vietnam

Contents

Workshop on
Exploring Potential for Low Carbon Society (LCS) in Vietnam

Grand Plaza hotel, Hanoi, May 31, 2012

Agenda

8:00-8:30	Registration
8:30-8:50	**Opening remarks** ・ Dr. Nguyen The Chinh, Deputy General Director of ISPONRE in MONRE ・ Mr. Akira Shimizu, Senior Representative of the JICA Vietnam office
8:50-9:20	**National Strategy on Climate Change** Mr. Truong Duc Tri, Deputy Director of DMHCC in MONRE
9:20-9:50	**Vietnam Green Growth Strategy** Ms. Nguyen Thi Dieu Trinh, officer of Department of Science, Education, Natural Resources and Environment in MPI
9:50-10:30	**A Low Carbon Society Development towards 2030 in Vietnam** Dr. Nguyen Tung Lam, Head, Department of Integrated Research, ISPONRE in MONRE
10:30-10:50	Coffee Break
10:50-11:20	**Low Carbon Asia Research Net Work** Dr. Shuzo NIshioka, Secretary General of LCSR-Net/IGES
11:20-12:00	**Panel Discussion** Panelist ・ Dr. Nguyen The Chinh, Deputy General Director of ISPONRE in MONRE ・ Ms. Nguyen Thi Dieu Trinh, officer of Department of Science, Education, Natural Resources and Environment in MPI ・ Prof. Yuzuru Matsuoka, Professor, Graduate School of Engineering, Kyoto University ・ Dr. Shuzo NIshioka, Secretary General of LCSR-Net/IGES ・ Mr. Hiroshi Tsujihara, a JICA Expert from the Ministry of the Environment Moderator ・ Dr. Junichi Fujino, Senior Researcher, Center for Social and Environmental Systems Research, NIES **3 discussion points:** 1. What kind of “research” do you need to create practical LCS policy based on long-term perspectives? 2. What kind of “research” can you provide for LCS policy making? 3. What are our actions now?
12:00	Meeting Adjourned

Workshop on Exploring Potential for Low Carbon Society in Vietnam
Summary

Background

The Government of Vietnam, Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE) of the Ministry of Natural Resource and Environment (MONRE) organized the workshop on "Exploring Potential for Low Carbon Society" in Vietnam on May 31, 2012 at the Gland Plaza Hotel, Hanoi. It was implemented with the support of Japan International Cooperation Agency (JICA), National Institute for Environmental Studies (NIES), Kyoto University, Low carbon Society Research Network (LCS-RNet) Secretariat, and Institute of Global Environmental Strategies (IGES).

70 people, from relevant government officials, such as those from Department of Meteorology, Hydrology and Climate Change (DMHCC), Institute of Meteorology, Hydrology and Environment (IMHEN), and ISPONRE of MONRE; Ministry of Planning and Investment (MPI), Department of Science, Education, Natural Resources and Environment (DSENRD); Central Institute for Economic Management (CIEM); Ministry of Agriculture and Rural Development (MARD); to academics, NGOs, and donor agencies participated in the workshop.

Objectives

The objective of the Workshop was to identify the methodologies for sustainable Low Carbon Society (LCS) in Vietnam and exchange opinions to explore their usefulness and associated challenges. It also aimed to promote information sharing and cooperation among agencies which are working on or interested in low carbon initiatives. The content of the workshop comprised four presentations: (1) An overview of National Climate Change Strategy by DMHCC, (2) Green Growth Strategy in Vietnam by MPI, (3) Introduction of the outcomes of the LCS scenario studies towards 2030 in Vietnam, and (4) Introduction of Low Carbon Asia Research Network (LoCARNet) by LCSR-Net Secretariat/IGES, with a panel discussion being conducted following these presentations. Dr. Nguyen The Chinh, Deputy General Director of ISPONRE, played a prominent role as the coordinator and facilitator of the workshop.

Opening remarks

The representatives from both Vietnam and Japan delivered opening remarks. Dr. Nguyen The Chinh delivered his speech on behalf of the Vietnam team. He expressed his great sense of honour and pleasure in welcoming all participants to the workshop. He emphasized the importance of examining how to reduce GHG emissions and energy consumption, and ways of managing energy, waste, and land, in addition to improving economic growth, and addressing the global economic

crisis. He pointed out that addressing these challenges was fundamental to the promotion of a sustainable low carbon economy in Vietnam.

Following the opening remarks by Dr. Nguyen The Chinh, Mr. Akira Shimizu, representative of the JICA Vietnam office, delivered the opening address on behalf of the Japanese delegation. He commended the initiative of the Government of Vietnam, especially its National Climate Change Strategy and Green Growth Strategy. He emphasised the importance of mainstreaming the concept of low carbon societies into Vietnam's development strategies. He expressed the hope that the workshop would help in efforts towards capacity development for Vietnam for the effective planning and implementation of these initiatives.

National Climate Change Strategy and Green Growth Strategy

Current Policy in Vietnam concerning Climate Change and Green Growth was reported on during the workshop. In Vietnam, there are two relevant policies which aim to promote low carbon society. The first is the National Strategy on Climate Change, approved by the Prime Minister under Decision No. 2139 dated December 5, 2011. In line with this policy, Vietnam established the National Committee on Climate Change under Prime Minister Decision No. 43 dated January 9, 2012. The Prime Minister appointed MONRE to hold jurisdiction over the National Strategy on Climate Change. The other relevant policy is the Vietnam Green Growth Strategy. The formulation of the Strategy was also suggested by the Prime Minister, and the Prime Minister appointed the Ministry of Planning and Investment (MPI) to prepare the Vietnam Green Growth Strategy in order to support the implementation of the National Climate Change Policy. The Prime Minister issued notice that low carbon growth is part of the Green Growth Strategy under the 38/TB-VPCP March 3, 2011. MPI has carried out the adjustment necessary for the approval of their draft on Green Growth in Vietnam.

Both the National Climate Change Strategy and Green Growth Strategy aim to strengthen Vietnam's sustainable socio-economic development through appropriate natural resource management in line with sound science and economic analysis; improvement of industrial processes; development and dissemination of clean energy and renewables; and improvement of relevant governance systems, by means of the development and sharing of their vision for sustainable development towards 2050. The significant difference between National Strategy of Climate Change and Green Growth Strategy is that National Strategy on Climate Change is driven by the necessity to respond to the projected impacts of sea-level rise and the frequency of natural disasters. The objectives of GHG mitigation include contributing to the protection of global climate systems. On the other hand, the objectives of Green Growth Strategies emphasize the restructuring of economies and increasing

competitiveness through efficient use of resources and addressing environmental degradation. Socio-economic strategies, such as the improvement of industrial processes to lower GHG emissions, would be necessary for low carbon economic development under the concept of Green Growth. Mr. Mr. Luong Quang Huy, Official of Department of Meteorology, Hydrometeorology and Climate Change (DMHCC), MONRE, on behalf of Truong Duc Tri, Deputy Director of Department of DMHCC in MONRE, presented the overview of National Strategy on Climate Change, while Ms. Nguyen Thi Dieu Trinh, officer of Department of Science, Education, Natural Resources and Environment in MPI, introduced their draft document, Vietnam Green Growth Strategy.

Nguyen The Chinh offered comments to the effect that Vietnam faces a number of challenges to address both Green Growth Strategies and climate change strategies, such as developing its GDP and protecting and making use of its natural resources. He raised the question of Vietnam's choices for low carbon growth while addressing poverty reduction. He then emphasized the necessity of finding the trade-offs and co-benefits. He also pointed out the importance of having and sharing clear future scenarios for Vietnam and the costs and benefits of investments for socio-economic development. He expressed his expectations that the LCS scenario studies should use the Asia-Pacific Integrated Motel (AIM) as one of the key methodologies to address and evaluate both National Climate Change Strategies and Green Growth Strategies.

A Low Carbon Society Development towards 2030 in Vietnam

Dr. Nguyen Tung Lam, Head, Department of Integrated Research, ISPONRE presented the outcomes of a study "A Low Carbon Society Development Towards 2030 in Vietnam". This is an LCS scenario study for Vietnam conducted collaboratively between ISPONRE; the Institute of Meteorology, Hydrology and Environment (IMHEN); the Water Resources University in Vietnam; Kyoto University; NIES; and JICA. AIM is a group of computer models developed by a team composed of members from NIES, Kyoto University, and several research institutes in the Asia-Pacific region. It is the first set of models focused on the Asian region, initially undertaken in 1990. It aims to design and assess policy options for sustainable LCS in the Asia-Pacific region and to stabilize the global climate - depicting the feasible and robust mid-to long-term low carbon growth pathways in line with collaborative research outcomes with local researchers and policy makers in Asia, including Vietnam.

"A Low Carbon Society Development Towards 2030 in Vietnam" is an updated study from the preliminary study on Sustainable Low Carbon Development Towards 2030 in Vietnam which was implemented by an AIM Project Team in February 2010. It estimates GHG emissions and mitigations in the energy sector and the Agriculture, Forestry and Other Land use sectors (AFOLU), outlining

Vietnam's socio-economic scenarios for 2030. According to the study, GHG emissions will increase four fold from 151Mt CO_2 in 2005 to 601 Mt in 2030 under a BaU scenario. On the other hand, the study estimated that, if Vietnam adopted the 2030CM scenario, it would reduce GHG emissions by 36% by 2030 when compared with 2030BaU estimates. Emission intensity would be reduced by 20%. The study also analysed Vietnam's potential to reduce GHG emissions in AFOLU and energy sectors respectively and concluded that GHG emissions in AFOLU sectors can be decreased by 57% with 2030CM as compared with 2030BaU levels. Midseason drainage and conservation of existing forests protected as reserves are expected to hold the largest mitigation potential in these sectors. Furthermore, about 38% of GHG emissions in the energy sector can be reduced in 2030CM as compared with 2030BaU levels. Fuel shift and energy efficiency are projected to be the largest countermeasures in this sector. After the presentation, Dr. Nguyen The Chinh stated his expectation that the AIM models would be the key methodologies for Nationally Appropriate Mitigation Action (NAMA), and LCS scenario study would be highly significant for the monitoring of Vietnam's National Climate Change Strategies, as well as the draft of Green Growth Strategies. He also expressed an expectation that reliable data for Vietnam would be made available through the study.

Asia Low Carbon Research Network (LoCARNet)

Dr. Shuzo Nishioka, Secretary General of LCS-RNet/IGES presented an overview of the Low Carbon Asia Research Network, the so-called LoCARNet. He explained that it aimed to support research communities in order to promote research which would contribute to policy-making processes towards low-carbon growth, by enabling a sufficient amount of dialogue between scientists and policy-makers. He expressed his expectation that these research communities will come to play an important role in providing their knowledge of the platform among stakeholders, such as policy-makers of both central and local governments, private sector entities, donors, researchers and various international organizations. He further hopes that these stakeholders should conduct exchange of knowledge for effective national and local development plans, policy formulation, and infrastructure investment, in line with an analysis which gives full consideration to the circumstances of each country's specific needs.

Panel Discussion

A panel discussion was facilitated by Dr. Junichi Fujino, Senior Researcher, Center for Social and Environmental System Research of NIES. He raised three discussion points:

1. What kind of "research" do you need to create practical LCS policy based on long-term perspectives?
2. What kind of "research" can you provide for LCS policy making?

3. What are our actions now?

Dr. Nguyen The Chinh of ISPONRE, Ms. Nguyen Thi Dieu Trinh officer of MPI, Prof. Yuzuru Matsuoka of Kyoto University, Dr. Shuzo Nishioka of Secretary General of LCS-RNet/IGES, and Mr. Hiroshi Tsujihara, a JICA expert from the Ministry of the Environment, Japan participated as the panelists for the discussion, and also conducted two-way communication with the participants from the floor.

During the panel discussion, participants discussed the necessity of research at both macro and micro levels which would assist consensus building among different stakeholders. The importance of such research was discussed in terms of the necessity to introduce sustainable economic structures and suitable technology options, which would bring about socio-economic benefits by reducing GHG emissions from Vietnam, and the corresponding requirement for financial support and capacity development in Vietnamese society.

Firstly, Ms. Nguyen Thi Dieu Trinh of the office of MPI responded to the questions raised by the discussion. She noted her experience in developing Green Growth Strategy from scratch. She mentioned her enormous difficulty in finding suitable researchers from a long list of those available, because, while their research appeared to engage with the topic of Green Growth Strategies, that they did not necessarily engage with the practical aspects of policy making. She pointed out that regular communication between policy-makers and researchers is important, and that this should be conducted in a timely, effective, and efficient manner. She also pointed out the difficulty in deciding the appropriate research topics for policy in a limited timeframe. As an officer engaged in national development planning, she expressed her preference that researchers conduct comprehensive macro level research. She identified the importance of research to analyse the issues on the ground, but at the same time she emphasized the necessity of harmonization of research between macro and micro levels. She also highlighted that harmonization was necessary between the various initiatives within the UN system, which was organizing a number of initiatives and strategies.

Subsequently, Dr. Nguyen The Chinh of ISPONRE emphasized the necessity to stabilize the macro economy and shift it towards a green economy in order to achieve a sustainable low carbon society in Vietnam. He expressed his opinion that it was great a opportunity to attract donors who would contribute to the comprehensive implementation of Vietnam's own climate change strategy and Green Growth Strategy. He pointed out the necessity of research mainly from three perspectives. Firstly, he spoke about the necessity of research which developed the model to respond to poverty reduction objectives and which analysed the need for balance while managing land, forest, and

agricultural products appropriately, and conducting activities towards low carbon development. He noted that Vietnam was an agricultural country, which had to conduct land management and forestry management appropriately. It was also, he said, important to improve the transport and energy sectors. While it was easy to identify their importance, it was difficult to find solutions which would encourage LCS, as there were a number of challenges, such as a restructuring of the economy and improvements towards poverty reduction. Secondly, he also called for research to identify clues for managing financial needs, including overall costs, and how much Official Development Assistance (ODA) Vietnam needed to borrow. Thirdly, he emphasized the necessity for research to address Vietnam's energy options, while simultaneously taking into consideration a number of the challenges in the way of development. He noted that Vietnam should preferably familiarise themselves with Japanese management customs as regards to energy and the environment, in order to pursue Win-Win solutions for both Vietnam and Japan.

From the floor, one of the researchers from CIEM responded to the 1st discussion point on three fronts. Firstly, he pointed out that we need to build the capacity of entire societies in order to develop LCS, and that it was important to elucidate the benefits to be obtained through LCS. Consequently, he expressed his conviction of the necessity to conduct two types of research - on both macro and micro levels, and including combinations of both such levels - owing to the different layers on which our society operates, and the need to endeavour towards collective efforts integrating these different layers. Secondly, he suggested that clarification of the theme and topic was important for capacity development programs. He also expressed the necessity of research to conduct market-driven schemes appropriately, including the response to the development of market regulation for green growth. Thirdly, he offered his comments regarding LoCARNet. He pointed out that the knowledge-sharing facilitated by LoCARNet should extend to regions other than Asia, and that this would enhance collaboration between researchers and policy makers.

A participant from DMHCC then commented on the LCS Scenario Study focused on Vietnam, which was presented by Dr. Nguyen Tung Lam of ISPONRE. He pointed out the necessity of further research which indicated the appropriate technologies and their transfer, given that the LCS Scenario Study recommended technical options and these necessitated technical solutions. He also pointed out that Vietnam needs to achieve its GHG emission reduction targets by implementing its climate change strategies and green growth strategies effectively.

Mr. Hiroshi Tsujihara, a JICA Expert from the Ministry of the Environment, noted that Vietnam had a sizable chance to achieve LCS through appropriate decision-making and development planning. Japan faces big challenges to restructure its energy management system to shift from the

carbon-intensive conditions under the current governance structure and a number of existing infrastructures. He expressed his hope that the Vietnamese government carry out design roadmapping towards low carbon society based on sound scientific and economic analysis. On the basis of this design and roadmap, the Vietnamese government should take actions. He noted that AIM may prove to be helpful in considering the direction Vietnam should take towards achieving sustainable LCS.

Mr. Naoki Mori, JICA expert, Climate Change Program Advisor for the Support Program to Respond to Climate Change in JICA Vietnam Office, wanted to know how AIM supported the Green Growth Strategies in Vietnam in its preparation and implementation phases, and what support AIM could provide for NAMA.

Prof. Yuzuru Matsuoka of Kyoto University described the role of AIM models. He explained that AIM was a set of integration tools, and its development and implementation involved interaction between researchers and policy makers. In response to the questions from Mr. Mori, he stated that AIM helps to facilitate discussion and propose cost-effective policy options while clarifying their feasibility. He proposed collaboration among different stakeholders, as the use of AIM required continuous analysis and discussion among policy makers, researchers, and other stakeholders in line with the outcomes. The appropriateness of the assumptions used in the scenarios themselves also necessitates discussion among the Vietnamese. He noted that AIM was suitable to discuss long-term strategies and that the integrated assessment was the main tool for that purpose. However, he emphasized that iterative discussions had to be conducted among Vietnamese, and the follow-up activities were to be undertaken by researchers and policy makers in Vietnam itself.

Prof. Matsuoka also responded to the question about the necessity of research from both macro and micro levels. AIM tries to show the evidence at both using macro–economic CGE type models and the micro level technology bottom-up type models, including AIM/Enduse model. AIM also shows the consistency between macro and micro level analyses. Analysis using AIM would also throw up the long-term challenges in implementation of various options.

Dr. Shuzo NIshioka responded to the comment on LoCARNet. He noted that there were a number of donors who were working on strategies for low carbon and green growth in Asia. He said it was necessary to carry out analyses of multiple aspects and issues simultaneously, in order to address these strategies, and that we therefore need to develop a practical collaborative network to address these concretely and efficiently. He also noted that LoCARNet should be managed by means of the development of autonomous management by the regional countries (e.g. rotation in hosting of the

meetings) in the next three years, even though IGES has served as the secretariat at the beginning. He emphasized that the concept of LoCARNet includes the enhancement of ownership among each stakeholder in Asia towards the LCS.

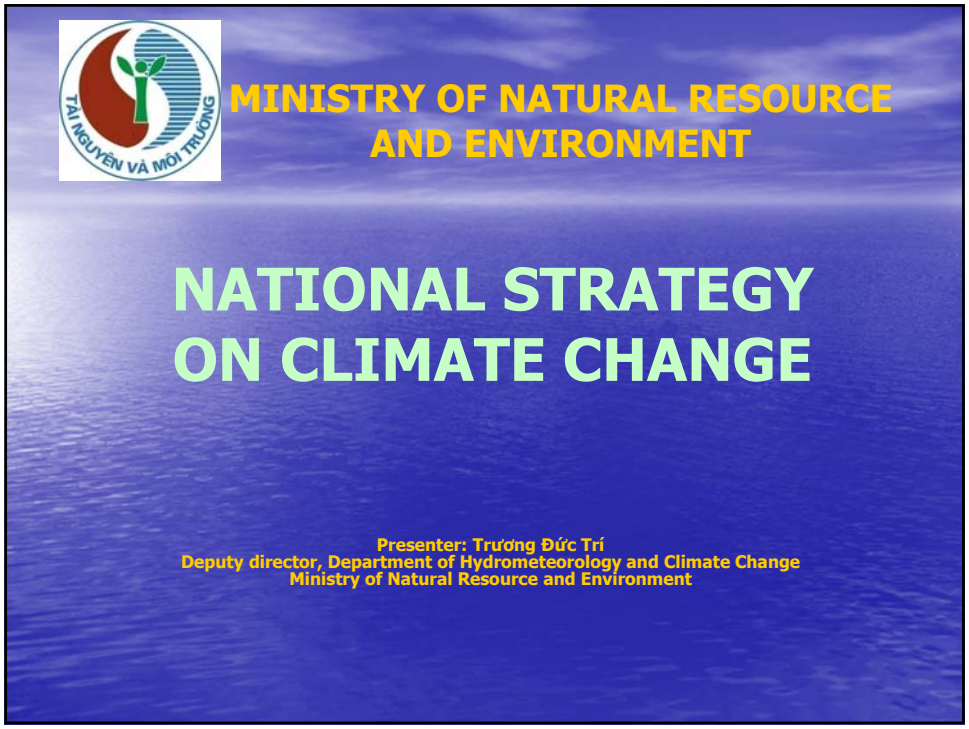
Ms. Nguyen Thi Dieu Trinh of MPI spoke about the necessity to address gender issues in drafting a Green Growth Strategy document. She also pointed out the need for coordination among the different agencies. On the question of financial needs, she made the point that the Green Growth Strategy would need to be made more easily implementable, as Vietnam had to work with the concrete Action Plan in terms of specific and comprehensive activities. Furthermore, she underlined the necessity to develop the market mechanisms for economic reform and technological investment, and their evolution. Promotion of green economy would mobilize the funds available for technology investment and transfer - open market mechanisms are important for green growth. She also noted the difficulty in responding to a number of questions from the stakeholders who asked about the costs to be undergone, because Vietnam is yet to establish specific targets and clear implementation strategies for green growth. She also emphasized that Vietnam needed to address climate change adaptation as a matter of high priority, while addressing the question of low carbon society for Vietnam's comprehensive sustainable development. As regards the necessity for research, she responded that MPI would give priority to the macro level research, as it needs to plan and implement appropriate development strategies. She also highlighted the necessity of research to make an appropriate legal framework in Vietnam. In answering a question from Mr. Mori, she expressed her wish that the outputs from the AIM model would be important to monitor Vietnam's Green Growth Strategy, and that she would like to explore how to make use of them. She noted that there were other similar research programmes and suggested that there was a need to understand and compare their respective approaches. She also suggested that researchers ought to discuss and review the results of different LCS studies among themselves. She emphasized the necessity to avoid duplication of efforts.

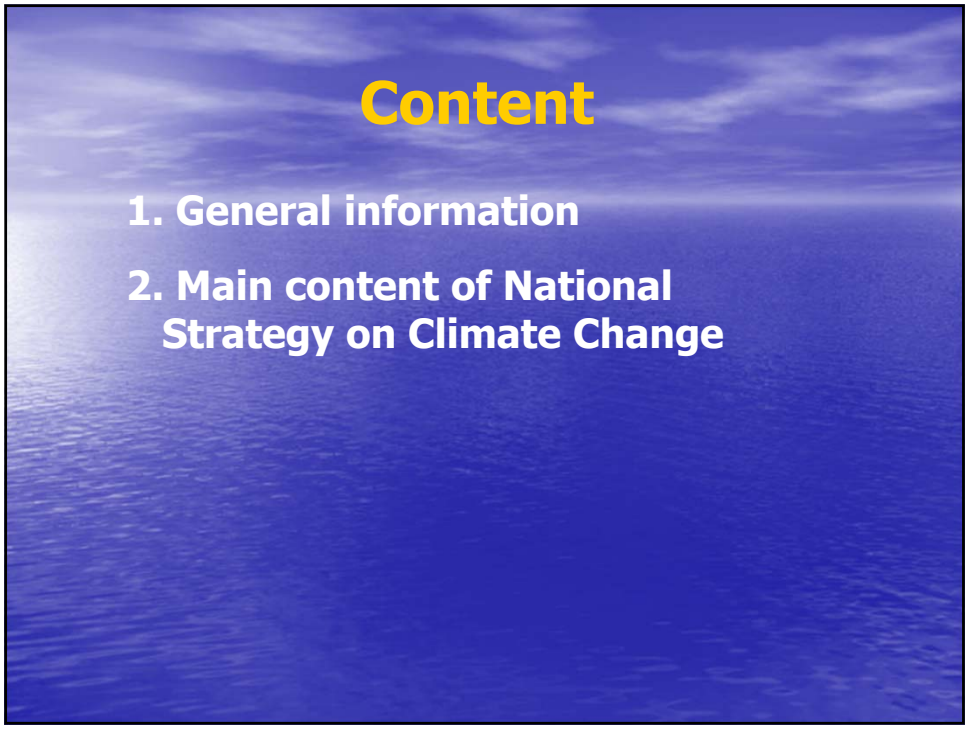
Concluding remarks

For the final comment of the panel discussion and the conclusion of the workshop, Dr. Nguyen The Chinh of ISPONRE agreed with the comment of the researcher from CIEM, pointing out the importance of enhancing awareness-building on an overall societal level. He also agreed that the market economic mechanisms were fundamental to the promotion of green growth in Vietnam. For the question of financial investment, he suggested to examine the lessons learnt from past successes and failures, including the experience in developing business opportunities through trade between Japan and Vietnam. He concluded by emphasising the necessity for collaborative work among different stakeholders towards building a sustainable LCS.

3. Compilation of Speakers' Presentation

English


MINISTRY OF NATURAL RESOURCE AND ENVIRONMENT
NATIONAL STRATEGY ON CLIMATE CHANGE
Presenter: Trương Đức Trí
Deputy director, Department of Hydrometeorology and Climate Change
Ministry of Natural Resource and Environment


Content
1. General information
2. Main content of National Strategy on Climate Change

1. General information

- Viet Nam, average temperature has risen about 0.5 to 0.7°C within 50 years,
- Sea lever has risen about 20cm;
- El Nino, La Nina phenomena impact increase strongly day by day;
- Calamities increase fiercely, especially storm, flood and drought;

1. General information *(cont)*

Scenario of climate change and sea level rise in Vietnam:

- In the end of 21st century, our annual average temperature will increase about 2 - 3°C;
- Total annual rainfall in rainy season's will increase while rainfall in dry season decrease;
- Sea level may rise from 75cm to 1m over the 1980-1999 period;
- If sea level increase over 1m, about 10-12% of Viet Nam population will be affected and 10% GDP lost;

1. General information *(cont)*

Challenges:

- Awareness of climate change is not enough;
- The management system and policies are still weak and decentralized.
- Research on climate change effect is still limited;
- The socio-economic structure has not been ready to cope with climate change;
- The economic sectors are yet cross-integrated. Moreover, during the economic growth, climate change has not been evaluated appropriately;
- Development orientations of economic sectors is still using of natural resources.

1. General information *(cont)*

Viet Nam actions

- Approve National target program on climate change response (Decision No.158 dated December 2nd,2008 of Prime Minister)
- Build and promulgate Viet Nam scenario of climate change and sea level rise (June,2009), update result of the scenario (March, 2012)
- Approve National Plan on climate change (Decision No.2139 dated December 5th,2011 of Prime Minister)
- Establish National Committee on Climate Change (Decision 43 dated January 9th,2012 of Prime Minister)
- From 2012, we start deploying models to cope with impacts of climate change, particularly sea level rise. The coastal provinces are priority deployed especially provinces on the Mekong Delta .

2. National Strategy on Climate change contents

POINTS OF VIEW:

- Vietnam regards responding to climate change as a vital issue.
- The climate change response must be closely connected the sustainable development, take advantage of opportunities to innovate in thinking of development, improve national competitiveness and power.
- Carry out actions of adaptation and mitigation of greenhouse gas emissions at the same time, in which first period of adaptation is focused.
- The climate change response is responsibility of whole system. Viet Nam focuses on promoting internal force, takes full advantage of international cooperation mechanisms.
- Solutions of the response to climate change must be systematic, intergrated, interbranch, inter-regional, focused, in accordance with each stage and international regulations;
- Strategy on climate change has trans-century vision, it is the foundation for other strategies.

STRATEGIC TARGET:

- Promote national capacity, carry out solutions of climate change adaptation and mitigation of greenhouse gas emissions at the same time, secure people's lives and property, aime at sustainable development.
- Strenghthen human ability and natural system to respond to climate change, develop the low-carbon economic in order to protect and improve quality of human life, guarantee the security and national sustainable development in the context of global climate change and actively protect the global climate system with international community.

SPECIFIC OBJECTIVES :

- Ensure food security, energy security, water security, poverty reduction, gender equality, social security, public health, improving lives, protect natural resources in the context of climate change;
- The low-carbon economy, green growth become national mainstream;
- Enhance awareness, responsibility and ability of responding to climate change, take advantage of opportunities from climate change for socio-economic development, develop and expand friendly consumption style in accordance with the climate system.
- Positively contribute responding to climate change, strengthen international cooperation activities to effectively respond to climate change.

THE TASKS OF STRATEGIC :

Adaption:

1. Actively respond to calamity and monitor climate
   - a) Early warning
   - b) Reduce damage caused by calamity
2. Ensure food security and water resources
   - a) food security
   - b) water resources security
3. Positively respond to sea level rise in accordance with vulnerable areas.

THE TASKS OF STRATEGIC *(cont):*

Adapt and mitigate greenhouse gas emission :

4. Protect forest, sustainable development of forest, increase absorption of greenhouse gas and biodiversity conservation

Mitigate greenhouse gas emission

5. greenhouse gas emission mitigation contributes to protect global climate system
   - a) Develop renewable energy sources, new energy sources
   - b) Economize and effectively use energy
     - Industrial processing and construction
     - TransportationGiao thông vận tải
   - c) Agricuture
   - d) Waste management

THE TASKS OF STRATEGIC *(cont):*

Interbranch :

6. Strengthen the leading role of Government in responding to climate change
   - a) Adjust, cross-integrate climate change into strategies and plans
   - b) Complete and strengthen institution
7. Build community to effectively respond to climate change
   - a) Community responds to climate change
   - b) Upgrade the system of public health care, effectively respond to climate change
   - c) Raise awareness, education and training
8. Develop advanced science and technology in accordance with climate change response
9. Strengthen international cooperation and integration, raise national position on climate change issue.
10. Diversificate effective financial resources and investment.

IMPLEMENTATION PHASES

- ***From now on to 2012:***
  - The urgent and undelayed adaptation activities must be implemented.
  - Focus on capacity building activities, strengthen science and technology, review, adjust and supplement the mechanisms, policies. strategies for green growth, climate change adaptation and mitigation of GHG emissions in accordance with international circumstance will be affirmed more clearly after 2012.
- ***2013 – 2025:***
  - Pay special attention to the GHG emissions reduction issue to protect the climate system.
  - Activities of climate change adaption and GHG emissions reduction are carried out at the same time, associated with the country's socio-economic development.
- ***2026 – 2050:***
  - GHG emissions reduction becomes to criteria in activities of socio-economic development.
  - Missions of strategy will be reviewed, adjusted and supplemented with the new development in order to build and strengthen the low carbon economy which has resistance and high adaptability to in front of climate change impacts.

PRIORITY PROGRAMS

1***) National target program responds to climate change, expansion plan for the period 2016 - 2025.***

2) Science and technology program of national climate change.

3) Scheme modernizes forecasting technology and hydrometeorology monitoring networks to 2020.

4) Mekong delta program and Hong river delta program on water resource management and climate change adaption.

5) Scheme inventories, monitores greenhouse gas emissions and manages activities minimizing greenhouse gas emissions.

6) Viet Nam program of climate change adaption in big cities.

7) Program upgrades and renovate sea dikes, river dike in accordance with the conditions of climate change and sea level rise.

8) Scheme to upgrade the community health care system in accordance with conditions of climate change and sea level rise.

9) Program of Islands' socio-economic development effectively responds to climate change and sea level rise.

10) Scheme builds experimentally and expands model of responding to climate change effectively.


Thank you!

Viet Nam Green Growth Strategy

Hanoi, May 31. 2012

Department of Science, Education, Natural Resources and Environment
Ministry of Planning and Investment

Content

- Background
- Process
- Definitions and Time Frame
- Goal and Objectives
- Tasks
- Implementation issues
- Financing
- Implementation
- Feasibility

Background

- National context
  - In 2004, Vietnam approved the Viet Nam agenda 21 and established the National Sustainable Development Council
  - In 2008, Viet Nam initiated its climate change response
    - Initially centered around NTP-RCC and started with the development of provincial and sectoral action plans
    - In 2011, the GOV initiated the development of a climate change and a green growth strategy
  - Recent macro-economic development have led to the need to restructure the economy
- The VGGS is driven by these three national policy agenda and Viet Nam awareness to contribute to international efforts to combat climate change.

Process

- PM issued notice in March 2011 (38/TB-VPCP March 3 2011) which stated that low carbon growth is part of the Green growth strategy
- First step: Strategic Framework development
  - A drafting and Editorial board were established which included representatives from key Ministries (MOIT, MONRE, MARD, MOT)
  - Development of a strategic Framework
    - Consulted with the international community by November 24 2011
- Second step: Detailed Strategy
  - Consultation with stakeholders (2 with private sector and 3 with local government/academia and civil society; and one with international community (May 14 2012))
  - Review by editorial board and line ministries
  - Feasibility assessment of low carbon options
  - Study visits to Korea, Mexico and Germany/Netherlands,

Study Activities

- 3 Study visits:
  - Mexico
  - Korea
  - Netherlands/Germany
- Feasibility assessment of proposed low carbon options
- Reviews on selected issues:
  - Green employment/poverty alleviation
  - Natural Capital restoration

Study Visit Findings (NL/G)

- Assess how Vietnam can best position itself in the global green value chain so that green growth can contribute effectively to economic restructuring and repositioning
- Develop additional research mechanisms to monitor and evaluate the implementation of the green growth strategies to respond quicker to policy outcomes
- Need to focus on waste management issues and cleaner production
- Study mechanisms to support the engagement of small and medium enterprises in green growth.
- Strengthen the role and responsibilities of the institutions of science and technology research in the implementation of green growth strategies.
- Strengthen the capacity of the Vietnam Association s to ensures they better perform their role as e a bridge between government, businesses and scientists.

Study Visit Findings (Korea/Mexico)

- Korea:
  - Broad strategy, aiming to mainstream GG in overall economic development and Industrial Development which is relevant for Vn
  - Stressing both economic, social and environmental aspects
- Mexico:
  - Well established institutional framework with good strategic focus on energy and land use.

Definition and Time Frame

- Viet Nam definition of Green Growth
  - *The green growth in Vietnam is a growth model based on the process of changing growth models, restructuring the economy with an aim to fully exploiting comparative advantages, increasing economic efficiency and competitiveness through research into and application of advanced technologies, developing modern infrastructure systems to efficiently use natural resources, reducing greenhouse gas emission, responding to climate change, contributing to hunger eradication and poverty reduction, and creating driving forces to promote sustainable economic growth.*

Time duration:

- 2011 - 2020 with Vision towards 2050

Goal and Objectives

- Overall goal: Green growth and the low carbon economy will become the mainstream of sustainable economic development and strengthen social economic development.
- Objectives:
  - Restructure the economy and increase competiveness through efficient use of resources and address environmental degradation
  - Assess and promote the use of high technology development to increase efficiency in natural resource use, reduce GHG intensity of the economy and respond to climate change
  - Improve the quality through green employment, sustainable lifestyles, green infrastructure/building and restored natural capital

Targets

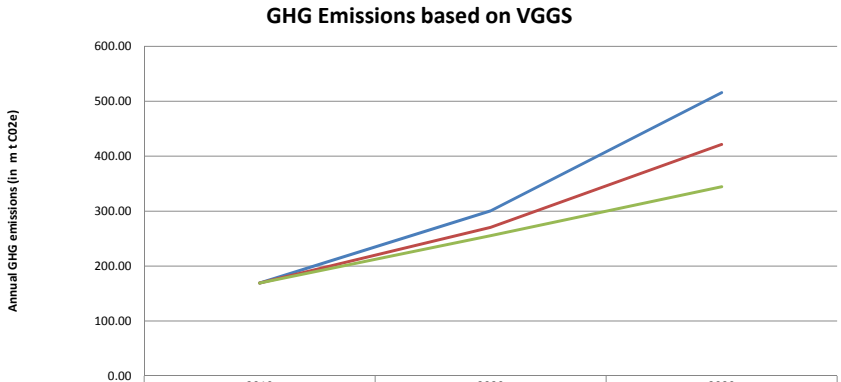
By 2020: *the average GDP per capita will double the 2010 level, the energy consumption per capita be reduced by 2.5- 3%/year, the greenhouse gas emission intensity be reduced by 10-15% compared to the 2010 level; a modern and efficient economic structure be formed, with which the value of hi-tech products and products applying high technologies will account for about 42-45% in the total GDP, the aggregate productivity contribute about 35% to the growth;*

By 2030: *Vietnam will achieve the middle-income country status, develop sufficient and appropriate material, technical, human, and institutional bases for a widespread implementation of green growth methods. The total greenhouse gas emission will be reduced by 2-3%/year; the aggregate productivity contribute at least 50% to the growth.*

By 2050: *Green energy and technologies will be widely used*

Impact of the VGGS on GHG Emissions

(based on SNC)



	2010	2020	2030
Baseline (SNC)	169.20	300.40	515.80
VGGS-Domestic	169.20	270.36	421.45
VGGS-int. support	169.20	255.34	344.35

Major Tasks

1. Greening production processes and restore natural capital.
2. Reduce the intensity of greenhouse gas emissions (per unit of GDP) and promote the uses clean energy, renewable energy.
3. Greening lifestyle and promote sustainable consumption.

1. Reduce the Intensity of GHG gasses per unit GDP

6. *Improving energy performance and efficiency, reducing energy consumption in production, transportation and trade.*
7. *Change the fuel structure in the industries and transportation*
8. *Promote the effective exploitation of renewable and new energy sources*
9. *Reducing greenhouse gas emissions through the development of sustainable and resource efficient agriculture*

2. Greening Production

1. *Greening production through master-plans and restructuring the economy*
2. Utilize natural resources economically and efficiently.
    1. *Sustainable use of water resources*
    2. *combat land degradation*
    3. *Mining and mineral use*
3. *Accelerate the development of green industries*
4. *Development of sustainable infrastructure*
5. *Innovate technologies and roll out cleaner production*

3. Greening Lifestyles and promote Sustainable Production

10. *Promote sustainable Urbanization*
11. *Develop new rural area with lifestyle in harmony with environment*
12. *Promoting sustainable consumption and building green lifestyle*

Implementation Arrangements

- ***Develop and improve institutional arrangement***
  - Review policies, master-plans, socio-economic development plans
  - Embed green growth into the enhancement of coordination in implementing existing national target programs
  - Improve coordination to ensure proper mainstreaming in development planning
  - strengthen the role of civil society organizations
- ***Communicate and raise awareness to all people on the green growth strategy.***
- ***Conduct research, promulgate and employ the use of economic and technical standards and initiate the development of a database on green growth***

Financing

- Develop a framework for investment and finance for the green growth strategy
- Market based mechanism and financial instruments will be encouraged.
- Shift in taxation with wider application of eco-tax, moving from the principle of taxing production (goods and services) to taxing damages
- Study and a establish “green growth fund”

Human resource development towards Green Employment

- Strengthen training and knowledge education about the green economy, green growth for officials
- Strengthening re-training or in-service training, creating jobs, assuring well-beings for the unemployed caused by green growth.
- Deliver training and development of human resources for green growth through the education and training sector

Science, Technology, Monitoring and international cooperation

- ***Strengthen scientific and applied technology research***
- ***Monitoring and Evaluation of the Strategy Implementation***
  - Strengthen the supervision, monitoring, and evaluation during strategy implementation
  - Mobilize and encourage the participation of social organizations, unions and people in monitoring the implementation of green growth strategy.
  - Mobilize social organizations, unions and people classes join the efforts in implementing the green growth strategy
- ***Enhancing international cooperation***
  - Promote cooperation on scientific research and information
  - Attract the participation of international organizations, development partners, financiers, technical assistance on both bilateral and multilateral basis in implementing the green growth strategy
  - Promote exchanges in training, human resources development for creating green economy.
  - Create sufficient legal basis and favourable conditions to fulfil Viet Nam

Strategy Implementation

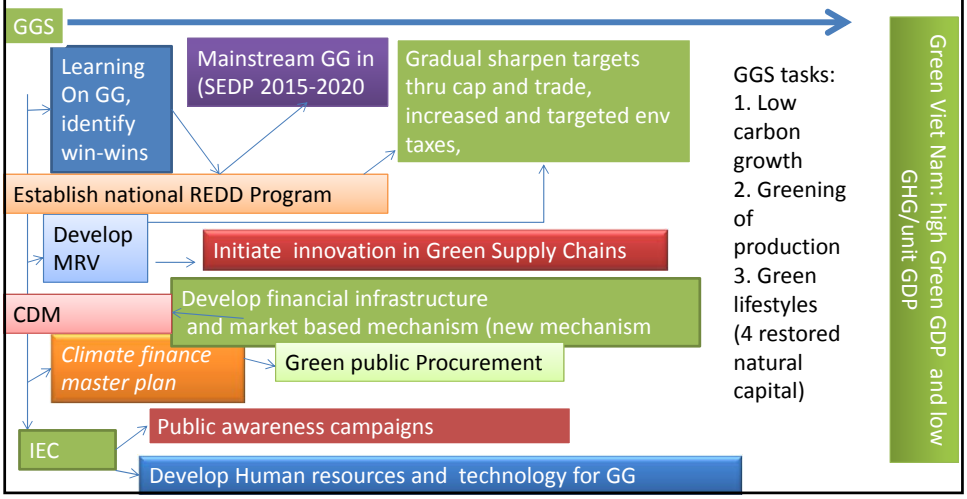
Road Map

- *For the period 2011-2020*, the main tasks are:
  - Inform the public and stakeholders on the strategy
  - Develop policies and supporting regulations to guide the implementation and management of the strategy.
  - Foster human resource development to meet requirements of developing green economy in Viet Nam.
  - Develop information and data system
  - Promote research and development.
  - Formulate and implement key projects on green growth (low carbon, GHG reduction, energy saving, renewable energy use, greening industries, construction and transportation).
  - Develop experimental projects/models on green growth in agriculture and forestry, energy, and construction
- *For the period 2021-2030*, the main tasks are:
  - Further strengthening to improve institutions and policies for green growth
  - Expanding human resource development.
  - Promoting the implementation of key projects.
  - Conducting environmental auditing at all levels
  - Promoting the process of economic restructuring following the green economy in Viet Nam.
- *For the period 2030-2050:* The specific measures will be identified based on the implementation results from the previous period of 2011-2030 as well as the country situation as well as the international context.

Proposed Roadmap

Phases: Learning →main-streaming-→ Green Growth→ towards a GE→ "green Viet Nam

2012---------2015---------2020---------2025----------2030---→ 2050



Organizing structure

- There are 3 options: new SC; current NCCC and NC on Competiveness and SD
- Key functions of the SC: a Inter-ministerial Steering Committee to coordinate and direct the green growth strategy.
  - Deputy Prime Minister acts as chairman.
  - Minister of Planning and Investment is a permanent vice president and four vice presidents MOF, MOIT, MARD and MONRE
  - Council members include representatives of other ministries, institutions , local governments, scientists and private sector.
- MPI leads and oversees overall implementation of green growth strategy

Thank you for your attention!

Low Carbon Society Study Workshop
31st May 2012, Hanoi, Vietnam

DEVELOPING VIETNAM LOW CARBON SOCIETY

Kyoto University: Nguyen Thai Hoa, Kei Gomi, Yuzuru Matsuoka
National Institute for Environmental Studies: Tomoko Hasegawa, Junichi Fujino, Mikiko Kainuma
Institute of Strategy, Policy and Natural Resources: Nguyen Thi Thuy Duong, Nguyen Tung Lam, Nguyen Lanh, Nguyen Van Tai
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Water Resources University: Nguyen Quang Kim
Japan International Cooperation Agency: Hiroshi Tsujihara

Background

Why we need a LCS?

In conventional growth pathway, developed countries have been emitting a large amount of green house gases in the process of economic growth.

To avoid it, a developing country like Vietnam should leap-frog this process and creates low-carbon society (LCS) directly.

One of the strategic objectives of “National Target to Respond to Climate Change” is “take an opportunity to develop towards a low-carbon economy” and “ National Climate Change Strategy” is “consider low carbon economy as principles in achieving sustainable development; GHG emission reduction to become mandatory index in social and economic development”

In order to contribute discussion on LCS, we created a national sustainable LCS scenario in Vietnam in 2030.

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To create a LCS society:

- We use ExSS tool and AIM/AFOLU Bottom up model to estimate GHG emissions and mitigations in energy sector and AFOLU sectors
- Target GHGs: only CO_2 is considered in energy sector, CO_2, CH_4 and N_2O are considered in AFOLU sectors

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- Part I: Socio-economic scenario in 2030
- Part II: GHG emissions/mitigations in energy sectors
- Part III: GHG emissions/mitigations in AFOLU sectors
- Part IV: Integration and Actions towards LCS

4

Part I: Socio-economic scenario in 2030

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Procedure

1. Data collection & estimation in the base year (2005)
2. Construct future socio-economic scenario in 2030 using ExSS

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Extended Snapshot Tool (ExSS)

- ✓ ExSS is a quantitative projection tool for LCS scenarios developed by Kyoto University and National Institute for Environmental Studies, Japan.
- ✓ It describes future socio-economic scenario (demography, economy, transport, land use, buildings, etc), energy demand, and GHG emissions and mitigation potential.
- ✓ GHG mitigation potential is based on energy technology database (both demand & supply sides), building performance, transport structure change, land use change, agriculture practice, behavior change and renewable energy potential.
- ✓ It can be used to identity detailed mitigation potential of each options in each sector.

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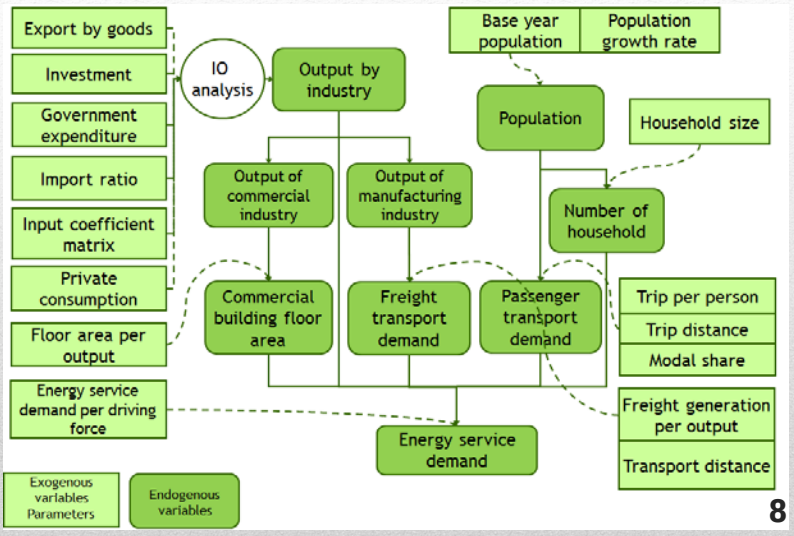
Socio-economic part of ExSS



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Data collection (socio-economic)

Data	Source
Population	Population Division - United Nations Population low variant, 2030 for Vietnam, General Statistic Office of Vietnam (2008)
Household	Vietnam Population and Housing Census (2009).
IO table	Input-output table 2005 (Trinh Bui, 2009)
Transport	JICA/MoT(2009): The comprehensive study on the sustainable development of transport system in Vietnam (VISTRANSS 2) General Statistic Office of Vietnam (2009) Schipper L., A. T. Le, O. Hans., 2008. Measuring the invisible. Quantifying emissions reductions from transport solutions. Hanoi case study. EMBARQ – The WRI Center for Sustainable Transport and World Resources Institute. Walter, H. and R. Michael (1995). Motorization and non-motorized transport in Asia. Transport system evolution in China, Japan and Indonesia. Land Use Policy, Vol 13, No.1, pp. 69-84, 1996.

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2030 BaU Assumptions

Indicator	Quantification (2030BaU scenario)	Tendency to
Population	104 million people	Growth rate at 0.9 % per annum
Demographic composition	[Male] 0-14: 8%, 15-64: 35.9%, 65 and over: 5.8% [Female] 0-14: 7.7%, 15-64: 35.2%, 65 and over: 7.4%	Number of male births are higher than female births
Average number of persons per household	3.5 (4.2 in 2005)	Slight decrease in average size of household
GDP	6.5%	Average annual growth rate during the period 2005 - 2030
Industrial structure	[Agriculture, Fishery, Forestry]: 17% (22% in 2005) [Industry, Construction]: 43% (41% in 2005) [Service]: 40% (37% in 2005)	Primary industry sectoral share has a decrease trend, whilst secondary and tertiary industry have an increasing trend.
Demand structure	Contribution of export in GDP: 29% (29% in 2005)	Export maintains there share in GDP
Modal shift in transport	Passenger transport:	Increasing of public transport, keep

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Estimated socio-economic indicators

	2005	2030 BaU	2030 CM	2030BaU/2005	2030CM/2005
Population (million people)	83.1	104.0	104.0	1.3	1.3
No. of households (million)	20.0	29.7	29.7	1.5	1.5
GDP (trillion VND)	818.5	3,963	3,963	4.8	4.8
Gross output (trillion VND)	1,934	9,750	9,750	5.0	5.0
Primary industry (trillion VND)	404	1,684	1,684	4.2	3.9
Secondary industry (trillion VND)	1,033	5,497	5,497	5.3	5.2
Tertiary industry (trillion VND)	497	2,569	2,569	5.2	5.2
Passenger transport demand (million people-km)	223,981	542,687	518,028	2.4	2.3
Freight transport demand (million ton-km)	38,856	235,212	235,124	6.1	6.1

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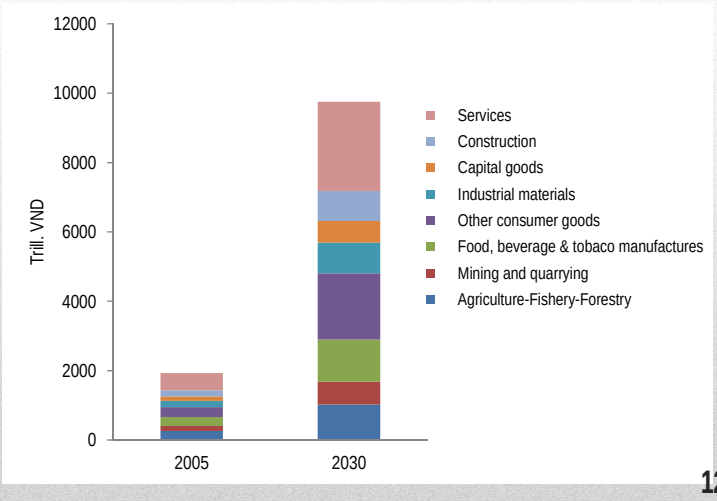
Projected industrial output



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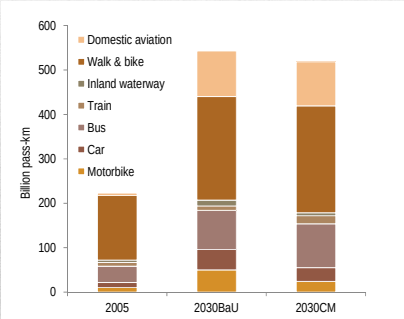
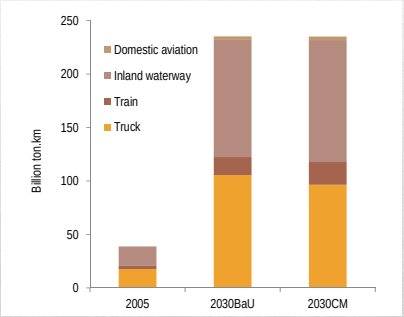
Projected transport demand

- ✓ There is an increasing share of motorbike and domestic aviation in passenger transport in 2030
- ✓ Freight transport volume increases proportionally with growth of secondary industries



Passenger transport



Freight transport

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Part II: CO_2 emissions/mitigations in Energy sector

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Procedure

1. Data collection of energy demand and supply in the base year (2005)
2. Project 2030BaU (Business as usual) energy demand and CO_2 emissions
3. Develop 2030CM (Countermeasures) scenario with mitigation options

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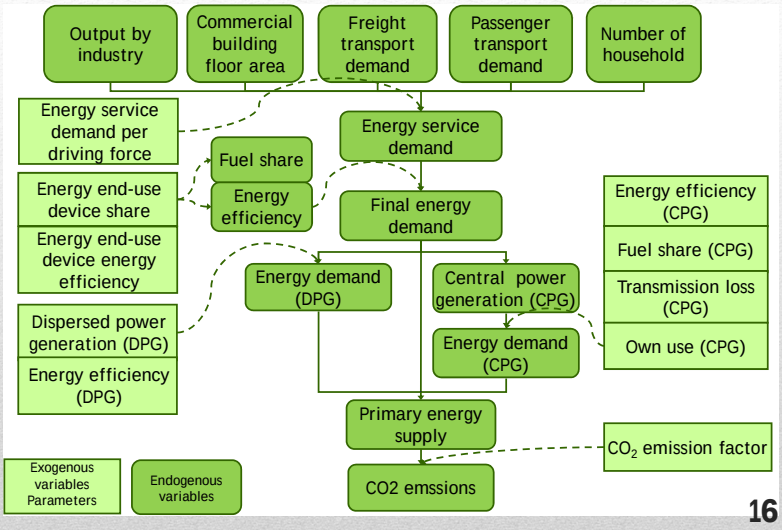
Energy part of ExSS



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Data collection (energy)

Data	Source	Remarks
Energy demand	System for the Analysis of Global Energy Markets (SAGE), 2003. Model Documentation Report. Office of Integrated Analysis and Forecasting Energy Information Administration U.S Department of Energy Washington, DC. International Energy Agency (IEA), 2007. Energy balances of non-OECD countries 2004-2005. 2007 Edition. IEA statistics.	Final energy demand by fuel by sector is obtained from National Energy Balance 2005 (IEA). Other literatures were referred in order to estimate details of energy demand by industries and by services.
Power supply	International Energy Agency (IEA), 2007. Energy balances of non-OECD countries 2004-2005. 2007 Edition. IEA statistics.	Total power supply and fuel consumption were derived from EBT.

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2030 BaU Assumptions

Field	Variables	Assumptions
Final energy demand	Total	From 2005 to 2030, total final energy demand grows by 5.1%/year from 2005 to 2030.
	By sectors	Industrial sector grow in higher rate than total demand.
	By fuels	Electricity and petroleum products grow in higher rate than total demand.
Power supply	Share of fuels	According to APEC Energy Demand and Supply Outlook (4th edition) and Vietnam Power Development Plan (PDP VI)
	Efficiency	Nhan T. N., M. H. Duong, 2009. The potential for Mitigation of CO_2 Emission in Vietnam's Power Sector. DEPOCEN Working paper Series No. 2009/22.

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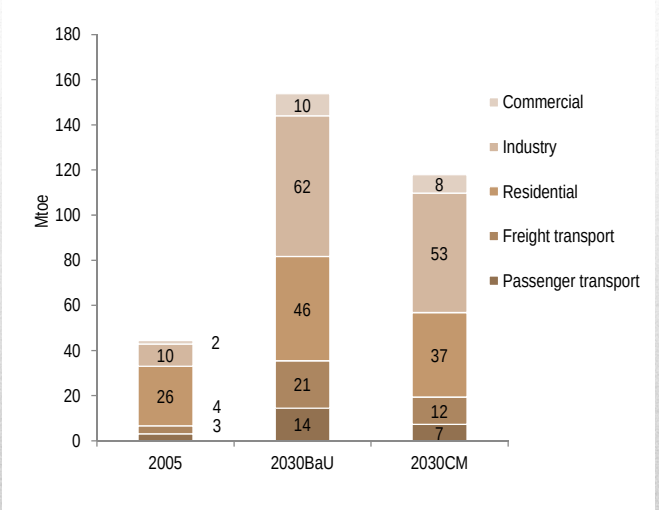
Projected final energy demand by sectors



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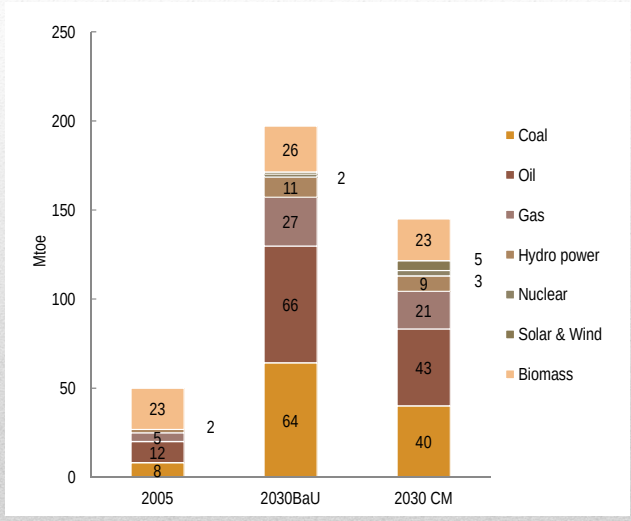
Projected primary energy demand by fuels



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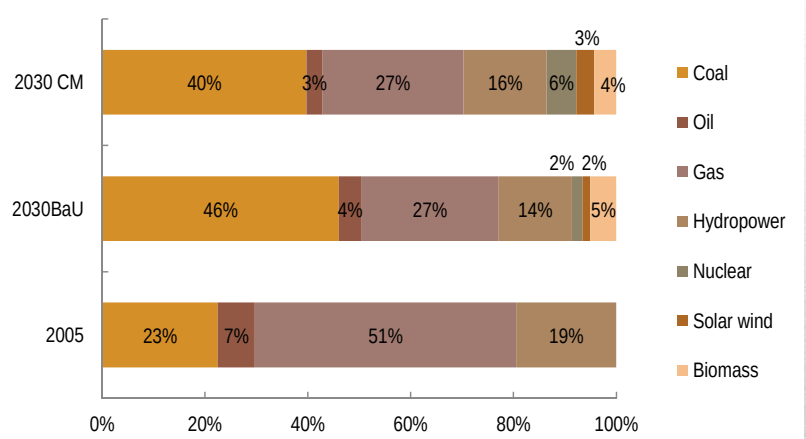
Projected energy mix of power supply



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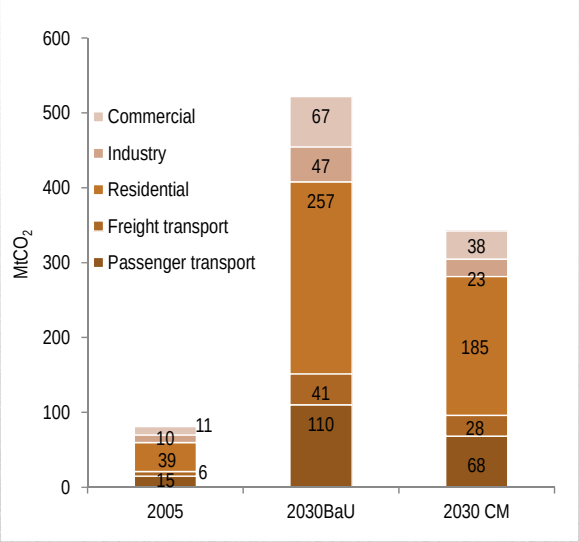
Projected CO_2 emissions



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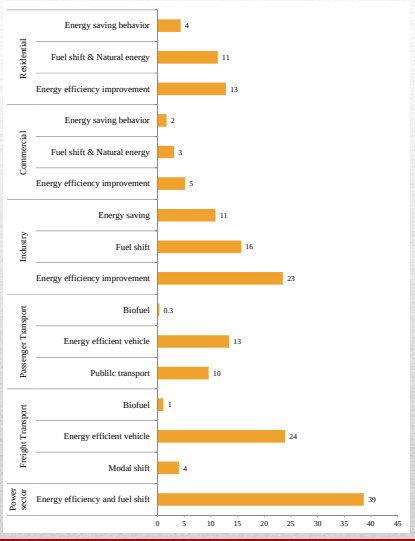
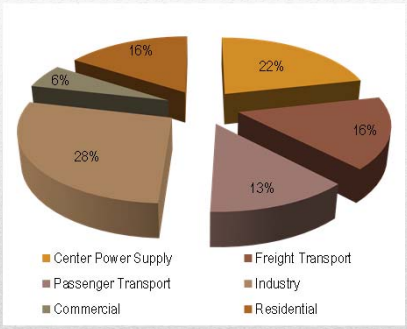
Contribution of low carbon countermeasures





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Part III: GHG emissions/mitigations in AFOLU sectors

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Framework

- Country: Vietnam
- Year:
  - Agriculture; 2000, 2005, 2010, 2015, 2020, 2030
  - LULUCF; 2000-2030 (1 year step)
- Target GHGs: CO_2, CH_4, N_2O
- GHG emission sources:
  - livestock enteric fermentation, livestock manure, managed soils, paddy rice and land-use change, excluding fire and disturbance of land.
- Scenarios
  - BaU: No countermeasure applied
  - CM: Countermeasure applied under several carbon taxes

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AFOLUB model

Activity data → AFOLUB model → Emission/mitigation

- AG/Bottom-up
- LULUCF/Bottom-up

- AFOLUB model
  - Bottom-up type model to determine combination and amounts of individual mitigation countermeasures
  - Estimate GHG emissions and mitigations in AFOLU sectors
  - Analyze effect of policies such as carbon tax, energy tax, subsidy etc.
  - Time horizon: mid-term (typically until 2030)
- AGriculture Bottom-up module (AG/Bottom-up)
  - Illustrate behavior of agricultural producers and selection of mitigation countermeasures
  - Maximize producer's profit
- The LULUCF/Bottom-up
  - Illustrate land use and land use change cohort
  - Maximize total accumulated mitigation in the future

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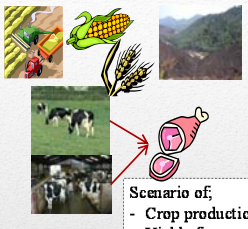
Input and output of AFOLUB model



Scenario of;
- **Crop production**
- **Yield of crops and carcass weight of animals**
- **Number of livestock animals**
- **Land use, land use change**

List of Countermeasure
Characteristics of countermeasure
- Cost
- Reduction effect
- Life time
- Diffusion ratio
- Energy consumption and recovery

Scenario of;
- Fertilizer input
- Price of commodity and energy
- Production technologies
  - Feeding system of livestock
  - Manure management system
  - Share ratio of irrigation area

Policy;
- GHG emission tax rate
- Energy tax rate
- Subsidy

Allowable abatement cost for GHG emission mitigation

AFOLUB model

Emission/mitigation
Types of countermeasures

Exogenous variables | Endogenous variables | Model

Source: Hasegawa and Matsuoka, submitted

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Data sources

- Present & future Activity data
  - Crops & Livestocks in 2005-2009:
    - Vietnam Second National Communication to the UNFCCC (SNC)
    - Statistical Yearbook (2002, 2007 and 2009)
    - Ministry of Agriculture and Rural Development, 2006
    - FAOSTAT, 2012, download
  - Landuse in 2000, 2005:
    - SNC
    - ResourceSTAT, FAOSTAT, 2011, download
    - Statistical Yearbook 2001(2002)
- Countermeasure data
  - Collected from domestic & international literatures
  - Countermeasures in LULUCF is referred to SCN

Countermeasures in Agricultural sector

Emission sources	Code	Countermeasures	Code	Cost [USD/activity/yr]*	Mitigation [tCO_2eq/activity/yr]*	Reference
Enteric fermentation	3A1	Replacement of roughage with concentrates	RRC	-23	0.45	Bates(1998a), Shibata et al.(2010), Graus et al.(2004)
		High genetic merit	HGM	0	0.32	Bates(1998a)
Manure management	3A2	Dome digester, cooking fuel and light	CFL	44	0.62	USEPA(2006)
		Daily spread of manure	DSM	2.2	0.33	Bates(1998a)
Rice cultivations	3C7	Midseason drainage	MD	0	0.89	USEPA(2006)
		Fall incorporation of rice straw	FIR	0	0.68	USEPA(2006)
		Replace Urea with Ammonium	RAS	20	0.24	USEPA(2006), Graus et al. (2004)
Managed soils	3C4~3C6	High efficiency fertilizer application	HEF	2.2	0.65	USEPA(2006), Hendriks et al. (1998), Amann et al. (2005)
		Slow-release fertilizer application	SRF	2150	0.76	USEPA(2006), Akiyama et al.(2010)
		Tillage and residue management	TRM	5	0.08	IPCC(2007), Smith et al.(2007)

* Activity is area of cropland for crop cultivation and animal numbers for livestocks.

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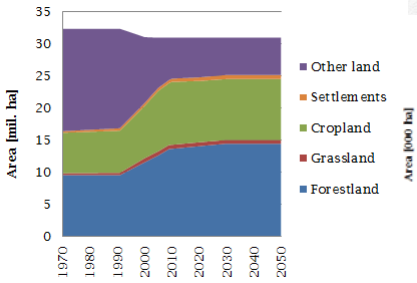
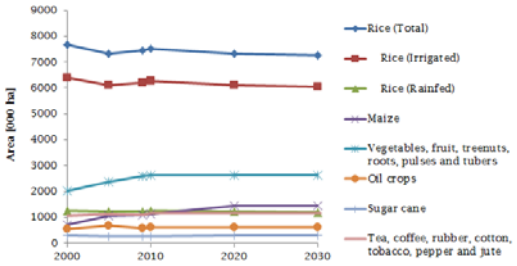
Assumptions





Scenarios of land use and land use change

Scenarios of harvested area of crop production

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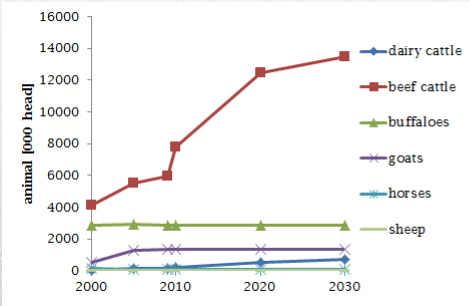
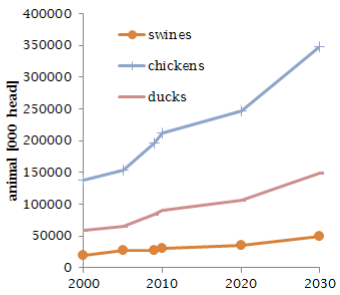
Assumptions





Scenarios of livestock animal (1)

Scenarios of livestock animal (2)

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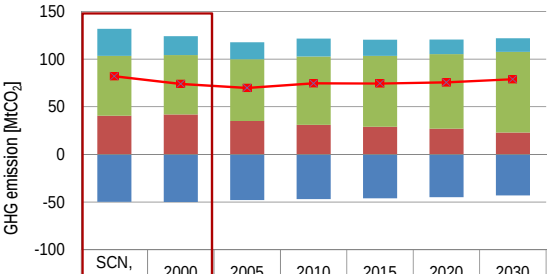
Comparison of total GHG emissions in BaU in AFOLU sectors



	SCN, 2000	2000	2005	2010	2015	2020	2030
Emission and removals from soils	28	20	18	19	17	15	14
Emission from agriculture	63	62	65	72	74	78	85
Forest and grassland conversion	41	42	35	31	29	27	23
Changes in forest and other woody biomass stocks	-50	-50	-48	-47	-46	-45	-43
TOTAL	82	74	70	75	74	76	79

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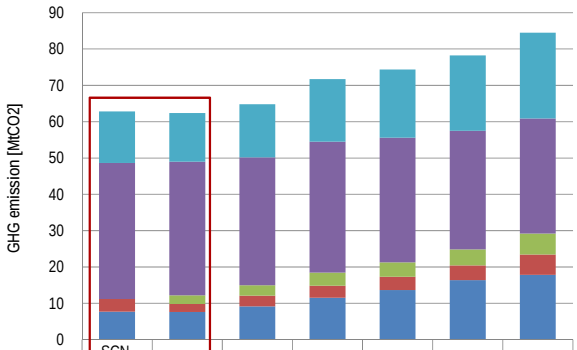
Comparison of breakdown of GHG emissions in Agriculture in BaU case



	SCN, 2000	2000	2005	2010	2015	2020	2030
Managed soils (N2O)	14	13	15	17	19	21	24
Rice field (CH4)	37	37	35	36	34	33	32
Manure (N2O)	0	2	3	4	4	4	6
Manure (CH4)	3	2	3	3	4	4	6
Enteric fermentation (CH4)	8	8	9	12	14	16	18

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Mitigation in 2030 in different allowable abatement cost in AFOLU sectors

Mitigation in 2030 [$MtCO_2$]		Allowable abatement cost [USD/tCO_2]			
		0	10	100	10000
Agriculture	Enteric fermentation: High genetic merit	0.1	0.1	1.6	1.8
	Enteric fermentation: Replacement of roughage with concentrates	3.2	3.2	2.6	2.5
	Manure management: Daily spread of manure	0.0	0.0	0.0	4.9
	Manure management: Dome digester, cooking fuel and light	2.8	2.8	2.8	0.1
	Rice cultivations: Replace urea with ammonium sulphate	0.0	1.8	1.8	1.8
	Rice cultivations: Midseason drainage	4.7	6.7	6.7	6.7
	Rice cultivations: Fall incorporation of rice straw	0.0	3.4	3.4	3.4
	Managed soils: High efficiency fertilizer application	0.0	2.9	2.7	2.4
	Managed soils: Slow-release fertilizer	0.0	0.0	0.8	2.8
	Total	10.8	20.8	22.7	26.6
LULUCF	Protection and sustainable management of existing production forest areas	0.0	3.1	3.1	3.1

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Part IV: Integration and Actions towards LCS

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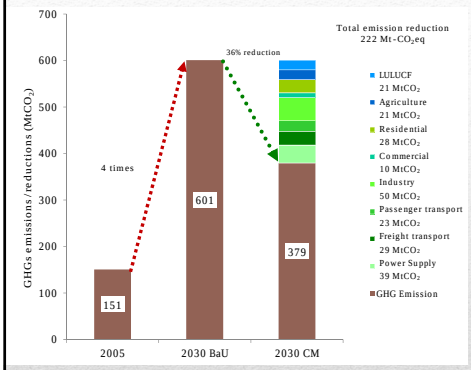
GHG emissions/mitigations in Vietnam in 2030

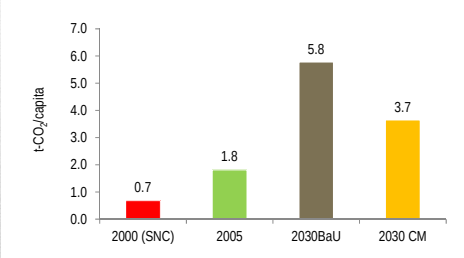


Sector	GHG emissions ($MtCO_2$eq)		GHG emissions reduction ($MtCO_2$eq)
	2030BaU	2030CM	
AFOLU sectors	79	37	42
Agriculture	85	64	21
LULUCF	-6	-27	21
Energy sectors	522	342	180
Residential sector	110	68	42
Commercial sector	41	28	13
Insudtry	257	185	71
Transport	114	61	53
Total	601	379	222

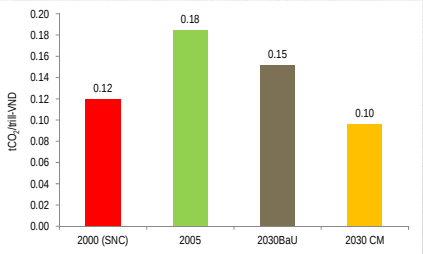
35

Projected per capita GHG emissions and emission intensity

Per capita GHG emissions



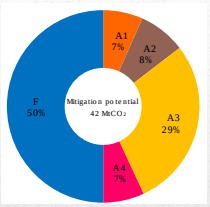
Emission intensity



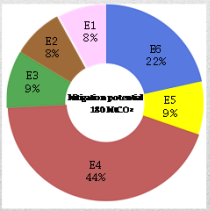
36

Actions towards low carbon society in Vietnam

Actions towards LCS in Vietnam in 2030		GHG emissions mitigations ($MtCO_2$)
AFOLU sectors		42
Action A1	Livestock Manure Management	3
Action A2	Livestock Enteric Fermentation	3
Action A3	Rice Cultivation Management	12
Action A4	Soil Management	3
Action F	Forest and Land Use Management	21
Energy sectors		180
Action E1	Green Building	14
Action E2	Convenient Transport	15
Action E3	Energy Saving Behavior	17
Action E4	Energy Efficiency Improvement	79
Action E5	Fuel Shift in Industry	16
Action E6	Smart Power Plants	39



Mitigation potential of AFOLU sector



Mitigation potential in Energy sector

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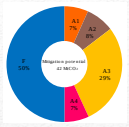
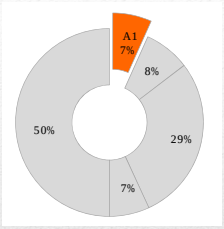
Action A1. Livestock Manure Management



The action "Livestock Manure Management" is expected to reduce 2.8 $MtCO_2$ at Allowable Abatement Cost (AAC) of 10 USD/tCO_2, accounts for 7% of total GHG emissions in AFOLU sectors



Breakdown of emission mitigation in action A1 in different AAC

Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
Daily spread of manure	0.0	0.0	0.0	4.9
Dome digester, cooking fuel and light	2.8	2.8	2.8	0.1
Total	**2.8**	**2.8**	**2.8**	**5.0**

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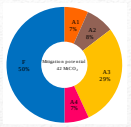
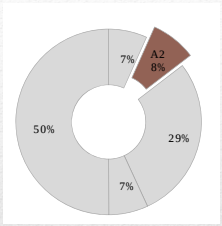
Action A2. Livestock Enteric Fermentation



The action "Livestock Enteric Fermentation" is calculated to reduce 3.3 $MtCO_2$ at AAC of 10 USD/tCO_2 in 2030. This action comprises of 2 main countermeasures; namely, high genetic merit and replacement of roughage with concentrates, account for 8% of total GHG emissions in AFOLU sectors



Breakdown of emission mitigation in action A2 in different AAC

Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
High genetic merit	0.1	0.1	1.6	1.8
Replacement of roughage with concentrates	3.2	3.2	2.6	2.5
Total	**3.3**	**3.3**	**4.2**	**4.3**

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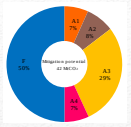
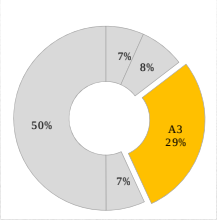
Action A3. Rice Cultivation Management



The action "Rice Cultivation Management" is contributed to the largest potential mitigation in agricultural sector (11.9 $MtCO_2$ at AAC of 10 USD/tCO_2), account for 29% of total GHG emission reduction in AFOLU sectors



Breakdown of emission mitigation in action A3 in different AAC

Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
Replace urea with ammonium sulphate	0.0	1.8	1.8	1.8
Midseason drainage	4.7	6.7	6.7	6.7
Fall incorporation of rice straw	0.0	3.4	3.4	3.4
Total	**4.7**	**11.9**	**11.9**	**11.9**

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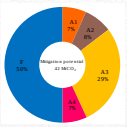
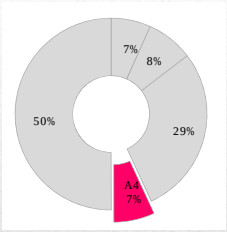
Action A4. Soil Management



The action "Soil Management" is contributed to reduce 2.9 $MtCO_2$, account for 7% of total GHG emission in AFOLU sectors. This action comprises of 2 main countermeasures; namely, high efficiency fertilizer application and slow-release fertilizer.



Breakdown of emission mitigation in action A4 in different AAC

Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
High efficiency fertilizer application	0.0	2.9	2.7	2.4
Slow-release fertilizer	0.0	0.0	0.8	2.8
Total	**0.0**	**2.9**	**3.5**	**5.1**

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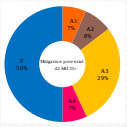
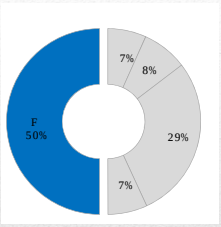
Action F. Forest and Land Use Management



The action "Forest and Land Use Management" is a biggest reduction contributor, account for 50% of GHG emissions reduction in AFOLU sectors, which numbers to about 20.9 $MtCO_2$ main countermeasures such as "protection and sustainable management of existing production forest areas", "conservation of existing protection forests" and "planting fast-growing trees for lumber".



Breakdown of emission mitigation in action F in different AAC

Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
Protection and sustainable management of existing production forest areas	0.0	3.1	3.1	3.1
Conservation of existing protection forests	0.0	16.5	16.5	16.5
Planting fast-growing trees for lumber	0.0	1.3	1.3	1.3
Total	**0.0**	**20.9**	**20.9**	**20.9**

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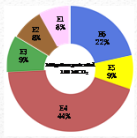
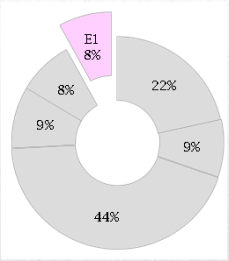
Action E1. Green Building



The "Green Building" action focuses on countermeasures of fuel shifting and natural energy utilization of two sectors (residential and commercial). This action is expected to reduce 14.4 $MtCO_2$, account for 8% of total CO_2 emission reduction in energy sector



Breakdown of emission mitigation in action E1

	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Residential	**11302**	78%	6%
Heating	369		
Hot water	2040		
Cooking	8893		
Commercial	**3099**	22%	2%
Heating	456		
Hot water	2306		
Cooking	338		
Total	**14401**	100%	8%

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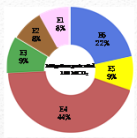
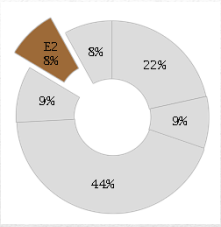
Action E2. Convenient Transport



The action on "Convenient Transport" primarily comprises of a shift from private vehicles to public transportation (such as from motorbike and car to bus and train) by traffic management system and increased penetration of fuel switch (fuel switch from gasoline and diesel to electricity and bio-diesel).



Breakdown of emission mitigation in action E2

	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Passenger transport	**9932**	66%	6%
Bio diesel vehicle	335		
Public transport	9596		
Freight transport	**5117**	34%	3%
Bio diesel vehicle	1107		
Modal shift	4011		
Total	**15049**	100%	8%

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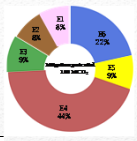
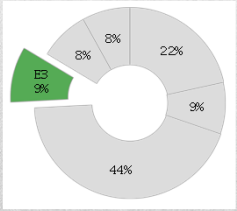
Action E3. Energy Saving Behavior



The action "Energy Saving Behavior" is projected to reduce 16.9 $MtCO_2$ or 9% of total CO_2 emission reduction in energy sector. Energy saving activities focus on energy services such as cooling, heating, hot water, cooking in commercial and residential sectors, direct heating, steam and motor in industrial sector.



Breakdown of emission mitigation in action E3

	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Residential	**4349**	26%	2%
Cooling	94		
Heating	109		
Hot water	525		
Cooking	2961		
Lighting	245		
Refrigerator	179		
Other electric equipment	236		
Commercial	**1697**	10%	1%
Cooling	51		
Heating	594		
Hot water	581		
Cooking	108		
Lighting	163		
Refrigerator	93		
Other electric equipment	106		
Industry	**10871**		6%
Furnace	3182		
Boiler	3872		
Motor	2250		
Other	1567		
Total	**16917**	36%	9%

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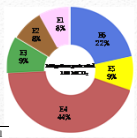
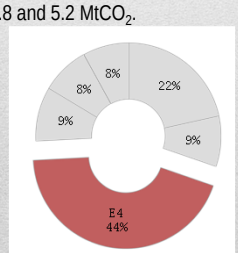
Action E4. Energy Efficiency Improvement



The "Energy Efficiency Improvement" action is able to reduce CO_2 emissions in all sectors in 2030 by 78.8 $MtCO_2$ or 44% of total CO_2 emission reduction in energy sector. The highest amount of CO_2 emission reduction accounts for transport sector by 37.3 $MtCO_2$. It is followed by industry, residential and commercial sectors with respectively amount of CO_2 reductions are 23.5, 12.8 and 5.2 $MtCO_2$.



Breakdown of emission mitigation in action 4

	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Residential	**12838**	16%	7%
Cooling	1460		
Heating	127		
Hot water	857		
Cooking	5937		
Lighting	2275		
Refrigerator	940		
Other electric equipment	1241		
Commercial	**5159**	7%	3%
Cooling	795		
Heating	969		
Hot water	822		
Cooking	303		
Lighting	1092		
Refrigerator	624		
Other electric equipment	555		
Industry	**23484**	30%	13%
Furnace	14861		
Boiler	4757		
Motor	974		
Other	2892		
Passenger transport	**13431**	17%	7%
Motorbike	4033		
Car	3355		
Bus	3772		
Train	31		
Ship	18		
Aviation	2221		
Freight transport	**23901**	30%	13%
Truck	23698		
Train	10		
Ship	179		
Aviation	13		
Total	**78812**	100%	44%

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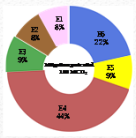
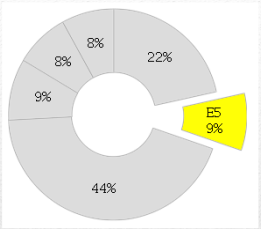
Action E5. Fuel Shift in Industry



The action "Fuel Shift in Industry" is projected to reduce CO_2 emission in 2030 by 15.7 $MtCO_2$ or 9% of total CO_2 emission in energy sector.

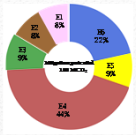
Fuel uses in industry sector will be able to shift from high carbon intensity to lower carbon intensive. For instance, fuel switch from coal and oil to natural gas.



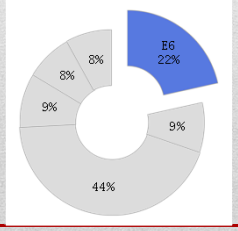
Breakdown of emission mitigation in action E5

Sector	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Agriculture-Fishery-Forestry	1335	9%	1%
Mining and quarrying	2253	14%	1%
Food, beverage & tobaco manufactures	2067	13%	1%
Other consumer goods	3251	21%	2%
Industrial materials	3037	19%	2%
Capital goods	1060	7%	1%
Construction	2667	17%	1%
Total	**15670**	100%	9%

Action E5. Fuel Shift in Industry



The action "Smart Power Plants" is calculated to reduce CO_2 emission in 2030 by 26.6 $MtCO_2$ or 16% of total CO_2 emission reduction in energy sector. This action comprises of 4 main countermeasures; namely, utilizing economically efficient domestic energy resources, promoting the use of renewable energies, reducing transmission and distribution loss, and developing nuclear power plant.



Power supply indicators in Vietnam

	Coal	Oil	Gas	Hydropower	Nuclear	Solar wind	Biomass	Total
2005								
Fuel (ktoe)	2132	679	4812	1845	0	0	0	9467
Efficiency (%)	36	31	37	100				
Generation (ktoe)	769	213	1770	1845	0	0	0	4597
Own-use (ktoe)	21	6	49	51	0	0	0	126
Transmission loss (ktoe)	84	23	194	203	0	0	0	505
Distribution (ktoe)	663	184	1527	1592	0	0	0	3966
2030BaU								
Fuel (ktoe)	36611	3468	21244	11330	1619	1214	4046	79532
Efficiency (%)	42	35	40	100	100	100	30	
Generation (ktoe)	15377	1214	8498	11330	1619	1214	1214	40465
Own-use (ktoe)	421	33	233	310	44	33	33	1109
Transmission loss (ktoe)	1196	94	661	882	126	94	94	3148
Distribution (ktoe)	13759	1086	7604	10138	1448	1086	1086	36207
2030CM								
Fuel (ktoe)	22643	2438	15439	8028	3088	1853	772	54260
Efficiency (%)	45	38	42	100	100	100	40	
Generation (ktoe)	10189	926	6484	8028	3088	1853	309	30877
Own-use (ktoe)	279	25	178	220	85	51	8	846
Transmission loss (ktoe)	694	63	441	547	210	126	21	2102
Distribution (ktoe)	9217	838	5865	7261	2793	1676	279	27929

Conclusions

- Vietnam LCS scenarios in 2030 were projected using ExSS and AIM/AFOLU models,
- Target GHGs are: CO_2 from energy use, CO2, CH4 and N20 in AFOLU sectors
- In 2030BaU scenario, GHG emissions were four folds from 2005 from 151 MtCO2 to 601 MtCO2
- In 2030CM scenario, GHG emission was reduced 36% from 2030BaU. Emission intensity was reduced 20%
- In AFOLU sectors, GHG emissions is contributed to decrease by 57% by 2030CM compared to 2030BaU level. Midseason drainage and conservation of existing protection forests are expected the largest mitigation countermeasures in the sectors.
- In energy sector, about 38% of GHG emissions can be reduced in 2030CM compared to 2030BaU level. Fuel shift and energy efficiency are projected the largest countermeasures in the sector.

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LCS·R Net — International Research Network for Low Carbon Societies

Integrating Asian Wisdom: Low Carbon Asia Research Network LoCARNet

Low Carbon Society Study Workshop
31 May 2012
Grand Plaza Hanoi Hotel
Hanoi

Dr. Shuzo Nishioka
Secretary General, LoCARNet/LCS-RNet
Institute for Global Environmental Strategies (IGES)

1

Image

LoCARNet: Low Carbon Asia Research Network
Research Institutions/ researchers' network
who dedicating directly in LCS policy making process

LCS·R Net


Sirintornthep TOWPRAYOON Thailand

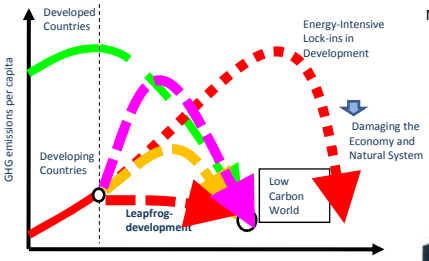

Rizaldi BOER Indonesia


Ho Chin SIONG Malaysia


Mikiko Kainuma Japan

Mohamad Bin SA'ELAL Malaysia


Bundit LIMMEECHOKCHAI Thailand



Vietnam


Hak MAO Cambodia


Jiang KEJUN China

NIES JAPAN · 国家发展和改革委员会能源研究所 · 국립환경과학원 · IGES · JGSEE · 環境省 Ministry of the Environment · UTM · ISKANDAR

2

*Japan Launched **LoCARNet***

Low Carbon Asia Research Network

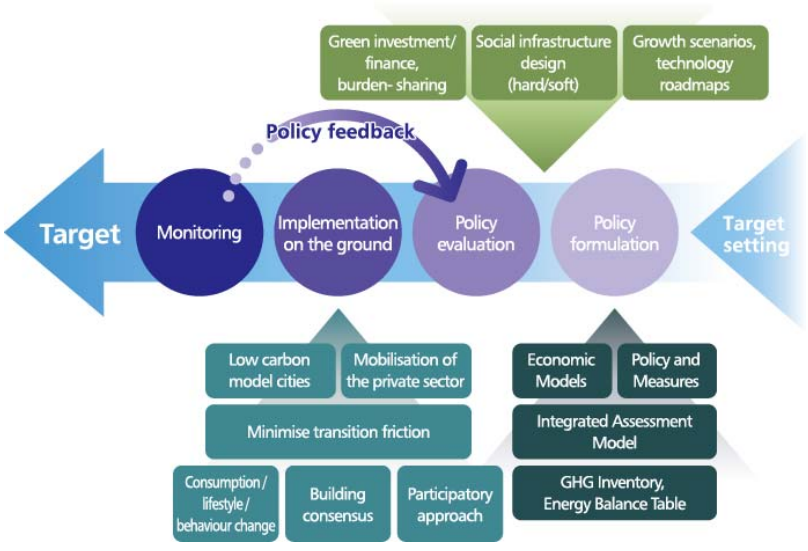
- **LoCARNet** launched by Ministry of Environment Japan and the Institute for Global Environment Strategies (IGES) in close cooperation with the National Institute for Environmental Studies (NIES) **promotes research to support the development of policies for low-carbon growth** by enabling dialogue between scientists and policy-makers.
- **LoCARNet facilitates** the Asian region to move forward with low-carbon growth, with a number of ongoing favourable conditions to **turn challenges into opportunities.**

Initiation

- The Government of Japan and the International Research Network for Low Carbon Societies (LCS-RNet) proposed the establishment of a network called the **"Low Carbon Asia Research Network (LoCARNet)"** at ASEAN+3 Environmental Minister Meeting (EMM) held in October 2011 in Cambodia.
- The **launch of LoCARNet** was declared at the side-event of the "**East Asia Low Carbon Growth Partnership Dialogue"** and the initiation of **LoCARNet** was announced by **the Minister of the Environment**, Japan on 15 April 2012.

Knowledge to Action: Formulation of low-carbon growth policies

- Step-by-step process from data collection, knowledge sharing, identification of tools and methods, to implementation and review-



LoCARNet - Activities and Uniqueness

➢**Network of prominent researchers**（Institutes) who are deeply involved in low-carbon development policy processes in this region.

➢**Science-Science-Policy Dialogue**: LoCARNet promotes research for policies towards low-carbon growth by enabling a sufficient amount of dialogue between scientists and policy-makers.

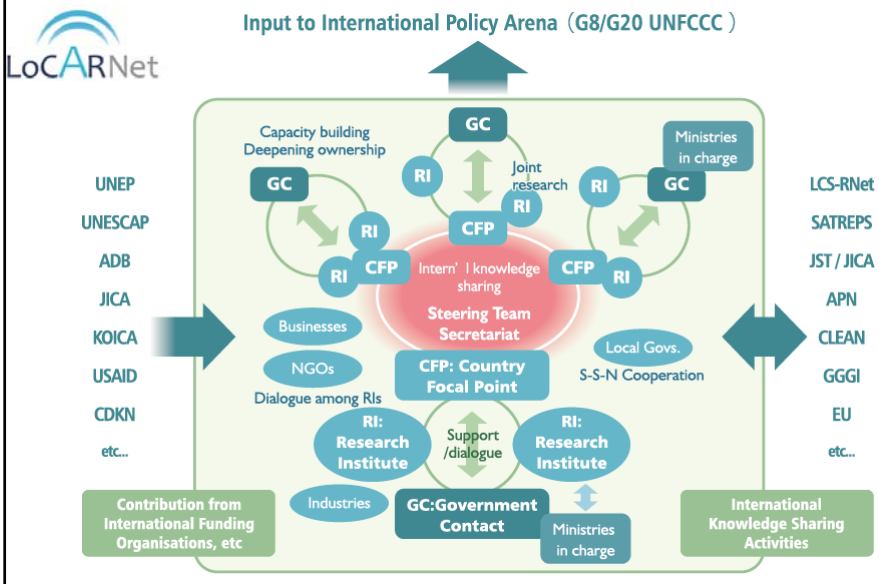
➢**Ownership of knowledge by countries**: LoCARNet also encourages collaboration amongst researchers in-country whose research capacity and scientific knowledge are firmly grounded in their home countries.

➢**South-South-North Collaboration**: LoCARNet aims to increase in research capacity in the AP region through knowledge sharing and information exchange, in the scheme of not only north-south cooperation, but also south-south regional cooperation.

➢（Not at all funding but wisdom network⇒APN/LC-Initiative)

Framework of "Low Carbon Asia Research Network (LoCARNet)"

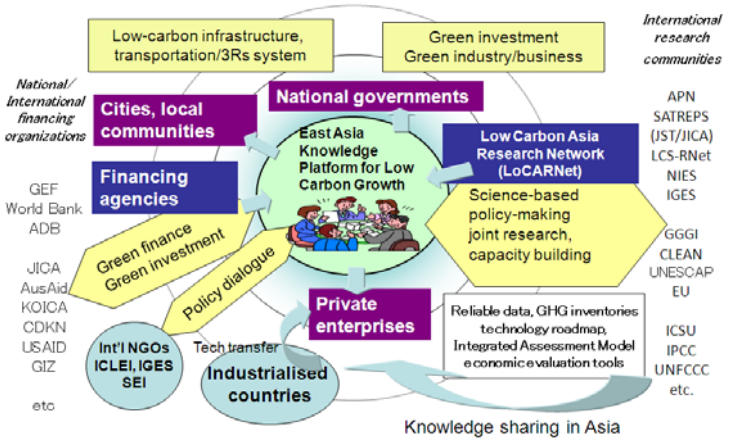
LoCARNet is a multi-layered, flexible network for researchers to contribute to low carbon policy-making.



Concept of "East Asia Knowledge Platform for Low Carbon Growth"

- aim to held developing countries create and implement low-carbon and resilient development strategies, compatible with their development goals.

- The initiation of **LoCARNet** was announced by the Minister of the Environment, Japan in the East Asia Climate Change Dialogue held in Tokyo, Japan on 15 April 2012.
- **LoCARNet** is one component of **East Asia Knowledge Platform** to promote all efforts and actions for realising low-carbon growth in the region.



Collaboration of JICA/NIES/IGES

Side-event on East Asia Low Carbon Growth Partnership Dialogue
(14 April 2012, Tokyo, Japan)

East Asia Knowledge Platform for Low Carbon Growth

- - - - - Research Community - - - - - **- - Practitioners - -**

Research into low-carbon societies
National Institute of Environmental Studies (NIES)

Research network for low-carbon growth and sustainable development
Institute for Global Environmental Strategies (IGES)

Knowledge and lessons learned from international cooperation activities:
Japan International Cooperation Agency (JICA)

Previous cooperation: development of scenarios towards low-carbon societies in Iskandar, Malaysia in accordance with the SATREPS scheme by JST/JICA, etc..

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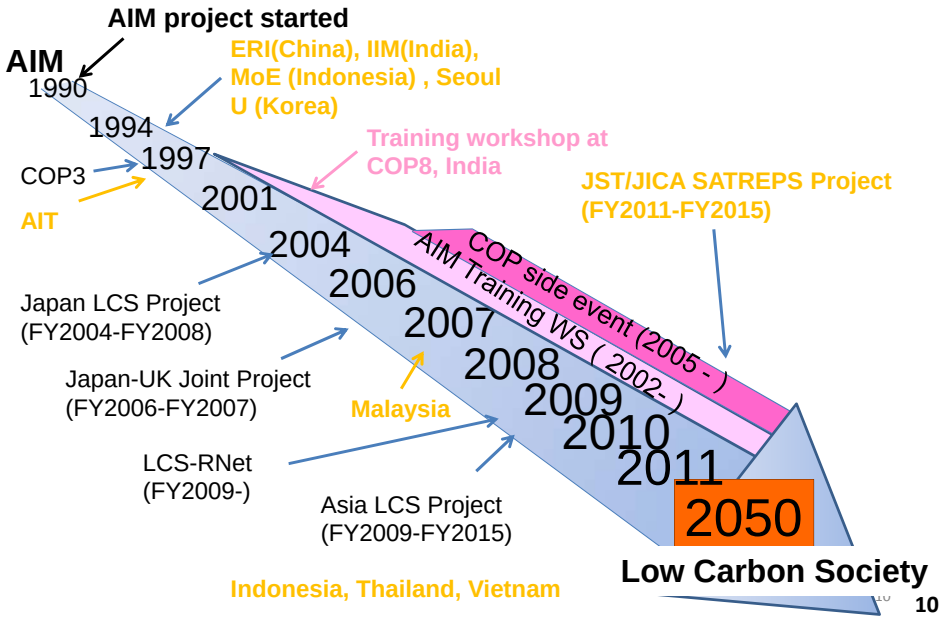
How Japanese Government/NIES/IGES worked so far

- Since 1997, **capacity building and training** of the Asia-Pacific Integrated Assessment Model (AIM) model **for Asian researchers** has been implemented, and more than 50 researchers in Asian countries have been trained .
- In 2008, Japan proposed to set up the "**International Research Network for Low Carbon Societies (LCS-RNet)" at the G8 Environment Ministers Meeting** to contribute to the global effort to tackle climate change by sharing up-to-date scientific findings on visions and pathways towards low-carbon societies.
- Since 2009, the Ministry of the Environment Japan has commissioned the operation of LCS-RNet to the Institute for Global Environment Strategies (IGES) to **develop a knowledge platform for low-carbon development to achieve towards low-carbon societies**.
- Since 2009, the Ministry of the Environment Japan has also commissioned **research on low-carbon growth in Asia** to a research team led by the National Institute for Environmental Studies (NIES). The research team has studied the ***feasibilities of low-carbon growth*** *in each country* **working with local researchers and helping them to exercise the AIM model to set up low-carbon targets and make low carbon scenario in their own countries.**

Asia-Pacific Integrated Model (AIM)



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LCS-RNet G8+

-Low Carbon Society Research Network-

Researchers' network who dedicate to governmental policy making process to reach a Low Carbon Society responding to G8 and world leaders' requirements

- 16 institutions from France, Germany, India, Italy, Japan, Korea, UK
- 2nd Annual Meeting (2010, Berlin): 88 participants from 57 institutions from 23 countries (including BRICs, Indonesia, South Africa) and 2 IGOs

From findings of 2nd Annual Meeting in Berlin 2010

- Inter-linkages among society's components must be understood.
- Technologies and R&D alone cannot attain LCS.
- Modelling implications and limitations must be correctly understood.

http://lcs-rnet.org/

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Movement of knowledge sharing

Policy Dialogue:
Sustainable and Low-Carbon Development in Indonesia and Asia
16-17 February 2010
Bogor, Indonesia

Dialogue:
Transition towards Low Carbon Societies in Thailand and Asia
17-18 November 2010
Bangkok, Thailand

Stakeholder Dialogue:
Low Carbon Development and Research Need
18-19 April 2011
Hanoi, Viet Num

A Low Carbon Asia:
From Malaysia to Asia Dialogues between Policy-Makers and Researchers:
Towards Implementation
4-5 July 2011,
Johore Bahr, Malaysia

1996 — 2009 — 2010 — 2011.1 — 2011.6-7

1996, **AIM Workshop**
ERI(China), IIM(India), MoE (Indonesia) , Seoul U (Korea)

2009, **LCS-RNet**
Knowledge sharing platform
Capacity Building for Asia

January 2011 , **Asian Development Bank**
Research and Development Technical Assistance
- Model and Software Development
- Low Carbon Analysis and Roadmap
- Capacity Building and Training

July 13, 2011, **World Bank**
Low Emissions Development Policy Implementation : Toward International Coherence on Knowledge Sharing

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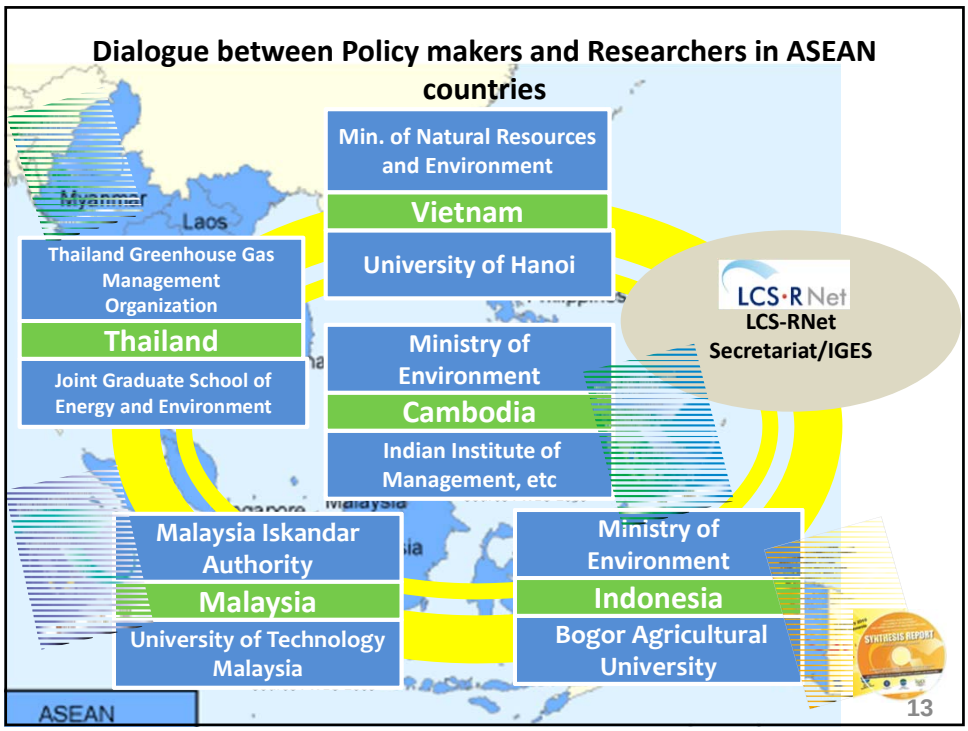

Future Direction of LoCARNet

- **There is a need to enhance collaboration with other stakeholders**. International organisations and development practitioners can cooperate toward low-carbon research and provide support to build up a research exchange network/platform. Private sector collaboration will also **become more important for green investment and green growth.**
- **Coordination and collaboration are vital at the national, sub-national/cities and regional levels**. This will strengthen ownership of knowledge, and also accelerate the speed of low-carbon growth in Asia.


Integrating Asian wisdom
Thank you for your kind attention!
Save our mother climate

Contribution of Scientific Study to Making a Practical LCS Policy
-Panel Discussion-

1. **If we cannot go to LCS,…**
2. **LCS offers higher QOL with less energy demand and lower-carbon energy supply**
3. **LCS needs good design, early action, and innovations**

Designed by Hajime Sakai

Junichi FUJINO (fuji@nies.go.jp)
NIES (National Institute for Environmental Studies), Japan
Low Carbon Society Study Workshop and its training in Hanoi
31st May 2012, Ha Noi, Viet Nam

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3 Points of Panel Discussion

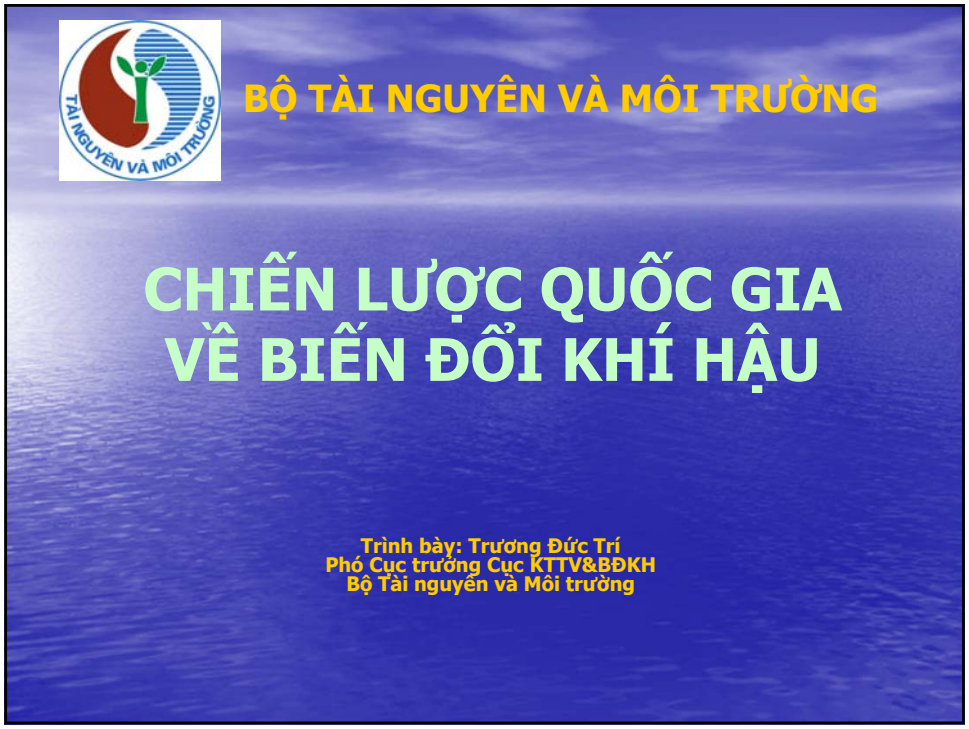
LoCARNet:

Research + Policy + X (e.g. business) =>
Make it happen!

1. What kind of “research” do you need to create practical LCS policy based on long-term perspectives?
2. What kind of “research” can you provide for LCS policy making?
3. What are our actions now?

4. Compilation of Speakers' Presentation

Vietnamese


BỘ TÀI NGUYÊN VÀ MÔI TRƯỜNG
CHIẾN LƯỢC QUỐC GIA
VỀ BIẾN ĐỔI KHÍ HẬU
Trình bày: Trương Đức Trí
Phó Cục trưởng Cục KTTV&BĐKH
Bộ Tài nguyên và Môi trường


Nội dung
1. Thông tin chung
2. Nội dung chính của Chiến lược quốc gia về BĐKH

1. Thông tin chung

- Ở Việt Nam, trong vòng 50 năm qua nhiệt độ trung bình đã tăng khoảng 0,5 - 0,7^{o}C,
- Mực nước biển đã dâng khoảng 20cm;
- Hiện tượng El Niño, La Niña ngày càng tác động mạnh mẽ;
- Thiên tai, đặc biệt là bão, lũ và hạn hán ngày càng khốc liệt;

1. Thông tin chung *(tiếp)*

Theo kịch bản BĐKH và nước biển dâng ở Việt Nam:

- Cuối thế kỷ 21, nhiệt độ trung bình năm ở nước ta tăng khoảng 2 - 3^{o}C;
- Tổng lượng mưa năm và lượng mưa mùa mưa tăng, trong khi đó lượng mưa mùa khô lại giảm;
- Mực nước biển có thể dâng khoảng từ 75cm đến 1m so với thời kỳ 1980-1999;
- Nếu mực nước biển dâng cao 1m, khoảng 10-12% dân số nước ta bị ảnh hưởng trực tiếp và tổn thất khoảng 10% GDP;

1. Thông tin chung *(tiếp)*

Những thách thức của Việt Nam

- Nhận thức về biến đổi khí hậu còn chưa đầy đủ;
- Hệ thống quản lý, chính sách còn thiếu, dàn trải;
- Nghiên cứu về tác động của BĐKH còn hạn chế;
- Cơ cấu kinh tế - xã hội chưa sẵn sàng ứng phó với BĐKH;
- Các ngành kinh tế chưa lồng ghép, quan tâm đúng đắn tới BĐKH;
- Định hướng phát triển của các ngành kinh tế vẫn theo hướng sử dụng tài nguyên để phát triển.

1. Thông tin chung *(tiếp)*

Hành động của Việt Nam

- Phê duyệt Chương trình mục tiêu quốc gia ứng phó với biến đổi khí hậu (QĐ số 158 ngày 02.12.2008 của Thủ tướng Chính phủ)
- Xây dựng và công bố Kịch bản BĐKH và nước biển dâng cho Việt Nam (tháng 6.2009) và công bố kết quả cập nhật kịch bản (tháng 3.2012)
- Phê duyệt Chiến lược quốc gia về biến đổi khí hậu (QĐ số 2139 ngày 05.12.2011 của Thủ tướng Chính phủ)
- Thành lập Ủy ban quốc gia về biến đổi khí hậu (QĐ số 43 ngày 09.01.2012 của Thủ tướng Chính phủ)
- Từ năm 2012, bắt đầu triển khai các mô hình ứng phó với các tác động của BĐKH, đặc biệt là nước biển dâng. Ưu tiên triển khai ở các tỉnh ven biển, đặc biệt là các tỉnh Đồng bằng Sông Cửu Long

2. Các nội dung chính của Chiến lược quốc gia về biến đổi khí hậu

QUAN ĐIỂM:

- Việt Nam coi ứng phó với BĐKH là vấn đề có ý nghĩa sống còn.
- Ứng phó với biến đổi khí hậu của Việt Nam phải gắn liền với phát triển bền vững, tận dụng các cơ hội để đổi mới tư duy phát triển, nâng cao năng lực cạnh tranh và sức mạnh quốc gia.
- Tiến hành đồng thời các hoạt động thích ứng và giảm nhẹ phát thải khí nhà kính, trong đó ở thời kỳ đầu thích ứng là trọng tâm.
- Ứng phó với BĐKH là trách nhiệm của toàn hệ thống; phát huy nội lực là chính, tận dụng hiệu quả các cơ chế hợp tác quốc tế.
- Các giải pháp ứng phó với biến đổi khí hậu phải có tính hệ thống, đồng bộ, liên ngành, liên vùng, trọng tâm, trọng điểm, phù hợp với từng giai đoạn và các quy định quốc tế;
- Chiến lược về biến đổi khí hậu có tầm nhìn xuyên thế kỷ, là nền tảng cho các chiến lược khác.

MỤC TIÊU CHIẾN LƯỢC:

- Phát huy năng lực của toàn đất nước, tiến hành đồng thời các giải pháp thích ứng với tác động của biến đổi khí hậu và giảm nhẹ phát thải khí nhà kính, bảo đảm an toàn tính mạng người dân và tài sản, nhằm mục tiêu phát triển bền vững.
- Tăng cường năng lực thích ứng với biến đổi khí hậu của con người và các hệ thống tự nhiên, phát triển nền kinh tế các-bon thấp nhằm bảo vệ và nâng cao chất lượng cuộc sống, bảo đảm an ninh và phát triển bền vững quốc gia trong bối cảnh biến đổi khí hậu toàn cầu và tích cực cùng cộng đồng quốc tế bảo vệ hệ thống khí hậu trái đất.

MỤC TIÊU CỤ THỂ:

- Đảm bảo an ninh lương thực, an ninh năng lượng, an ninh nguồn nước, xóa đói giảm nghèo, bình đẳng giới, an sinh xã hội, sức khỏe cộng đồng, nâng cao đời sống, bảo vệ tài nguyên thiên nhiên trong bối cảnh BĐKH;
- Nền kinh tế các-bon thấp, tăng trưởng xanh trở thành xu hướng chủ đạo;
- Nâng cao nhận thức, trách nhiệm và năng lực ứng phó với biến đổi khí hậu; tận dụng các cơ hội từ biến đổi khí hậu để phát triển kinh tế - xã hội; phát triển và nhân rộng lối sống, mẫu hình tiêu thụ thân thiện với hệ thống khí hậu.
- Góp phần tích cực với cộng đồng quốc tế trong ứng phó với BĐKH; tăng cường các hoạt động hợp tác quốc tế của Việt Nam để ứng phó hiệu quả với BĐKH.

CÁC NHÓM NHIỆM VỤ CỦA CHIẾN LƯỢC:

Thích ứng:

1. Chủ động ứng phó với thiên tai và giám sát khí hậu
   - a) Cảnh báo sớm
   - b) Giảm thiệt hại do rủi ro thiên tai
2. Đảm bảo an ninh lương thực và tài nguyên nước
   - a) An ninh lương thực
   - b) An ninh tài nguyên nước
3. Ứng phó tích cực với nước biển dâng phù hợp các vùng dễ bị tổn thương

CÁC NHÓM NHIỆM VỤ CỦA CHIẾN LƯỢC *(tiếp):*

Thích ứng và giảm nhẹ phát thải KNK:

4. Bảo vệ, phát triển bền vững rừng, tăng cường hấp thụ khí nhà kính và bảo tồn đa dạng sinh học

Giảm nhẹ phát thải khí nhà kính

5. Giảm nhẹ phát thải khí nhà kính góp phần bảo vệ hệ thống khí hậu trái đất
   - a) Phát triển các nguồn năng lượng tái tạo, năng lượng mới
   - b) Sử dụng tiết kiệm, hiệu quả năng lượng
     - Sản xuất công nghiệp và xây dựng
     - Giao thông vận tải
   - c) Nông nghiệp
   - d) Quản lý chất thải

CÁC NHÓM NHIỆM VỤ CỦA CHIẾN LƯỢC *(tiếp):*

Liên ngành:

6. Tăng cường vai trò chủ đạo của Nhà nước trong ứng phó với BĐKH
   - a) Điều chỉnh, lồng ghép vấn đề biến đổi khí hậu vào các chiến lược, quy hoạch, kế hoạch
   - b) Hoàn thiện và tăng cường thể chế
7. Xây dựng cộng đồng ứng phó hiệu quả với biến đổi khí hậu
   - a) Cộng đồng ứng phó với biến đổi khí hậu
   - b) Nâng cấp hệ thống chăm sóc sức khỏe cộng đồng ứng phó hiệu quả với biến đổi khí hậu
   - c) Nâng cao nhận thức, giáo dục và đào tạo
8. Phát triển KHCN tiên tiến trong ứng phó với biến đổi khí hậu
9. Tăng cường hợp tác và hội nhập quốc tế nâng cao vị thế quốc gia trong các vấn đề về biến đổi khí hậu
10. Đa dạng hóa các nguồn lực tài chính và đầu tư có hiệu quả

GIAI ĐOẠN THỰC HIỆN CHIẾN LƯỢC

- ***Giai đoạn từ nay tới 2012***:
  - Các hoạt động thích ứng cấp bách, không thể trì hoãn cần phải được triển khai thực hiện.
  - Chú trọng các hoạt động nâng cao năng lực, tăng cường KHCN và rà soát, điều chỉnh, bổ sung các cơ chế, chính sách, chiến lược tăng trưởng xanh, thích ứng với BĐKH và giảm nhẹ phát thải KNK phù hợp với hoàn cảnh quốc tế sẽ được khẳng định rõ ràng hơn sau năm 2012.
- ***Giai đoạn 2013 – 2025***:
  - Đặc biệt quan tâm đến vấn đề giảm phát thải KNK để bảo vệ hệ thống khí hậu trái đất.
  - Các hoạt động thích ứng với BĐKH và giảm nhẹ phát KNK được đồng thời tiến hành gắn liền với phát triển kinh tế - xã hội của đất nước.
- ***Giai đoạn 2026 – 2050:***
  - Giảm phát thải khí nhà kính trở thành tiêu chí trong các hoạt động phát triển kinh tế - xã hội.
  - Các nhiệm vụ Chiến lược sẽ được rà soát, điều chỉnh, bổ sung với định hướng phát triển mới nhằm xây dựng và củng cố nền kinh tế các-bon thấp có khả năng chống chịu và thích ứng cao với các tác động của biến đổi khí hậu.

CÁC CHƯƠNG TRÌNH ƯU TIÊN

1) Chương trình mục tiêu quốc gia ứng phó với biến đổi khí hậu, xây dựng kế hoạch mở rộng cho giai đoạn 2016 – 2025.
2) Chương trình khoa học công nghệ quốc gia về biến đổi khí hậu.
3) Đề án hiện đại hóa công nghệ dự báo và mạng lưới quan trắc KTTV đến năm 2020.
4) Chương trình Đồng bằng sông Cửu Long và Chương trình Đồng bằng sông Hồng về quản lý TNN và thích ứng với BĐKH.
5) Đề án kiểm kê, giám sát phát thải khí nhà kính và quản lý các hoạt động giảm thiểu phát thải khí nhà kính.
6) Chương trình ứng phó với BĐKH cho các đô thị lớn của Việt Nam.
7) Chương trình nâng cấp và cải tạo hệ thống đê biển, đê sông phù hợp với điều kiện biến đổi khí hậu và nước biển dâng.
8) Đề án nâng cấp hệ thống chăm sóc sức khỏe cộng đồng phù hợp với điều kiện biến đổi khí hậu và nước biển dâng.
9) Chương trình phát triển kinh tế - xã hội các đảo dân sinh ứng phó hiệu quả với biến đổi khí hậu, nước biển dâng.
10) Đề án xây dựng thí điểm và nhân rộng mô hình cộng đồng ứng phó hiệu quả với BĐKH.


Trân trọng cảm ơn!

Hội thảo nghiên cứu xã hội các bon thấp
31 tháng 5, 2012, Hà nội, Việt Nam

XÂY DỰNG KỊCH BẢN XÃ HỘI CÁC BON THẤP Ở VIỆT NAM

Kyoto University: Nguyen Thai Hoa, Kei Gomi, Yuzuru Matsuoka
National Institute for Environmental Studies: Tomoko Hasegawa, Junichi Fujino, Mikiko Kainuma
Institute of Strategy, Policy and Natural Resources: Nguyen Thi Thuy Duong, Nguyen Tung Lam, Nguyen Lanh, Nguyen Van Tai
Institute of Meteorology, Hydrology and Environment: Huynh Thi Lan Huong, Tran Thuc
Water Resources University: Nguyen Quang Kim
Japan International Cooperation Agency: Hiroshi Tsujihara

Giới thiệu

Vì sao cần xây dựng một xã hội các bon thấp (LCS)?

Mô hình tăng trưởng truyền thống của các nước phát triển đã thải ra một lượng lớn khí nhà kính.

Để tránh lặp lại, những nước đang phát triển như Việt Nam cần tránh và xây dựng thẳng xã hội các bon thấp.

Một trong các mục tiêu dài hạn của "Chương trình mục tiêu quốc gia về ứng phó với biến đổi khí hậu" là tận dụng cơ hội để xây dựng một nền kinh tế các bon thấp" và "Chiến lược quốc gia về biến đổi khí hậu" xem xét " nền kinh tế các bon thấp như những nguyên tắc để phát triển bền vững; giảm khí thải nhà kính trở thành một chỉ tiêu bắt buộc của phát triển kinh tế và xã hội".

Để góp phần cho những thảo luận về LCS, nghiên cứu này là một kịch bản LCS cho Việt Nam vào năm 2030.

2

Để xây dựng mô hình xã hội các bon thấp:

- Sử dụng công cụ mô hình ExSS và mô hình AIM/AFOLU Bottom up để xác định phát thải và giảm khí nhà kính trong lĩnh vực năng lượng và nông, lâm nghiệp và sử dụng đất
- Mục tiêu KNK: trong lĩnh vực năng lượng chỉ xem xét CO_2 , trong lĩnh vực năng lượng và nông, lâm nghiệp và sử dụng đất xem xét CO_2, CH_4 and N_2O

3

- **Phần I: Kịch bản kinh tế xã hội vào năm 2030**
- **Phần II: Phát thải/giảm KNK trong lĩnh vực năng lượng**
- **Phần III: Phát thải/giảm KNK trong lĩnh vực AFOLU**
- **Phần IV: Chính sách và hành động hướng tới LCS**

4

Phần I: Kịch bản kinh tế xã hội vào năm 2030

5

Phương pháp

1. Thu thập số liệu và ước tính cho năm cơ sở (2005)
2. Xây dựng kịch bản kinh tế xã hội cho năm 2030 bằng mô hình ExSS

6

Mô hình ExSS

- ✓ ExSS là một công cụ dự báo lượng hóa các kịch bản LCS, do Đại học Kyoto và Viện Nghiên cứu Môi trường quốc gia của Nhật Bản phát triển.
- ✓ ExSS mô tả kịch bản kinh tế-xã hội tương lai (dân số, kinh tế, giao thông vận tải, sử dụng đất, xây dựng, v.v.), nhu cầu năng lượng, và khả năng phát thải và giảm KNK.
- ✓ Khả năng giảm KNK dựa vào dữ liệu về công nghệ năng lượng (cả hai mặt cung và cầu), các hoạt động xây dựng, thay đổi trong cấu trúc ngành giao thông vận tải, thay đổi sử dụng đất, hoạt động nông nghiệp, thay đổi trong hành vi tiêu dùng, và tiềm năng sử dụng năng lượng tái tạo.
- ✓ Mô hình có thể dùng để xác định tiềm năng giảm phát thải cụ thể của các giải pháp trong từng lĩnh vực.

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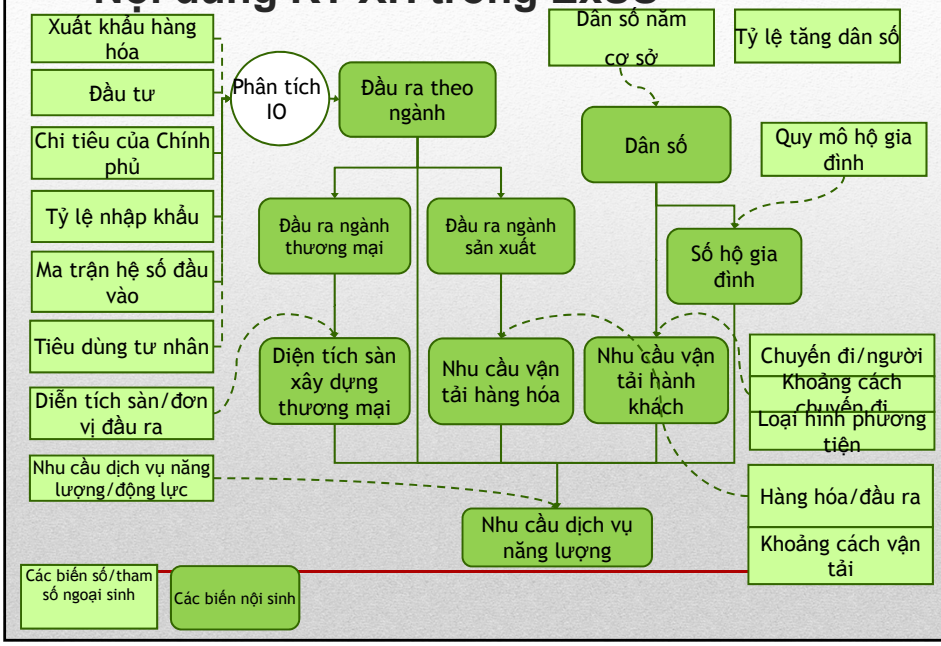
Nội dung KT-XH trong ExSS



Thu thập số liệu (kinh tế - xã hội)

Số liệu	Nguồn
Dân số	Ban dân số - Dân số Việt Nam 2030, Tổng cụ thống kê (2008)
Hộ gia đình	Điều tra dân số và nhà ở Việt Nam (2009)
Bảng IO	Bảng Input-output 2005 (Bùi Trinh, 2009)
Giao thông vận tải	JICA/Bộ GTVT (2009): Nghiên cứu phát triển hệ thống giao thông vận tải bền vững ở Việt Nam (VISTRANSS 2) Tổng cục thống kê (2009) Schipper L., A. T. Le, O. Hans., 2008. Measuring the invisible. Quantifying emissions reductions from transport solutions. Hanoi case study. EMBARQ – The WRI Center for Sustainable Transport and World Resources Institute. Walter, H. and R. Michael (1995). Motorization and non-motorized transport in Asia. Transport system evolution in China, Japan and Indonesia. Land Use Policy, Vol 13, No 3, pp. 69-84, 1996.

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Giả thiết 2030 BaU

Chỉ tiêu	Lượng hóa (Kịch bản 2030BaU)	Hướng tới
Dân số	104 triệu người	Tỷ lệ tăng 0.9 % /năm
Cơ cấu dân số	[Nam] 0-14: 8%, 15-64: 35.9%, 65 và trên: 5.8% [Nữ] 0-14: 7.7%, 15-64: 35.2%, 65 và trên: 7.4%	Tỷ lệ sinh nam cao hơn nữ
Số người trung bình/hộ gia đình	3.5 (4.2 tại 2005)	Giảm nhẹ theo quy mô trung bình của hộ gia đình
GDP	6.5%	Tỷ lệ tăng trưởng trung bình hàng năm trong giai đoạn 2005 – 2030
Cơ cấu công nghiệp	[Nông nghiệp, Ngư, Lâm]: 17% (22% tại 2005) [Công nghiệp, Xây dựng]: 43% (41% tại 2005) [Dịch vụ]: 40% (37% tại 2005)	Giảm công nghiệp sơ cấp, tăng CN thứ cấp và thứ ba.
Cơ cấu cầu	Đóng góp của xuất khẩu trong GDP: 29% (29% tại 2005)	XK giữ nguyên phần góp vào GDP
Cơ cấu trong GTVT	Vận tải hành khách: [Sắt] 0%, [Bus] 0.6%, [Thủy] 0.6%, [Xe con] 0.3%, [Xe máy] 8.3% [Đi bộ & Xe đạp] 90%, [Hàng không] 0.1%	Tăng VT công cộng, người dân đi bộ và xe đạp

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Ước tính các chỉ tiêu KT-XH

	2005	2030 BaU	2030 CM	2030BaU/2005	2030CM/2005
Dân số (triệu người)	83.1	104.0	104.0	1.3	1.3
Số hộ gia đình (triệu)	20.0	29.7	29.7	1.5	1.5
GDP (nghìn tỷ VND)	818.5	3,963	3,963	4.8	4.8
Sản lượng tăng (nghìn tỷ VND)	1,934	9,750	9,750	5.0	5.0
CN sơ cấp (nghìn tỷ VND)	404	1,684	1,684	4.2	3.9
CN thứ cấp (nghìn tỷ VND)	1,033	5,497	5,497	5.3	5.2
CN thứ ba (nghìn tỷ VND)	497	2,569	2,569	5.2	5.2
Nhu cầu vận tải hành khách (triệu người km)	223,981	542,687	518,028	2.4	2.3
Nhu cầu vận tải hàng hóa (triệu tấnkm)	38,856	235,212	235,124	6.1	6.1

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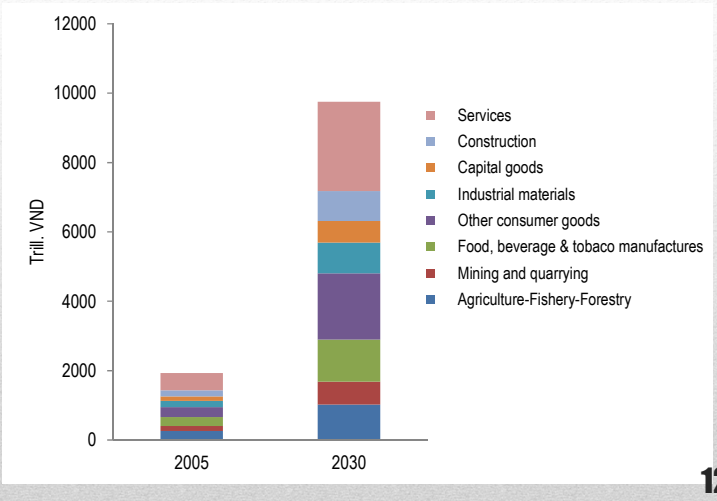
Dự báo sản lượng các ngành



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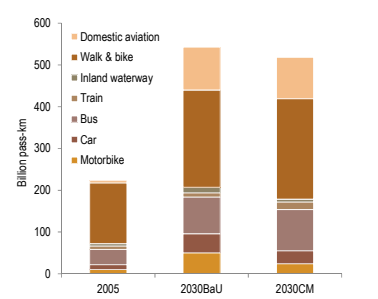
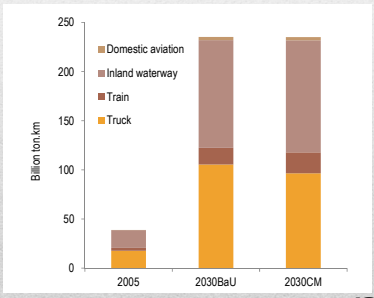
Dự báo nhu cầu vận tải

- ✓ Năm 2030, tăng thị phần xe máy và hàng không nội địa
- ✓ Khối lượng vận tải hàng hóa tăng cân đối với tăng trưởng của các ngành thứ cấp



Vận tải hành khách



Vận tải hàng hóa

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Phần II: phát thải/giảm CO_2 trong lĩnh vực năng lượng

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Phương pháp

1. Thu thập số liệu về nhu cầu và cung năng lượng tại năm cơ sở (2005)
2. Dự báo 2030BaU (Phát triển bình thường) về nhu cầu năng lượng và phát thải CO_2
3. Xây dựng kịch bản cho năm 2030CM về những lựa chọn giảm phát thải

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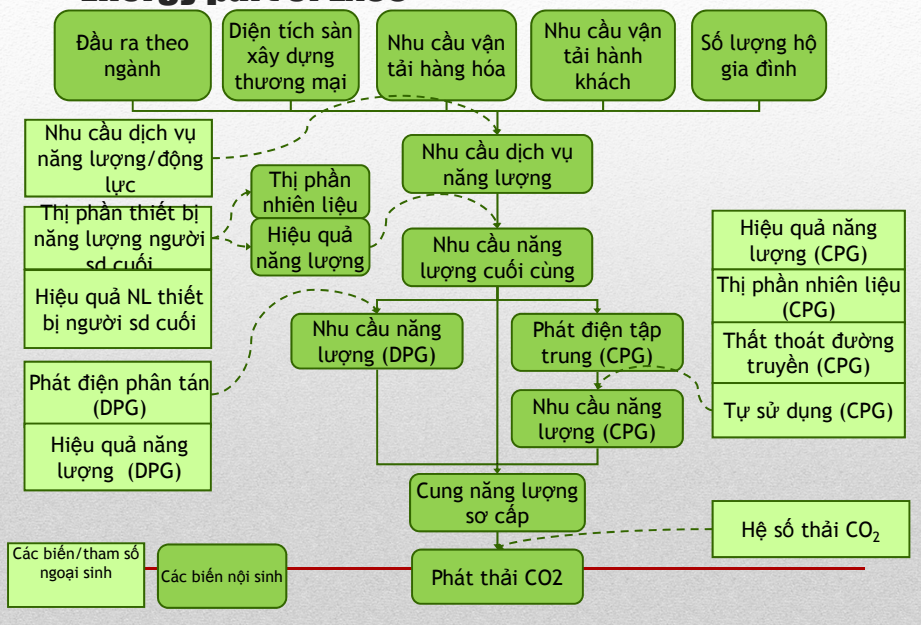
Energy part of ExSS



Dữ liệu thu thập (năng lượng)

Dữ liệu	Nguồn	Ghi chú
Nhu cầu năng lượng	System for the Analysis of Global Energy Markets (SAGE), 2003. Model Documentation Report. Office of Integrated Analysis and Forecasting Energy Information Administration U.S Department of Energy Washington, DC. International Energy Agency (IEA), 2007. Energy balances of non-OECD countries 2004-2005. 2007 Edition. IEA statistics.	Nhu cầu năng lượng cuối cùng theo ngành được tính dựa vào Bảng cân đối năng lượng quốc gia 2005 (Cơ quan Năng lượng quốc tế IEA). Các số liệu khác được viện dẫn để ước tính mức chi tiết nhu cầu năng lượng theo các ngành công nghiệp và dịch vụ.
Cung cấp năng lượng	International Energy Agency (IEA), 2007. Energy balances of non-OECD countries 2004-2005. 2007 Edition. IEA statistics.	Tổng cung năng lượng và tiêu thụ nhiên liệu được lấy từ EBT.
Hệ số phát thải	IPCC(2006):2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2 Energy, Chapter 1. Introduction, 1.4.2 Emission Factors	Sử dụng giá trị "Mặc định" của mỗi loại nhiên liệu .

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Các giả thiết 2030 BaU

Lĩnh vực	Biến số	Giả thiết
Nhu cầu năng lượng cuối cùng	Tổng	Từ 2005 đến 2030, tổng nhu cầu năng lượng cuối cùng tăng 5.1%/năm .
	Theo ngành	Tỷ lệ tăng công nghiệp cao hơn tổng nhu cầu.
	Theo loại nhiên liệu	Các sản phẩm điện và dầu tăng với tỷ lệ cao hơn tổng cầu.
Cung cấp năng lượng	Thị phần nhiên liệu	Theo Triển vọng Cung và Cầu năng lượng APEC (4th edition) và Kế hoạch phát triển điện Việt Nam (PDP VI)
	Hiệu suất	Nhan T. N., M. H. Duong, 2009. The potential for Mitigation of CO_2 Emission in Vietnam's Power Sector. DEPOCEN Working paper Series No. 2009/22.

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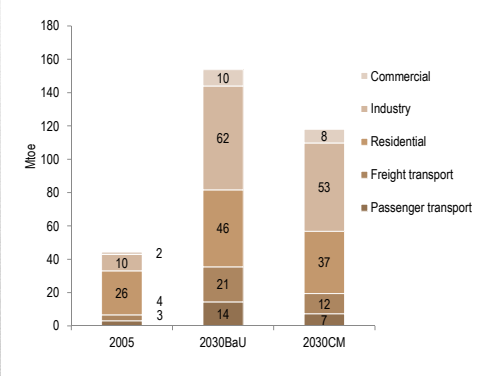
Dự báo nhu cầu năng lượng cuối cùng theo ngành



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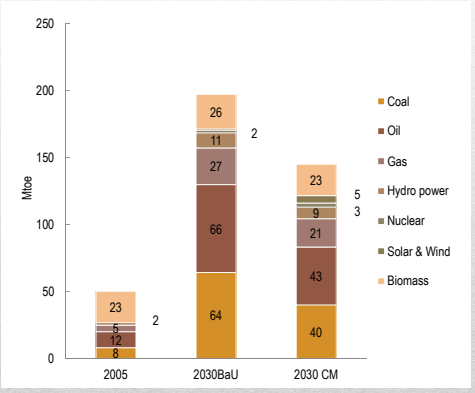
Dự báo nhu cầu năng lượng sơ cấp theo loại nhiên liệu



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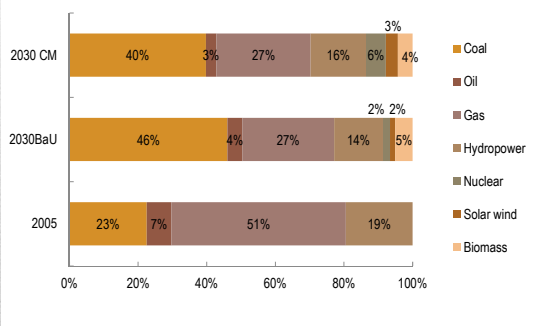
Dự báo cung điện



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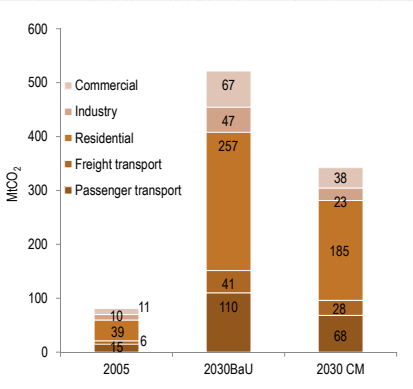
Dự báo phát thải CO_2



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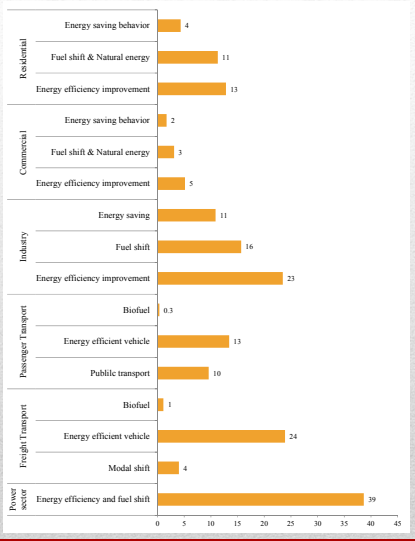
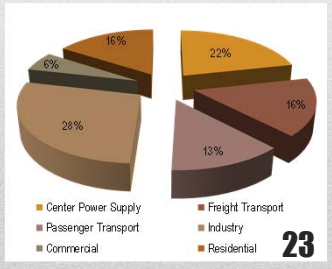
Đóng góp của các giải pháp các bon thấp





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Phần III: Phát thải/giảm KNK trong các lĩnh vực AFOLU

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Khung dự báo

- Quốc gia: Việt Nam
- Năm:
  - Nông nghiệp; 2000, 2005, 2010, 2015, 2020, 2030
  - LULUCF; 2000-2030 (bước tính 1 năm)
- Mục tiêu KNK: CO_2, CH_4, N_2O
- Các nguồn phát thải KNK:
  - Lên men trong ruột gia súc, phân gia súc, đất canh tác, lúa và thay đổi sử dụng đất, ngoại trừ cháy và xáo động đất đai.
- Các kịch bản
  - Bình thường (BaU): không có biện pháp nào được thực hiện
  - Có biện pháp: Các giải pháp được thực hiện với các loại thuế các bon

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Mô hình AFOLUB

- AG/Bottom-up
- LULUCF/Bottom-up

- **Mô hình AFOLUB**
  - Dạng mô hình Từ dưới lên để xác định sự kết hợp và số lượng các biện pháp giảm thải đơn lẻ
  - Ước tính phát thải và giảm KNK trong các lĩnh vực AFOLU
  - Phân tích hiệu quả của các chính sách như thuế cascbon, thuế năng lượng, trợ giá, v.v
  - Khung thời gian: giữa kỳ (điển hình cho tới năm 2030)
- **Mô hình Từ dưới lên Nông nghiệp (AG/Bottom-up)**
  - Mô tả hành vi của những nhà sản xuất nông nghiệp và lựa chọn các giải pháp giảm thải
  - Tối đa hóa lợi ích cho nhà sản xuất
- **Mô hình LULUCF/Bottom-up**
  - Mô tả sử dụng đất và thay đổi sử dụng đất
  - Tối đa hóa tổng giảm thải tích lũy trong tương lai

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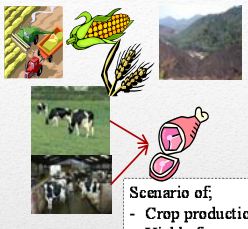
Đầu vào và kết quả của mô hình AFOLUB



Scenario of;
- **Crop production**
- **Yield of crops and carcass weight of animals**
- **Number of livestock animals**
- **Land use, land use change**

List of Countermeasure
Characteristics of countermeasure
- Cost
- Reduction effect
- Life time
- Diffusion ratio
- Energy consumption and recovery

Scenario of;
- Fertilizer input
- Price of commodity and energy
- Production technologies
  - Feeding system of livestock
  - Manure management system
  - Share ratio of irrigation area

Policy;
- GHG emission tax rate
- Energy tax rate
- Subsidy

Allowable abatement cost for GHG emission mitigation

AFOLUB model

Emission/mitigation Types of countermeasures

Exogenous variables | Endogenous variables | Model

Source: Hasegawa and Matsuoka, submitted

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Nguồn số liệu

- Số liệu hiện tại và tương lai
  - Cây trồng và gia súc tại 2005-2009:
    - Thông báo quốc gia lần 2 tới UNFCCC (SNC)
    - Niên giám thống kê (2002, 2007 và 2009)
    - Bộ NN-PTNT, 2006
    - FAOSTAT, 2012, download
  - Sử dụng đất tại 2000, 2005:
    - SNC
    - ResourceSTAT, FAOSTAT, 2011, download
    - Niên giám thống kê 2001(2002)
- Số liệu về các giải pháp
  - Thu thập trong nước và quốc tế
  - Các giải pháp trong LULUCF tham khảo từ SCN

Các giải pháp trong ngành Nông nghiệp

Emission sources	Code	Countermeasures	Code	Cost [USD/activity/yr]*	Mitigation [tCO_2eq/activity/yr]*	Reference
Enteric fermentation	3A1	Replacement of roughage with concentrates	RRC	-23	0.45	Bates(1998a), Shibata et al.(2010), Graus et al.(2004)
		High genetic merit	HGM	0	0.32	Bates(1998a)
Manure management	3A2	Dome digester, cooking fuel and light	CFL	44	0.62	USEPA(2006)
		Daily spread of manure	DSM	2.2	0.33	Bates(1998a)
Rice cultivations	3C7	Midseason drainage	MD	0	0.89	USEPA(2006)
		Fall incorporation of rice straw	FIR	0	0.68	USEPA(2006)
		Replace Urea with Ammonium	RAS	20	0.24	USEPA(2006), Graus et al. (2004)
Managed soils	3C4~3C6	High efficiency fertilizer application	HEF	2.2	0.65	USEPA(2006), Hendriks et al. (1998), Amann et al. (2005)
		Slow-release fertilizer application	SRF	2150	0.76	USEPA(2006), Akiyama et al.(2010)
		Tillage and residue management	TRM	5	0.08	IPCC(2007), Smith et al.(2007)

* Activity is area of cropland for crop cultivation and animal numbers for livestocks.

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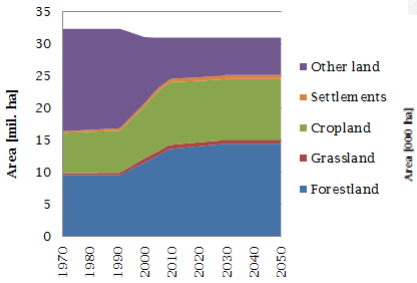
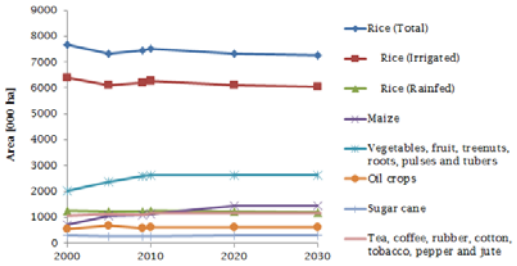
Các giả thiết





Các kịch bản sử dụng đất và thay đổi SDĐ

Các kịch bản diện tích thu hoạch trong sản xuất nông nghiệp

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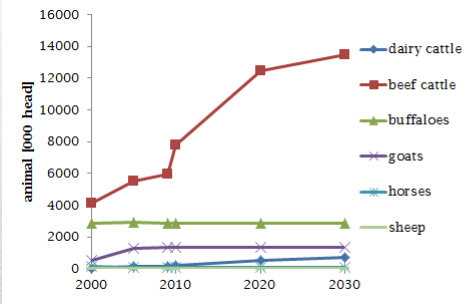
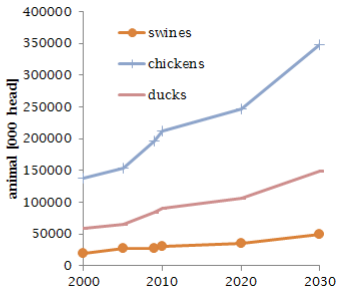
Các giả thiết



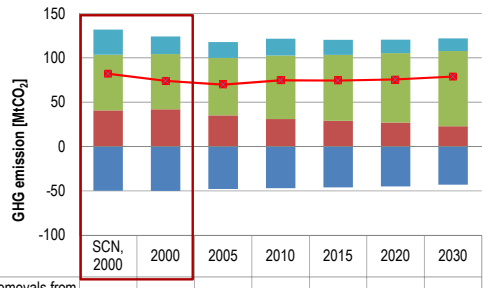


Các kịch bản gia súc (1)

Các kịch bản gia súc (2)

30

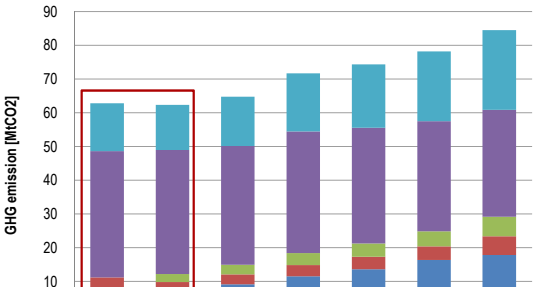
So sánh tổng lượng phát thải KNK theo kịch bản bình thường trong các lĩnh vực AFOLU



	SCN, 2000	2000	2005	2010	2015	2020	2030
Emission and removals from soils	28	20	18	19	17	15	14
Emission from agriculture	63	62	65	72	74	78	85
Forest and grassland conversion	41	42	35	31	29	27	23
Changes in forest and other woody biomass stocks	-50	-50	-48	-47	-46	-45	-43
TOTAL	82	74	70	75	74	76	79

31

So sánh chi tiết phát thải KNK trong Nông nghiệp với kịch bản BaU



	SCN, 2000	2000	2005	2010	2015	2020	2030
Managed soils (N2O)	14	13	15	17	19	21	24
Rice field (CH4)	37	37	35	36	34	33	32
Manure (N2O)	0	2	3	4	4	4	6
Manure (CH4)	3	2	3	3	4	4	6
Enteric fermentation (CH4)	8	8	9	12	14	16	18

32

Giảm thải năm 2030 với các chi phí biên cho phép khác nhau trong AFOLU

Giảm thải năm 2030 [$MtCO_2$]		Chi phí biên cho phép [USD/tCO_2]			
		<0	<10	<100	>100
Nông nghiệp	Lên men trong ruột: giá trị di truyền cao	0.1	0.1	1.6	1.8
	Lên men trong ruột: Thay thế thức ăn thô bằng cô đặc	3.2	3.2	2.6	2.5
	Quản lý chất thải: chất thải hàng ngày	0.0	0.0	0.0	4.9
	Quản lý chất thải: Nồi hầm, nhiên liệu nấu và đèn	2.8	2.8	2.8	0.1
	Trồng lúa: Thay thế ure bằng amonium sun phát	0.0	1.8	1.8	1.8
	Trồng lúa: Thoatst nước giữa mùa	4.7	6.7	6.7	6.7
	Trồng lúa: Kết hợp rơm lúa mùa thu	0.0	3.4	3.4	3.4
	Đất: sử dụng phân bón hiệu suất cao	0.0	2.9	2.7	2.4
	Đất: Phân bón bay hơi chậm (Slow-release)	0.0	0.0	0.8	2.8
	Tổng	10.8	20.8	22.7	26.6
LULUCF	Bảo vệ và quản lý bền vững các diện tích rừng sản xuất hiện tại	0.0	3.1	3.1	3.1
	Bảo tồn rừng bảo vệ hiện tại	0.0	16.5	16.5	16.5
	Trồng cây phát triển nhanh để lấy gỗ	0.0	1.3	1.3	1.3
	Tổng	0.0	20.9	20.9	20.9
Tổng cộng		10.8	41.7	43.5	47.5

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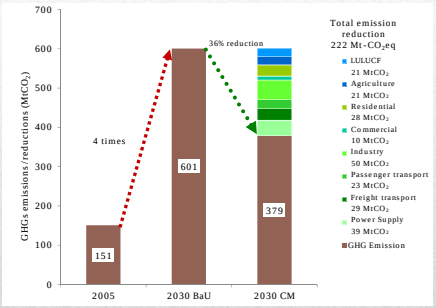
Phần IV: Chính sách và hành động hướng tới LCS

34

Phát thải/giảm thai KNK ở Việt nam năm 2030

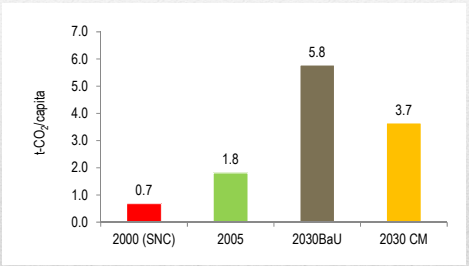


Lĩnh vực	Phát thải KNK ($MtCO_2eq$)		Giảm thải KNK ($MtCO_2eq$)
	2030BaU	2030CM	
AFOLU	**79**	**37**	**42**
Nông nghiệp	85	64	21
LULUCF	-6	-27	21
Năng lượng	**522**	**342**	**180**
Hộ gia đình	110	68	42
Thương mại	41	28	13
Công nghiệp	257	185	71
Giao thông vận tải	114	61	53
Tổng	**601**	**379**	**222**

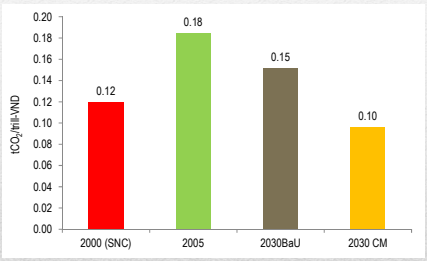
35

Dự báo mức phát thải KNK/người và cường độ phát thải

Phát thải KNK/người



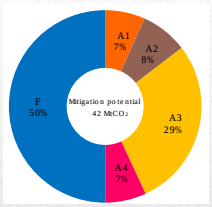
Cường độ phát thải



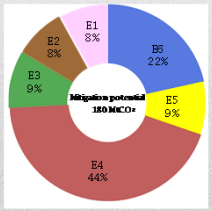
36

Hành động hướng tới xã hội các bon thấp ở Việt Nam

Các hành động hướng tới LCS ở Việt Nam năm 2030		Phát thải Giảm thải KNK (Triệu tấn CO_2tương dương)
Các lĩnh vực AFOLU		**42**
Hành động A1	Quản lý chất thải gia súc	3
Hành động A2	Lên men trong ruột gia súc	3
Hành động A3	Quản lý trong trồng lúa	12
Hành động A4	Quản lý đất	3
Hành động F	Quản lý rừng và sử dụng đất	21
Lĩnh vực năng lượng		**180**
Hành động E1	Tòa nhà xanh Building	14
Hành động E2	Giao thông thuận tiện	15
Hành động E3	Hành vi tiết kiệm năng lượng	17
Hành động E4	Cải tiến hiệu quả năng lượng	79
Hành động E5	Chuyển đổi nhiên liệu trong CN	16
Hành động E6	Các nhà máy điện thông minh	39
Tổng		**222**



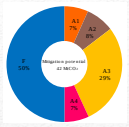
Tiềm năng giảm thải trong lĩnh vực AFOLU



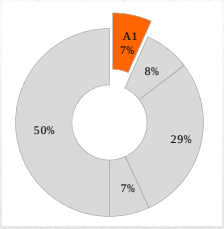
Tiềm năng giảm thải trong lĩnh vực năng lượng

37

Hành động A1. Quản lý chất thải gia súc



Hành động "Quản lý chất thải gia súc" được kỳ vọng có thể giúp giảm 2.8 $MtCO_2$ tại AAC of 10 USD/tCO_2, chiếm 7% tổng lượng phát thải KNK trong các lĩnh vực AFOLU

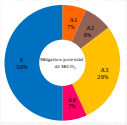


Chi tiết giảm phát thải của hành động A1 trong các AAC khác nhau

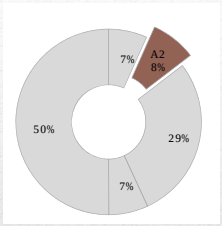
Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
Daily spread of manure	0.0	0.0	0.0	4.9
Dome digester, cooking fuel and light	2.8	2.8	2.8	0.1
Total	**2.8**	**2.8**	**2.8**	**5.0**

38

Hành động A2. Lên men trong ruột gia súc



Hành động A2 được tính toán để giảm 3.3 $MtCO_2$ tại AAC với giá 10 USD/tCO_2 năm 2030. Hành động này có 2 giải pháp chính, là di truyền cao và thay thế thức ăn khô bằng cô đặc, chiếm 8% tổng lượng phát thải KNK của các lĩnh vực AFOLU

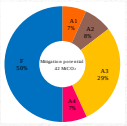


Chi tiết giảm phát thải của hành động A2 trong các AAC khác nhau

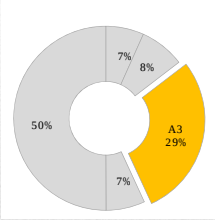
Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
High genetic merit	0.1	0.1	1.6	1.8
Replacement of roughage with concentrates	3.2	3.2	2.6	2.5
Total	**3.3**	**3.3**	**4.2**	**4.3**

39

Hành động A3. Quản lý trong trồng lúa



Hành động này góp phần lớn nhất trong khả năng giảm thải trong lĩnh vựa nông nghiệp (11.9 $MtCO_2$ tại AAC giá 10 USD/tCO_2), chiếm 29% tổng giảm thải KNK trong các lĩnh vực AFOLU



Chi tiết giảm phát thải của hành động A3 trong các AAC khác nhau

Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
Replace urea with ammonium sulphate	0.0	1.8	1.8	1.8
Midseason drainage	4.7	6.7	6.7	6.7
Fall incorporation of rice straw	0.0	3.4	3.4	3.4
Total	**4.7**	**11.9**	**11.9**	**11.9**

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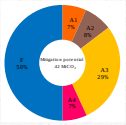
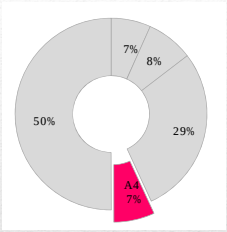
Hành động A4. Quản lý đất



Hành động này góp phần giảm 2.9 $MtCO_2$, chiếm 7% tổng phát thải KNK trong các lĩnh vực AFOLU. Hành động nay gồm 2 biện pháp; sử dụng phân bón hiệu suất cao và phân bốc hơi chậm.

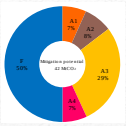


Chi tiết giảm phát thải của hành động A4 trong các AAC khác nhau

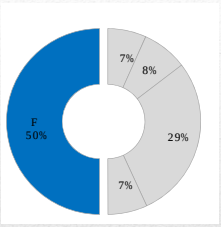
Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
High efficiency fertilizer application	0.0	2.9	2.7	2.4
Slow-release fertilizer	0.0	0.0	0.8	2.8
Total	**0.0**	**2.9**	**3.5**	**5.1**

41

Hành động F. Quản lý Rừng và Sử dụng đất



Hành động này có mức đóng góp lớn nhất, chiếm 50% mức giảm thải KNK trong AFOLU, hay 20.9 $MtCO_2$ các biện pháp chính là "bảo vệ và quản lý hiệu quả các khu vực rừng hiện có", "bảo tồn các vùng rừng bảo vệ" và "trồng cây phát triển nhanh"

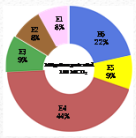


Chi tiết giảm phát thải của hành động F trong các AAC khác nhau

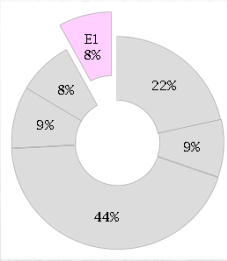
Mitigation in 2030 [$MtCO_2$]	Allowable abatement cost [USD/tCO_2]			
	0	10	100	100000
Protection and sustainable management of existing production forest areas	0.0	3.1	3.1	3.1
Conservation of existing protection forests	0.0	16.5	16.5	16.5
Planting fast-growing trees for lumber	0.0	1.3	1.3	1.3
Total	**0.0**	**20.9**	**20.9**	**20.9**

42

Hành động E1. Tòa nhà xanh



Hành động này tập trung vào các biện pháp chuyển đổi nhiên liệu và sử dụng "năng lượng tự nhiên" của hai lĩnh vực (dân dụng và thương mại). Hành động này có thể giảm 14.4 $MtCO_2$, chiếm 8% tổng lượng giảm thải KNK trong lĩnh vực năng lượng



Chi tiết giảm phát thải của hành động E1

	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Residential	**11302**	78%	6%
Heating	369		
Hot water	2040		
Cooking	8893		
Commercial	**3099**	22%	2%
Heating	456		
Hot water	2306		
Cooking	338		
Total	**14401**	100%	8%

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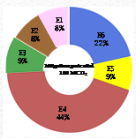
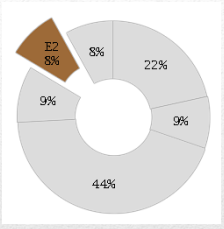
Hành động E2. Giao thông thuận tiện



Hành động này chuyển từ phương tiện cá nhân sang công cộng bằng hệ thống quản lý giao thông và chuyển đổi nhiên liệu (từ xăng và dầu sang điện và dầu sinh học).

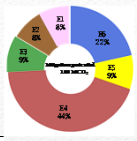


Chi tiết giảm phát thải của hành động E2

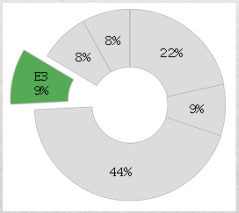
	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Passenger transport	**9932**	66%	6%
Bio diesel vehicle	335		
Public transport	9596		
Freight transport	**5117**	34%	3%
Bio diesel vehicle	1107		
Modal shift	4011		
Total	**15049**	100%	8%

44

Hành động E3. Hành vi tiết kiệm năng lượng



Hành động này có thể giảm 16.9 $MtCO_2$ hay 9% của tổng lượng giảm thải CO_2 trong lĩnh vực năng lượng. Tập trung vào các nội dung như làm mát, sưởi ấm, nước nóng, tại khu vực hộ gia đình và thương mại trong các lĩnh vực thương mại; và sử dụng nhiệt, hơi và động cơ trong lĩnh vực CN.

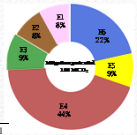


Chi tiết giảm phát thải của hành động E3

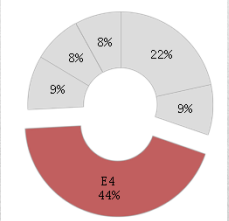
	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Residential	**4349**	26%	2%
Cooling	94		
Heating	109		
Hot water	525		
Cooking	2961		
Lighting	245		
Refrigerator	179		
Other electric equipment	236		
Commercial	**1697**	10%	1%
Cooling	51		
Heating	594		
Hot water	581		
Cooking	108		
Lighting	163		
Refrigerator	93		
Other electric equipment	106		
Industry	**10871**		6%
Furnace	3182		
Boiler	3872		
Motor	2250		
Other	1567		
Total	**16917**	36%	9%

45

Hành động E4. Cải tiến hiệu quả năng lượng



Hành động này có thể giảm phát thải CO_2 tại mọi lĩnh vực năm 2030 78.8 $MtCO_2$ hay 44% của tổng giảm thải trogn lĩnh vực năng lượng. Mức giảm cao nhất cho lĩnh vực GTVT là 37.3 $MtCO_2$. Sau đó là các lĩnh vực CN, hộ gia đình và thương mại, lần lượt là 23.5, 12.8 và 5.2 $MtCO_2$.



Chi tiết giảm phát thải của hành động A4

	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Residential	**12838**	16%	7%
Cooling	1460		
Heating	127		
Hot water	857		
Cooking	5937		
Lighting	2275		
Refrigerator	940		
Other electric equipment	1241		
Commercial	**5159**	7%	3%
Cooling	795		
Heating	969		
Hot water	822		
Cooking	303		
Lighting	1092		
Refrigerator	624		
Other electric equipment	555		
Industry	**23484**	30%	13%
Furnace	14861		
Boiler	4757		
Motor	974		
Other	2892		
Passenger transport	**13431**	17%	7%
Motorbike	4033		
Car	3355		
Bus	3772		
Train	31		
Ship	18		
Aviation	2221		
Freight transport	**23901**	30%	13%
Truck	23698		
Train	10		
Ship	179		
Aviation	13		
Total	**78812**	100%	44%

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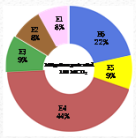
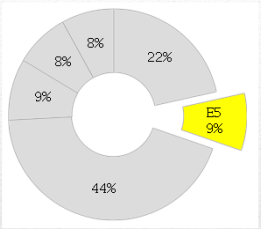
Hành động E5. Chuyển đổi nhiên liệu trong CN



Hành động này có thể giảm phát thải CO_2 vào 2030 là15.7 $MtCO_2$ hay 9% tổng lượng phát thải CO_2 trong lĩnh vực năng lượng .
Nhiên liệu sử dụng trong lĩnh vực CV sẽ giúp chuyển từ cường độ các bon cao sang mức thấp. Ví dụ chuyển từ than và dầu sang dùng khí tự nhiên.



Chi tiết giảm phát thải của hành động E5

Sector	CO_2 emission reduction [$ktCO_2$]	Contribution in the Action [%]	Contribution in total reduction in energy sector [%]
Agriculture-Fishery-Forestry	1335	9%	1%
Mining and quarrying	2253	14%	1%
Food, beverage & tobaco manufactures	2067	13%	1%
Other consumer goods	3251	21%	2%
Industrial materials	3037	19%	2%
Capital goods	1060	7%	1%
Construction	2667	17%	1%
Total	**15670**	100%	9%

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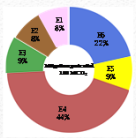
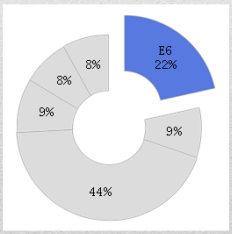
Hành động E6. Nhà máy điện thông minh



Hành động "Nhà máy điện thông minh" được tính để giảm phát thải CO_2 năm 2030 là 26.6 $MtCO_2$ hay 16% tổng lượng thải CO_2 trong lĩnh vực năng lượng. Hành động này gồm 4 biện pháp; là sử dụng nguồn năng lượng trong nước hiệu quả, thúc đẩy sử dụng năng lượng tái tạo, giảm thất thoát đường truyền và phân phối, phát triển nhà máy điện hạt nhân



Chi tiết giảm phát thải của hành động E6

	Coal	Oil	Gas	Hydropower	Nuclear	Solar wind	Biomass	Total
2005								
Fuel (ktoe)	2132	679	4812	1845	0	0	0	9467
Efficiency (%)	36	31	37	100				
Generation (ktoe)	769	213	1770	1845	0	0	0	4597
Own-use (ktoe)	21	6	49	51	0	0	0	126
Transmission loss (ktoe)	84	23	194	203	0	0	0	505
Distribution (ktoe)	663	184	1527	1592	0	0	0	3966
2030BaU								
Fuel (ktoe)	36611	3468	21244	11330	1619	1214	4046	79532
Efficiency (%)	42	35	40	100	100	100	30	
Generation (ktoe)	15377	1214	8498	11330	1619	1214	1214	40465
Own-use (ktoe)	421	33	233	310	44	33	33	1109
Transmission loss (ktoe)	1196	94	661	882	126	94	94	3148
Distribution (ktoe)	13759	1086	7604	10138	1448	1086	1086	36207
2030CM								
Fuel (ktoe)	22643	2438	15439	8028	3088	1853	772	54260
Efficiency (%)	45	38	42	100	100	100	40	
Generation (ktoe)	10189	926	6484	8028	3088	1853	309	30877
Own-use (ktoe)	279	25	178	220	85	51	8	846
Transmission loss (ktoe)	694	63	441	547	210	126	21	2102
Distribution (ktoe)	9217	838	5865	7261	2793	1676	279	27929

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Kết luận

- Các kịch bản LCS của Việt Nam tới năm 2030 được dự báo qua sử dụng các mô hình ExSS và AIM/AFOLU,
- Mục tiêu KNK: CO_2 từ sử dụng năng lượng, CO2, CH4 và N20 trong AFOLU
- Kịch bản 2030BaU, phát thải KNK cao gấp 4 lần, từ năm 2005 là 151 MtCO2 lên 601 MtCO2
- Kịch bản 2030CM, phát thải KNK giảm 36% so với 2030BaU. Cường độ phát thải giảm 20%
- Trong các lĩnh vực AFOLU, phát thải KNK góp giảm 57% theo kịch bản 2030CM so với mức của kịch bản 2030BaU. Các biện pháp như thoát nước giữa mùa và chuyển đổi rừng phòng hộ hiện tại là những biện pháp có mức giảm thải cao nhất.
- Trong lĩnh vực năng lượng, khoảng 38% phát thải KNK có thể được giảm theo kịch bản 2030CM so với mức của kịch bản 2030BaU. Chuyển đổi nhiên liệu và hiệu quả năng lượng là những biện pháp góp phần giảm thải cao nhất trong lĩnh vực này.

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Đóng góp của nghiên cứu khoa học trong viêc hình thành chính sách các bon thấp
- Thảo luận nhóm-

1. Nếu như chúng ta không thể tiến tới xã hội các bon thấp,…
2. Xã hội các bon thấp đáp ứng được chất lượng cuộc sống với ít nhu cầu năng lượng
3. Xã hội các bon thấp cần thiết kế tốt, hành động sớm và đổi mới.

Thiết kế bởi Hajime Sakai

Junichi FUJINO (fuji@nies.go.jp)
NIES (Viện nghiên cứu môi trường Nhật bản)
Hội thảo nghiên cứu xã hội các bon thấp và khóa đào tạo tại Hanoi
31st May 2012, Ha Noi, Viet Nam

1

3 vấn đề thảo luận nhóm

LoCARNet:
Nghiên cứu + Chính sách + X (VD: doanh nghiệp) =>
Make it happen!

1. Loại hình nghiên cứu nào cần để thiết lập chính sách các bon thấp trong tầm nhìn dài hạn?
2. Kiểu nghiên cứu nào có thể cung cấp cho thiết lập chính sách các bon thấp
3. Hành động của chúng ta bây giờ là gì?

Appendix

Photos of the Workshop

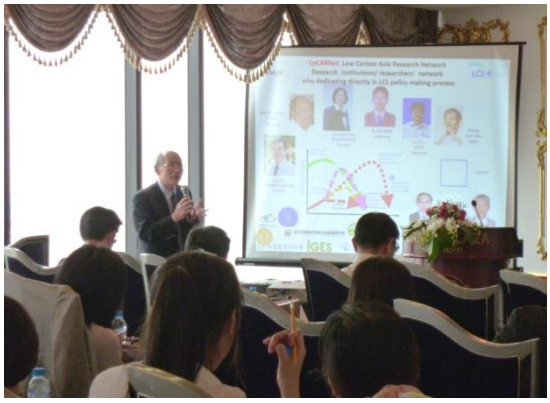
Group Photo

Opening Remarks

Dr. Nguyen The Chinh, ISPONRE

Opening Remarks

Mr. Akira Shimizu, JICA Vietnam Office



Dr. Shuzo Nishioka, Secretariat of LCS-RNet/IGES

Panel Discussion

Floor of the Workshop

List of documents distributed to the participants in the workshop

✧ Document distributed to all participants

- "A Low Carbon Society Development Towards 2030 in Vietnam", which is collaborated study between ISPONRE, IMHEN, Water Resources University, Kyoto University, NIES, and JICA.

✧ Documents distributed to the participants for their references

LCS-RNet Secretariat/IGES

- 2011 Synthesis Report of the LCS-RNet Third Annual Meeting - Transition towards Low Carbon Societies in a Changing World: Science, Policy and Society for Low Carbon Development Pathways
  http://lcs-rnet.org/publications/pdf/2011_3rd_Annual_Meeting_of_the_LCS-RNet_in_Paris.pdf
- 2010 Synthesis Report of the LCS-RNet Second Annual Meeting
  http://lcs-rnet.org/publications/pdf/2nd%20Annual%20Meeting%20of%20LCS-RNet_Berlin.pdf
- 2009 Achieving a low carbon society - Synthesis Report: Inaugural Meeting of the LCS-RNet
  http://lcs-rnet.org/publications/pdf/2009SynthesisReportEN.pdf
- Malaysia workshop on Asian Low Carbon Society: From Malaysia to Asia
  http://lcs-rnet.org/publications/pdf/201203_malaysia.pdf
- Cambodia Workshop on Scientific Approach to Low-Carbon Development Planning in Cambodia
  http://lcs-rnet.org/publications/pdf/LCS-RNet_Cambodia_Synthesis.pdf
- Thailand Workshop on Transition towards Low Carbon Societies in Thailand and Asia - Dialogue between Policy-makers and Researchers and Cross-sectoral Approach
  http://lcs-rnet.org/publications/pdf/2011SynthesisReport_Thailand.pdf
- Indonesia Workshop on Towards Sustainable Low-Carbon Development and Green Growth in Indonesia and Asia-Linking Research and Policy-
  http://lcs-rnet.org/publications/pdf/2010BogorSynthesisReport.pdf
- Introduction to Low Carbon Societies
  http://lcs-rnet.org/publications/pdf/2010LCS-RnetBro_EN.pdf

NIES

- Low-Carbon Asia – Scenarios and Actions, Asia-Pacific Integrated Model (AIM).
- Every Asia Low Carbon Scenario study displayed I the workshop is downloadable from
  http://2050.nies.go.jp/report.html
- Asia Low Carbon Societies (LCS) Research Project. http://2050.nies.go.jp/file/S-6_leaflet_E.pdf

Workshop on
Exploring Potential for Low Carbon Society (LCS) in Vietnam

Grand Plaza hotel, Hanoi, May 31, 2012

Participants List

The Government of Vietnam
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Nguyen The Chinh	Vice Director, Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE)
Nguyen Trung Thang	Vice Director, ISPONRE
Nguyen Thang	Vice Director, ISPONRE
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Phan Tuan Hung	Chief of Office, ISPONRE
Nguyen Ngoc Le	Deputy Chief of Office, ISPONRE
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Chung Henk Jin	Korean supervisor in green growth project, ISPONRE
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Nguyen Ngoc Hai	Official, Department of Strategy, MPI
Nguyen Thi Dieu Trinh	Department of Science Education and Environment, MPI (Speaker)
Nguyen Nam Phuong	Official, Viet Nam General Statistics Office, MPI

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Mai Van Trinh	General Director, Institute of Agricultural Environment, Ministry of Agriculture and Rural Development (MARD)

Ministry of Industry and Trade (MOIT)

Tran Minh Khoa	Energy specialist, Department of Energy, Ministry of Industry and Trade (MOIT)
Vũ Ngoc Duc	Official, Center of Renewable energy, Institute of Energy, MOIT

Embassy, Organizations, NGOs, Universities

Cha Dong Won	Ministry of Construction, Housing Bureau
Le Thi Ngoc Bich	British Embassy
Nguyen Tu Uyen	Department of Sustainable Development, AusAID Development organization, Australia

Phan Quynh Nhu	General Secretary, Fresh Air Network of Vietnam, Vietnam Clean Air Partnership (VCAP)
Le Thi Thuy Lan	Official, Electricity of Vietnam (EVN)
Nguyen Danh Son	Specialist of Substain Development, Social Science Institute
Tran Thi Phuong	Asian Institute of Technology (AIT)
Nguyen Nguyet Nga	Lecture, University of Trade
Ngo Duc Thanh	Lecturer, National University
Pham Thi Lan Phuong	Interpreter
Bui Nguyet Anh	Interpreter

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Akira Shimizu	Senior Representative, JICA Vietnam office
Tadashi Suzuki	Representative, JICA Vietnam office
Naoki Mori	JICA Expert, Climate Change Program Advisor for Support Program to Respond to Climate Change
Hiroshi Tsujihara	JICA expert in MONRE, Ministry of the Environment, Japan
Takako Ono	JICA Expert, Chief Advisor of Project for Capacity Building of National Greenhouse Gas Inventory in Vietnam
Pham Thu Hien	Assistant of JICA expert
Nguyen Thanh Ha	JICA Vietnam office
Truong Quynh Trang	JICA Vietnam office
Hoang Thu Thuy	JICA Vietnam office
Le Thi Hoa	JICA Vietnam office

Secretariat of International Research Network for Low Carbon Societies (LCSR-Net)
Institute for Global Environmental Strategies (IGES)

Shuzo Nishioka	Secretary General, Secretariat of LCSR-Net/ IGES (speaker)
Tomoko Ishikawa	Chief Secretary, Secretariat of LCSR-Net/IGES

Takako Wakiyama	Associate Researcher, LCSR-Net/IGES

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Kei Gomi	Program-Specific Researcher, the Graduate School of Engineering, Kyoto University
Nguyen Thai Hoa	PhD student, the Graduate School of Engineering, Kyoto University

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Kazuya Fujiwara	Consultant, Mizuho Information and Research Institute, Inc

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Junichi Fujino	Senior Researcher, Center for Social and Environmental Systems Research, NIES
Yumiko Asayama	Research Associate, Center for Social and Environmental Systems Research, NIES

Overview of the AIM Training workshop in Hanoi, Vietnam

Following the LCS workshop, an Asia-Pacific Integrated Motel (AIM) training workshop was held in the meeting room of ISPONRE from the afternoon of May 31, 2012. AIM is a group of computer models, which has been developed by Kyoto University, National Institute for Environmental Studies (NIES), and several other research institutes in the Asian-Pacific region since 1990. Prof. Yuzuru Matsuoka, Kyoto University delivered a lecture to the participants about the purpose and methodology of AIM models. After Prof. Matsuoka, Dr. Kei Gomi, Kyoto University, introduced the Extended snapshot tool (ExSS), which is an Input-Output type model for describing and evaluating low carbon society using social accounting matrices, energy balance tables, land use transition matrix, GHG emission and reduction tables of the target societies. Dr. Kazuya Fujiwara, Mizuro Information & Research Institute, Inc, explained the AIM/Enduse, which is national and local level bottom-up engineering type model for technology selection and energy supply/consumption.

On the morning of June 1, more intensive discussions on the Vietnamese LCS scenario and model development were held as part of the workshop between delegates from Kyoto University and ISPONRE researchers. Ms. Nguyen Thai Hoa presented the data and assumptions behind the scenario. Responding to questions from the ISPONRE side on the model and data, Ms. Hoa and Prof. Matsuoka introduced the theory and function of the model and pointed out that the reliability and quality of data is not a problem of the model itself, though it should be considered seriously as it affects the quality of output of the model.

Proceedings: Workshop on Exploring Potential for Low Carbon Society in Vietnam

Year: 2012

This report is based on the presentation documents at the Workshop on Exploring Potential for Low Carbon Society in Vietnam held on May 31, 2012.

Presentation documents are downloadable from the website
http://2050.nies.go.jp/symposium.html