21 December 2013

FINAL REPORT
OUTCOME & HIGHLIGHTS SUMMARY

THIRD GREEN ECONOMY GREEN GROWTH, GEGG FORUM
Energy – Water – Food
Nexus
----- For Greening & Cooperation -----
Moving Forward and Faster

NAY PYI TAW (Myanmar International Convention Center) & YANGON (Diamond Jubilee Hall, Yangon University)
REPUBLIC OF THE UNION OF MYANMAR
20 TO 22 NOVEMBER 2013

Organized By: GEGG Myanmar (Not for profit) Association.

In Collaboration with:

- Ministry of Environmental Conservation & Forestry, Focal Ministry for GEGG Forum
- Ministry of National Planning and Economic Development,
- Ministry of Education,
- Ministry of Energy,
- Ministry of Science and Technology,
- Ministry of Culture,
- Myanmar Engineering Society
- Association of Myanmar Architects
- National Economic and Social Advisory Council, NESAC

Supported by:

- Tun Foundation;
- Environmental & Economic Research Institute
- Yangon Media Group
- Max group & Ayarwaddy Foundation
- FMI Group, Myanmar,
- Zaykabar Co. Ltd, Myanmar,
- The Government of Norway.
- The Government of Sweden,
- The Government of Japan,
- United Nations Development Programme.

In Partnership with

- UNDP Myanmar Country Office and Regional Resource Center, Bangkok, Thailand.
- UNEP International Environmental Technology Center, Osaka, Japan.
- UN Convention to Combat Desertification Global Mechanism, Rome, Italy
- The Smithsonian Institution, USA
- WWF
- Stockholm Environment Institute, Stockholm & Bangkok
- Institute for Global Environmental Strategies, IGES, Hayama, Japan.
- The Norwegian Energy Farm, Norway.
- Thailand Greenhouse Gas Management Organization (Public Organization) , TGO, Bangkok, Thailand
- Yokohama National University, Yokohama, Japan and UNEP regional Office for Asia Pacific.

SUMMARY HIGHLIGHTS

THE FIERCE URGNECY OF HOW!

Outstanding Support

The Opening Statement was delivered by H.E. U Thein Sein, President of the Republic of the Union of Myanmar, attended by H.E Dr. Sai Muak Kham, Vice President, 13 Union Ministers, 7 Deputy Ministers , 1 Regional minister, 10 Director Generals, 10 Regional Representatives.

Greetings were given by Prof, Dr Emil Salim, Chairman, Council of Advisors to the President, Indonesia and Ms Julie Jacobsen Takahashi, Charges d'Affaires, Royal Norwegian Embassy, Myanmar

The President, Vice President, and Union Ministers viewed the winning Exhibitions of Affordable Green Myanmar Homes Design, Cartoons and Photographs of Natural Resource and Environment, and stayed back for Coffee and met with speakers and participants.

188 diverse participants registered for the Nay Pyi Taw Segment on 20 November, held at the Myanmar International Convention Center.

This included Members of People's Assembly, the Diplomatic Corps; UN and International Organizations; Private Sector, NGOs, Media, Academia .

The Yangon Segment held at Yangon University's Diamond Jubilee Hall was Opened by H.E U Min Swe, Chief Minister and attended by the Speaker of the Yangon Region Government Parliament and 5 Regional Ministers.

363 and 399 equally diverse participants registered on 21 and 22 November respectively. Over half of all registered participants were women.

A large number of participants attended the Nay Pyi Taw and Yangon segment, but did not register.

At the Summary / Concluding Session in Yangon on Friday 22 November, a head count indicated 185 participants remained.

At the closing session on Friday 22 November, a head count showed 185 participants remained

The Table below shows the Profile of Participants at the Third GEGG Forum

PRESIDENT	1
VICE-PRESIDENT	1
CHIEF MINISTER	1
UNION MINISTERS	13
REGIONAL MINISTERS	5
DEPUTY UNION MINISTERS	7
DIRECTOR-GENERALS	10
Nay Pyi Taw (20 Nov) Registered	188
Yangon (21 Nov) Registered	363 (Women 125)
Yangon (22 Nov) Registered)	399 (Women 150)
Yangon 22 Nov Concluding Session (Head count)	185
MEDIA	21
SPEAKERS National	38
SPEAKERS International	105

A Design Contest for Green Affordable Myanmar Homes, in collaboration with the Association of Myanmar Architects, Myanmar Engineering Society; a Greening Cartoon and a Photography Contests were also organized for the Third GEGG Forum. Sponsors included Myanmar media and Journalists.

Annex 1 shows the Agenda with Abstracts. Annex 2 lists the Final Programme with the Speakers, topics of presented and recommendations from the respective Sessions.

The Major Outcome

A shared and common refrain from the Third GEGG Forum is the imperative need for implementation, with focus on HOW.
One of the Parallel Session summed- up the message "The Fierce Urgency of HOW"

The Third GEGG Forum succeeded in increasing awareness of the importance of the Nexus of Energy- Water- Food, their inextricable linkages, the multi-faceted interventions available to foster greater integration and coherence for increasing greening and sustainability

The three High-level Roundtables Dialogue on Policy, Strategy, Cooperation, Financing and Investment that were held at Nay Pyi Taw, provided insights on the critical determinants for greening and growing the economy, providing a pathway for sustainable development and importantly poverty eradication, as stated in the Opening Statement of the President.
The Roundtables were chaired by H.E U Win Tun, Union Minister of Environmental Conservation and Forestry; H.E. Dr U Ko Ko Oo, Union Minister of Science and Technology; and Mr. Putra M. Kamayana, Head, ADB Extended Mission in Myanmar.

The two Plenary Panels, Chaired by H.E Prof. Dr Emil Salim (Indonesia) and Prof Joakim Öjendal (Sweden), and 12 Parallel Sessions in Yangon on the 21 and 22 November focused on how Science, Technology, Management, Governance, Data, Information and Capacity Building

These Sessions provided in-depth knowledge and experience for a range of Nexus Green and Sustainability applications

ANNEX 1.

FINAL PROGRAMME

THIRD GREEN ECONOMY GREEN GROWTH, GEGG FORUM

THE NEXUS OF ENERGY – WATER – FOOD

For

Greening and Cooperation

Moving Forward and Faster

Segment ONE
High-Level Roundtables Policy Dialogue Sessions
Myanmar International Convention Center
20 November 2013 Nay Pyi Taw

Segments TWO and THREE

Implementing Science, Technical, Management, Governance and Information Systems
Plenary and Parallel Sessions
Yangon University Diamond Jubilee Hall, Gate No.1 Pyay Road
Kamayut, Yangon.
21 & 22 November 2013

THE PLATFORM FOR MOVING FORWARD

Green Economy Green Growth Myanmar (not for profit) Association
was approved by Cabinet on 5 October 2012 and registered with the Myanmar Ministry of National Planning and Economic Development. The Objectives of the Association is *"A professional not-for-profit catalytic and enabling group that will encourage and support sustainable, resilient, inclusive and equitable green economy green growth. The group will foster national and international partnerships and mobilize knowledge and resources to support the programmes and projects of the Union of the Republic of Myanmar"*

The Association's banking; finances and management procedures follow established Rules and Regulations and are audited by an external auditor that is a member of the International Federation of Accountants (IFAC).

The First Green Economy Green Growth, GEGG Forum was organized on the 4 to7 November 2011, attended by over 220 diverse participants.
The Second GEGG Forum held on the 13 to 16 November 2012 the Opening Address was delivered by H.E. Dr.Sai Muak Kham Vice President of the Republic of the Union of Myanmar. It was attended by over 500 national and international participants, including over 80 CBOs from all the Regions and Divisions of the country.
In Nay Pyi Taw, there were 2 Plenary and 10 Parallel Sessions as well as 6 Parallel Capacity Building Workshops.
In Yangon, 1 High-Level Dialogue and 1 Town Hall format meeting were organized.

GEGG Myanmar Association with outstanding support by WWF-US and the Smithsonian organized:

- On 21 April 2013 a Special Earth Day Symposium at the WWF-US Washington DC Office in honor of H.E U Win Tun Union Minister for Environmental Conservation and Forestry who gave the Keynote Address. The Union Minister mentioned the important role of the GEGG Association in promoting green economy in Myanmar.
- On 19 May 2013 two events for the President of the Republic of the Union of Myanmar participated by five senior Ministers (Defense, Home, Foreign, Energy, and the Senior Minister, President Office) , five Deputy Ministers, two Ambassadors, and high-level officials

    ❖ The two hour plus on a yacht along the Potomac River., included a working Lunch. The President of Myanmar spoke eloquently and articulated clearly the importance and interconnectedness of natural resource, environment,

sustainable development, energy, economic development, poverty alleviation, investments, energy, and stressed the critical role of education. At the request of the President, the Senior Minister, President Office highlighted the greening and sustainable strategy the country is pursuing and mentioned the "world class" First and Second GEGG Forum as well as the Third GEGG Forum that will be held in November this year. The Minister mentioned that the Forums and the follow up activities of the GEGG Association are providing important inputs for policy and strategy considerations.

- ❖ A special V VIP tour was organized for the President and Delegation at the Smithsonian National Museum for Natural History, in Washington DC.

The website <geggmyanmar.com> gives more information on the Forums.

The First and Second GEGG Forums have started the process to increase awareness and catalyze policies and projects to promote green economy green growth in Myanmar. This is a continuous process, strengthened and accelerated with experience and knowledge gained and with the multiple benefits becoming more discernible.

MOVING FORWARD AND FASTER

The Third GEGG Forum aims to move the greening process in Myanmar forward and faster. It will focus attention on the critically important and emerging Nexus of Energy – Water – Food.

The Nexus is imperative for green economy green growth, functioning of ecosystem services, sustainability and resilience.

To foster inclusive and equitable growth in Myanmar, increasing and improving Intra-Regional, i.e. between and amongst the 14 Regions and Divisions of the Republic of the Union of Myanmar is imperative.

The Nexus will also provide increased coherence to promote Inter- Regional cooperation and integration, in particular with ASEAN and Mekong countries and Beyond.

As Myanmar Chairs ASEAN in 2014 and the AEC implemented end 2015, energy, water, food and their inter-connectedness are critical for cooperation and promoting sustained economic development and poverty alleviation.

ANNEX 2

AGENDA & STRUCTURE OF THE THIRD GEGG FORUM

20 November 2013 Nay Pyi Taw

Segment ONE High Level Roundtable Dialogue

09:00 Opening Session

- ❖ H. E The President of the Republic of the Union of Myanmar, U Thein Sein, Opening Address
- ❖ Union Minister for Environmental Conservation and Forestry, Welcome Remarks
- ❖ GEGG Myanmar(not for profit) Association Chairman U Thein Tun, Welcome

Greetings By:

- ❖ H.E Professor Emil Salim, Chairmen, Advisory Council to the President of Indonesia, Former Minister for Environment and Development; Former Minister for Environment and Forestry.
- ❖ Charges d'affaires, Julie M. Jacobsen Takahashi, Royal Norwegian Embassy Yangon, Myanmar

BREAK

TO FOSTER DIALOGUE THE HIGH-LEVEL ROUND TABLES WILL BE TOWN-HALL FORMAT

10:30 to 12:00 Roundtable Dialogue 1-1 *Policy and Strategy determinants for integrating Energy – Water - Food Nexus*

Chaired by H.E U Win Tun, Union Minister of Environmental Conservation and Forestry.

- ❖ H.E Prof. Dr Emil Salim, Indonesia President Council of Advisers, Former Minister for Environment and Development; Former Minister for Environment and Forestry.
- ❖ Dr. Rajendra Pachauri, Director General, The Energy and Resource Institute, TERI, New Delhi, India ; Chairman , UN Intergovernmental Panel on Climate Change, IPCC.
- ❖ Dr. San Win, Pro Rector, University of Forestry, Yezin, Myanmar.
- ❖ U Tin Htut Oo, Chairman, National Economic and Social Advisory Council, Myanmar; Member, GEGG Myanmar (not for profit) Association
- ❖ Toily Kurbanov, UNDP Country Director, Yangon, Myanmar.

12:00 to 13.30 LUNCH

- ❖ Awards to the Winners of the Design Contest for Affordable Green Myanmar Homes. Organized by the Association of Myanmar Architects and Myanmar Engineering Society, and sponsored by the GEGG Myanmar (not for profit) Association. By
  - ✓ H.E Union Minister of Environmental Conservation and Forestry, U Win Tun, and GEGG Myanmar (Not for Profit) Association Chairman U Thein Tun
  - ✓ Association of Myanmar Architects, Vice-President U San Oo
  - ✓ Myanmar Engineering Society, President U Win Khaing
  - ✓ GEGG Myanmar (not for profit) Association Executive Director U Kyaw Lwin Hla

- ❖ Announcement of the Establishment of the Centers of Excellence for Greening, Sustainability, Resilience and Smart Built and Natural Systems, CoE-GSRS. By Dr. Nay Htun, Founder & Hon. Patron GEGG Myanmar (not for profit) Association

13.30 to 15:00 Roundtable Dialogue 1-2 *Inter and Intra Regional Cooperation – The Important Drivers.*

Chaired by H.E Dr U Ko Ko Oo, Union Minister of Science and Technology.

- ❖ Hideyuki Mori, President, International Institute for Global Environmental Strategies, IGES, Hayama, Japan
- ❖ Daw Chaw Khin Khin, Secretary General, Environmental and Economic Research Institute (EERi), National Advisor, eWomen Project
- ❖ U Kyaw Tint Swe , Representative of Myanmar, ASEAN Inter-governmental Commission on Human Rights, Former Ambassador and Permanent Representative to the UN, New York; Member, GEGG Myanmar (not for profit) Association.
- ❖ Dr. Wah Wah Maung, Deputy Director-General, FERD, Ministry of National Planning and Economic Development, Myanmar..

15:00 to 15:30 Break

15:30 to 17:00 Roundtable Dialogue 1-3 *Innovative Financing and Investment Mechanisms*

Chaired by Mr Putu M. Hamayana, Head, extended Mission in Myanmar, Asian Development Bank, Yangon, Myanmar.

- ❖ U Aung Htun, Executive Chairman, Thai Strategic Capital Management Co, Ltd, Bangkok, Managing Director, Myanmar Investments International (London Stock Exchange Public Company)
- ❖ Tina Singhsacha, Chief Representative, Standard Chartered Bank, (Myanmar Representative Office)
- ❖ Ms. Meike De Shepper, Sr. Managing Director Singapore & Exports, Philips Lighting.

17:00 to 17:15 Concluding and Closing

H.E Dr.Thet Thet Zin, Deputy Union Minister, Ministry of Environmental Conservation and Forestry

18:00 to 20:00 Dinner

Sponsored by U Zaw Zaw, Chairman, Max Group & Ayarwaddy Foundation, at Royal Kumundra Hotel

19:00. Depart for Yangon

Special Chartered Flight Sponsored by GOLDEN MYANMAR AIRWAYS and Chairman, GEGG Myanmar (not for profit) Association, including by air-conditioned coaches

21 November 2013 Yangon

Segment TWO Application of Transformational Science and Technology

09:00 Opening Session

- Welcome Address by H.E U Myint Swe, Chief Minister, Yangon Division
- Welcome by Prof. Dr Tin Tun, Rector of Yangon University
- Welcome by GEGG Myanmar (not for profit) Association Chairman U Thein Tun

09:30 Plenary Panel: *"Science and Technology for integrating the Nexus of Energy-Water – Food.*

Town hall format to foster dialogue on cross-cutting issues

- Facilitated by Prof Emil Salim, Chairmen, Advisory Council to the President of Indonesia, Former Minister for Environment and Development; Former Minister for Environment and Forestry.

- Dr Rajendra Pachauri, Director General, The Energy and Resource Institute, TERI, New Delhi, India ; Chairman , UN Intergovernmental Panel on Climate Change, IPCC.
- U Kyaw Kyaw Hlaing, Chairman, Smart Group of Companies,
- Stuart Chapman, Representative, WWF Greater Mekong, Vientiane, Lao, PDR.
- Dr Erick Kemp-Benedict , Director, Asia Office Bangkok, Stockholm Environment Institute, Asia Office, Bangkok, Thailand

11:00 to 17:00 PARALLE SESSIONS [12:00 to 13:00 LUNCH]

Parallel Session 2 -1 *"Tools & Technology for Conserving, Monitoring and Managing Natural Resources*
Organized by Smithsonian Institution and Ministry of Environmental Conservation & Forestry
Chaired by Dr. Steve Monfort, Dr. Melissa Songer of the Smithsonian Conservation Biology Institute; & U Hla Maung Thein, Deputy Director General, Environmental Conservation Department, MOECAF
The session was facilitated by Smithsonian Institution
Abstract: Intersecting three biogeographic regions, Myanmar is known for its exceptionally high endemism and its incredible biodiversity. Scientifically sound biodiversity information is essential for ensuring informed land and water use planning, and sustainable development that will fortify the country's economic prosperity, while ensuring ecosystem services that benefit Myanmar's citizens. This Session covered a spectrum of biodiversity monitoring, ranging from small-scale to landscape level processes.
Annex 2-1 is the FINAL Agenda for the Session.

Parallel Session 2-2 *"Positioning Energy- Water- Food Nexus in Practice: Regional Cooperation for Myanmar Resource Sustainability."* Coordinated by Institute for Global Environmental Strategies, IGES, Hayama, Japan
Co-Chairs: IGES and U Win Hlaing , Deputy Director General, Planning and Statistics Department, Ministry of Environmental Conservation and Forestry .
There were 3 speakers from Myanmar, 3 speakers from Japan, and 3 speakers from Asia, notably Thailand and India. The session was enriched by three high-level speakers, namely U Win Hlaing , Deputy Director General, Planning and Statistics Department, Ministry of Environmental Conservation and Forestry of Myanmar, Dr Rajendra K. Pachauri, Chair of the Intergovernmental Panel on Climate Change (IPCC) and Director General, The Energy and Resources Institute (TERI), and Hideyuki Mori, the President of IGES.
Abstract
Myanmar is rich in both water, energy and land resource, but still need to pay careful attention to their nexus. This session will start by a presentation on IGES's research to demonstrate its importance. The following discussion is twofold. Part 1 will discuss how to practically implement the concept of the nexus, taking examples from clean energy, hydropower, waste management and urban management. In addition, given Myanmar's role as the ASEAN Chair from 2014, the role of regional cooperation to ensure resource

sustainability in Myanmar will be discussed by experts from Japan, Thailand, India, and Myanmar, as well as international and regional organizations.
Annex 2-2 is the FINAL Agenda for the Session.

Parallel Session 2-3 *"Green , Sustainable, Resilient and Smart Built Systems"* Co-Coordinators & Co-Chairs: Frank Dalene , Chairman, East End Committee Long Island Chapter, US Green Building Council, Chairman and Founder Hamptons Green Alliance; and Executive Committee Member of the Board & Treasurer, Peconic Institute, Long Island , NY, and
U Sun Oo Principal Architect, Design 2000, Vice President Association of Myanmar Architects, Member, GEGG Myanmar (not for profit) Association
Abstract
Built Systems substantially contributes to the Nexus of Energy – Water – Food. All buildings worldwide combined use 40% of global energy, 25% of global water, 40% of global resources and 33% of global energy related greenhouse gas emissions. As temperatures increase the critically integrated built and natural systems are dependent on the application of transformational science and technology by improving existing building standards increasing sustainability and resilience by improving the interconnectedness with adaptation, mitigation and preparedness. The urgency for providing the "How" is crucial, facilitated by hands-on application of transformational, functional technologies, effective operational intelligence, risk management practices and disaster preparedness advanced by groundbreaking expertise in design and construction. This session showcases pioneering design concepts, innovative means and methods, advanced materials, state-of-the-art building management systems and value added third party rating systems for greener, more sustainable, resilient and smarter built systems.
Annex 2-3 is the FINAL Agenda for the Session

Parallel Session 2-4 *"BioEnergy Resources, Technologies and Markets in the Context of Energy – Water – Food Nexus for the Greening and Sustainable Development of Myanmar"*
Co-Chairs: U Win Khaing, President, Myanmar Engineering Society; Member, National Energy Committee; Member, Myanmar Investment Commission, Member, GEGG Myanmar (not for profit) Association. , and
Svein Tveitdal**,** Klima 2020, Norway
Abstract
Myanmar's biomass resources from the forests, cultivated land and organic wastes are substantial. Today biomass covers around 80% of the country's energy consumption. Bringing this production and use from a non-efficient to a efficient use, and combining this with the use of solar, hydro and wind energy, could lead Myanmar to be a model of a carbon neutral, fossil energy free society within some decades. But there are many challenges in this perspective, such as the need for new technologies, capital and knowledge. The session will focus on the possibilities in Myanmar when it comes to resources, technologies and markets for BioEnergy in particular, since this energy source already plays such an important role in the country. The need for competence and capacity building as a tool in this respect will also be presented and discussed.

Annex 2-4 is the FINAL Agenda for the Session.

Parallel Session 2-5: "*Exploring the Ayeyarwady Futures in the Context of Water-Food-Energy Nexus – A Session for Multi-Stakeholder Collaboration"*
Coordinated by Dr.Chayanis Krittasudthacheewa, Stockholm Environment Institute (SEI).

Abstract

It is very likely that the next two decades will see massive changes in land- and water-use in the Ayeyarwady River Basin. While this has potential to contribute greatly to development, such rapid change also places demands on the energy, water and other resources use and may lead to the environmental degradation and further marginalization of particular groups and their livelihoods. These underline the urgent need for an informed multi-stakeholder process to support the exploration of alternative Ayeyarwardy Futures and strategic decision-making in the basin considering the interaction among different sectors. In this parallel session, the Stockholm Environment Institute (SEI) in collaboration with the Dutch Government, Myanmar national experts, and regional experts from Chulalongkorn University and the Joint Graduate School of Energy and Environment (JGSEE), King's Mongkut University of Technology Thonburi, Thailand, will introduce the participants to new initiatives: (1) the **"Ayeyarwady Futures"** funded by the Blue Moon Fund (BMF); (2) the "**Strategic Study to Develop the Basic Elements for Myanmar National IWRM Strategy**" funded by the Dutch Government; and (3) others. All participants will have an opportunity to take part in **exploring plausible futures and develop the visions for the Ayeyarwady River Basin in 2040.** Any participants from the government, CSOs, universities, private sector, development partners, and media with the interest to seek **collaborations and networking** for supporting Myanmar to move towards to the sustainable development in a rapid economic development decade are cordially invited.
Annex 2-5 is the Final Agenda for the Session

Parallel Session 2-6 *"Adaptive and sustainable management of local resources through mobilising social partnership and collective actions - Nurturing ecosystem services for human security and promoting innovation for building a sustainable society"*
Organized by the Yokohama National University and United Nations Environment Programme Regional Office for Asia and the Pacific

Abstract

This parallel session was aimed at the achievements, potentials and future challenges in promoting innovative approaches to sustainable use of natural resources and improving local livelihoods relevant to fostering green economy and green growth in Myanmar. 12 speakers made presentations and remarks, exchanged views and proposed suggestions for catalysing actions and support to sustainable natural resource use and local livelihood improvement through enhancing access and security related to water, food and energy. The participants broadly underlined the importance of sustainable ecosystem management for ensuring access to water, food and energy in Myanmar warned the alarming trends of ecosystem degradations and increasing environmental risks such as deforestation, mangrove destruction, soil degradation, biodiversity and species loss and

invasive species prevalent which may cause aggravating damages to water and energy supply and food production in the long term.
Innovative approaches were thus deemed as important such as participatory forest and mangrove management, ecological agriculture and non-tillage farming, agroforestry and multi-cropping agriculture, micro-hydro power generation, labelling schemes for ecological agriculture products and bio-filter for drinking water. Integrated and participatory ecosystem and social capacity assessment are important in planning and engaging local people in sustainable natural resource use and alternative livelihood. The following are some of the key recommendations that emanated from this parallel session:

i) Reinforcing policies, programmes and social capacity development for sustainable ecosystem management and natural resource use,
ii) Bolstering and operationalizing integrated and participatory approaches to ecosystem management and social capacity development aimed at sustainable natural resource use and alternative livelihood promotion,
iii) Promoting and supporting innovative natural resource use such as participatory forest and mangrove management, indigenous/endemic species restoration, ecological agriculture and non-tillage farming, agroforestry and multi-cropping agriculture, micro-hydro power generation, labelling schemes for ecological agriculture products and bio-filtering for drinking water,
iv) Facilitating the decentralization of ecosystem and natural resource use management to local communities while ensuring macro-level enabling policies and their compliance, and
v) Supporting partnership including those between universities for research, education and leadership development aimed at sustainable use of natural resources and ecosystem management.

Annex 2-6 is the Final Agenda for the Session

18:00 Third GEEG Forum Dinner at Mya Yeik Ny0 Hotel, Hosted by Zaykabar Co. Ltd.

22 November 2013 Yangon
Segment THREE Management, Governance, Information Systems.

09:00 to 10:30 Plenary Panel*: Management, Governance and Information Systems for integrating the Nexus*

Town hall format to foster dialogue on cross-cutting issues
Facilitator : Professor Prof Joakim Öjendal , Gothenburg University, Sweden.

- Arup Rajouria , Technical Advisor, Myanmar Climate Change Alliance, MCCA, UN-Habitat / UNEP.
- Dr. San Win, Pro- Rector, Yezin University of Forestry, Myanmar.

- Dr. Bach Tan Sinh, Director, Dept. of S&T Human Resource Policy & Organization, Ministry of Science and Technology, Hanoi, Vietnam

10:30 to 17:00 PARALLEL SESSIONS [12:00 to 13:00 LUNCH]

Parallel Session 3-1 "*Integrated Waste Management: Technology and Management for Energy-Water-Food Nexus"* Coordinated by Surendra Shrestha, Director, UNEP International Environmental Technology Center, Osaka, Japan.
Co Chairs: Surendra Shrestha and Dr. Khin Maung Lwin, Global Steering Committee Member, Water Supply & Sanitation Collaborative Council, Geneva, GEGG Myanmar (not for profit) Association.

Abstract.

Waste is an unwanted by product of human activity. Economic development has brought exponential growth of waste volumes which come in form of solids, liquids and air pollution. Waste has negative impact on human health and the environment. UNEP IETC has the knowledge base and technologies to put in place proactive policies towards prevention and reduction of waste. This Session will look at examples of waste management to make the case for national and city level strategies towards prevention policies.
Annex 3-1 is the Agenda for the Session.

Parallel Session 3-2 *Land – The Nexus of Energy – Water- Food for Greening and Cooperation"* Coordinated by Siv Oystese, Global Mechanism of the United Nations Convention to Combat Desertification UNCCD, Rome, Italy .

Abstract

One of the most significant natural capital assets is productive land and fertile soil. Land is central to the nexus that links energy, food, water, and environmental health in an interdependent loop. It is a vital resource for the provision of essential ecosystem services such as ensuring food security, regulating hydrological regimes, providing energy as well as conserving biodiversity, cycling soil nutrients, and storing carbon.
Sustainable land management (SLM) is critical to make progress towards a green economy. In a landscape approach all land uses are considered in an integrated way. This is how the nexus perspective translates into practice at the ground level. SLM of multi-functional landscapes can help manage the food-water-energy nexus while balancing all direct, indirect, on-site and off-site costs and benefits, keeping the land economically productive for future generations through the continued provision of ecosystem services.

SLM is successfully applied in different countries across the world. Several examples of SLM successfully applied in different countries were presented. The importance of engaging the private sector, incentives and market based mechanisms (IMBM), Spatial planning tools (such as InVEST and Marxan), and the valuation of land and natural capital, were included in the presentations.
Annex 3-2 gives the Final Agenda of the Session

Parallel Session 3-3 *"Making it Work – Energy, Water and Food Security in a Coherent Strategic Framework"*
Facilitated by WWF

Abstract

to develop a green economy with sustainability and equity at its core. It seeks to avoid the pitfalls of inequitable distribution of wealth and degradation of natural capital seen elsewhere around the world. There are strong indications that green approaches are underway in Myanmar, but formulating a green economy policy that responds to national interests and capacities is vital. A strategic framework would enable concerted and systemic action to be integrated in development policy, planning and implementation across the water-energy-food security nexus.

Referencing examples from Myanmar and other countries around the world, the session will explore the need for coherent policy across sectors at national and local levels, the processes by which this goal can be realized, and the supporting analytical tools and partnerships available to Myanmar.
Annex 3-3 is the Final Agenda for the Session.

Parallel Session 3-4 *"Energy, Greenhouse Gas, Climate Change" Capacity Development in ASEAN Region"* Coordinated by Dr. Jakkanit Kananurak, Director, Capacity Building and Outreach, Thailand Greenhouse Management Organization (Public Organization) Bangkok, Thailand and JICA

Abstract

The objective of this session is to share knowledge and discuss gaps and needs as well as possible collaboration to support capacity development for moving towards low carbon society development in Myanmar
The first part of the session: "Contribution of GHG mitigation actions under low carbon society to green economic development", 4 presentations will provide overview of best practices and lessons learned from developed and developing countries on GHG mitigation actions in different sectors under low carbon society concept which contribute to green economic development.
In the second part: "The important role of capacity building and knowledge sharing in supporting green economic development**"**, overview of current situation on GHG mitigation actions, low carbon society development of Myanmar will be presented, followed by discussion on gaps and needs on moving towards low carbon society
Annex 3-4 is the Agenda for the session.

Parallel Session 3-5 *"Applying Practical Techniques for Low Emissions Development Strategy (LEDS)" Coordinated By Dr. Eric Kemp-Benedict, Stockholm Environment Institute (SEI), Bangkok.*

Abstract

The main purpose of the session was to introduce an important theme within the global discourse on green economy and green growth, low-emission development pathways (LEDS), and connect them to the water-energy-food nexus.

The session further emphasized the importance of participatory methods for inclusiveness, combined with models for quantitative analysis. The session featured a small participatory scenario exercise and exploration with a simplified model of Myanmar's energy sector.
The first part of the workshop gave background information with a short introduction to the idea of LEDS highlighting its origin in the climate negotiation process (the United Nations Framework Convention on Climate Change, or UNFCCC) and the resources available for LEDS from various donors. This was followed by presentations on Indonesia, Viet Nam and Myanmar (U Myint Soe).
The second part of the workshop focused on participatory and modeling approaches. followed by a participatory scenario exercise. This was followed by a presentation on modeling results, and a hands-on activity using the energy planning software LEAP. To connect to the theme of the conference, the scenario and model analysis focused on the following goals: a) expand electricity coverage across the population; b) limit stress on the Ayeyarwady river system through hydropower production; c) limit increases in GHG emissions. These goals cannot all be achieved in an ideal way at the same time, which strongly suggests the need for an evidenced-based, participatory approach to decision-making and planning.
Annex 3-5 is the Agenda for the Session

Parallel Session 3-*6* *"Strategies for Maintaining Myanmar's Natural Capital and Building Resilience for Sustainable, Inclusive and Equitable Development."*
Coordinated by UNDP and Smithsonian Institution

Abstract

Natural resources, well-endowed in Myanmar, are central to greening for sustainable, inclusive and equitable development benefits for current and future generations. In order to realize the Government's vision on Green Economy Green Growth, coherent strategies are needed to plan and manage Myanmar's rich natural resources. The Session introduced different strategies that can be employed for building the foundation for natural resource stewardship for sustainable, inclusive and equitable development.

17:00 to 17:15 Summary

Dr. Nay Htun, Chairman of the Board of Directors, Peconic Institute, Long Island, NY; Founder, Hon, Patron, GEGG Myanmar (not for profit) Association

ANNEXES

FINAL AGENDA

Yangon Segment 21 November

FINAL Agenda Parallel Session 2 -1 *"Tools & Technology for Conserving, Monitoring and Managing Natural Resources"*

Organized by Smithsonian Institution and Ministry of Environmental Conservation & Forestry

The session was facilitated by Smithsonian Institution

- "Why Does Biodiversity Matter, and What Can We Do to Save It?" presented by Dr. Steve Monfort, Director, Smithsonian Conservation Biology Institute.
- "Myanmar's Vision for Participatory Management of Protected Areas" presented by Dr. Naing Zaw Htun, Assistant Director, Nature & Wildlife Conservation Division, Forest Department, Ministry of Environmental Conservation & Forestry (MOECAF).
- "Current Biodiversity Status and Challenges of Lampi Marine National Park" presented by U Tint Wai, Marine Biologist, Biodiversity & Nature Conservation Association (BANCA).
- "GIS, Remote Sensing and Geospatial Tools for Biodiversity Conservation" presented by Dr. Peter Leimgruber, Research Scientist, Smithsonian Conservation Biology Institute (SCBI).
- "Application of Spatial Monitoring and Reporting Tool (SMART) for Law Enforcement Monitoring in Protected Areas of Myanmar" presented by U Saw Htun, Country Director, Wildlife Conservation Society – Myanmar (WCS).
- "Natural Resources and International Policy: Lessons Learned and Opportunities for the Science and Policy Nexus" presented by Dr. Rowena Watson, Bureau of Oceans, Environment & Science, U.S. Department of State.
- "Monitoring and Managing Captive Elephants in Myanmar" presented by Dr. Khyne U Mar, Professor, University of Sheffield, UK.
- "Conservation Status of the Spoon-billed Sandpiper in Myanmar" presented by U Pyae Phyo Aung, Marine Biologist, Biodiversity and Nature Conservation Association (BANCA).
- "Capacity Building for Biodiversity and Natural Resource Management" presented by Dr. Melissa Songer, Conservation Biologist, Smithsonian Conservation Biology Institute.
- "Building Craft Traditions into Eco-tourism for Alternative Livelihoods" presented by Halle Butvin, Smithsonian Office of International Relations.
- "Community Participation in Conservation" presented by U Aung Kyaw Nyunt, Livelihood Expert, Biodiversity and Nature Conservation Association (BANCA).
- "Leveraging Public-Private Partnerships to Develop Effective and Sustainable Conservation Strategies" presented by Ms. Virginia Kromm, Assistant Director for Advancement, Smithsonian National Zoological Park.

Presentations were followed by a panel discussion with representatives from key sectors.

The main recommendations highlighted during the Session include;

- MOECAF has prioritized people-centered management approaches, e.g. stakeholder participation, community-based natural resource management, ecotourism and alternative livelihoods; but technical, financial, and capacity building support from NGOs and others is needed to implement them.
- MOECAF has rapidly increased the amount of protected area in the past 15 years; however there is shortage of experienced staff, lack of management plans, and incomplete biodiversity data. Priorities for capacity are improved protected area management, threat reduction, and GIS technologies.

- Capacity building in biodiversity conservation and natural resource management is needed across sectors including government, academia, and civil society. Strategies should include increasing and diversifying training opportunities, expanding academic curriculum, outreach to communities local to protected areas and the general public, engaging private and corporate partners, improving communication across and among sectors, with the goal of institutionalized conservation capacity building within MOECAF and other ministries for sustainable and long-term capacity building.

FINAL Agenda Parallel Session 2-2 *"Positioning Energy- Water- Food Nexus in Practice: Regional Cooperation for Myanmar Resource Sustainability."*
Coordinated by IGES, Japan

"Energy-Water-Food" nexus is now at the central pillar to design a country's sustainable development path. Indeed, the demand for all of three resources is increasing globally, and we are already facing the scarcity. Since these resources are interlinked, a policy focusing only in one of them may result in an unexpected problem in another resource. Hence the nexus concept calls for an integrated policy-making, rather than in policies in silos.

In particular, water-energy linkage deserves a special emphasis. Water requires energy for raw water extraction, treatment and supply, and wastewater treatment. On the other hand, energy generation requires water for fuel extraction and processing, cooling and hydropower generation. In the past few years, and the result of the research will be presented in this session.

But more importantly, what does the nexus mean to Myanmar in practice? It is important to go beyond a concept and "move forward and faster" to implementation, as titled in this GEGG conference. It is also important to share lessons in the region, so that Myanmar can build on lessons learnt in the region. Myanmar is in a favourable position to build such cooperative relationship as the ASEAN Chair from 2014. In this context, this session offers two points of discussion.

1. How can we implement the concept of the nexus in practice?

   This point is discussed in Part 1, in which speakers from international institutions, national governments, local governments and private sector offer diverse perspectives. The presentations specifically target themes that water and energy are interlinked; clean energy, hydropower, waste management and smart city.

2. What is the role of regional cooperation to ensure resource security in Myanmar?

   Experts from Thailand, India and Japan will provide their perspective in Part 2. Both Part 1 and 2 will benefit from international perspective, but will be complemented by discussants from Myanmar to ensure the relevance of discussion to Myanmar.

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Final Agenda

11:00- 11:20	Opening - Opening remarks by Hideyuki Mori, President, IGES - Honourable guest speech by Dr Rajendra K. Pachauri, Chair, The Intergovernmental Panel on Climate Change (IPCC) and Director General, The Energy and Resources Institute (TERI)
11:20- 12:00	Introduction: - Towards Myanmar's Green Leapfrog Development: Opportunities and Challenges with focus on Energy and Water sectors: Ikuho Miyazawa, Policy Researcher, Integrated Policies for Sustainable Societies Area, IGES - Resources sustainability in Myanmar: Lessons from integrated assessment of water-energy nexus in neighbouring countries: Dr. Bijon Kumer Mitra, Policy Researcher, Natural Resources and Ecosystem Services Area, IGES Discussion
12:00- 13:00	Lunch break
13:00-	Part 1: Practical solutions to address the water-energy nexus:

15:15	Chair: Hideyuki Mori, President, IGES Presentations: - Opportunities of clean energy solutions in Myanmar and in the region: Dr. U Win Khaing, President, Myanmar Engineering Society - Smart city: Ms. Keiko SASAKI, Director, Kitakyushu Asian Center for Low Carbon Society, Office for International Environmental Strategies, Environment Bureau, City of Kitakyushu - Implication of nexus approach for food security in Myanmar: Dr Ohnmar Khaing, Coordinator, Food Security Working Group (FSWG) - Waste to Energy with elaborate planning: Mr. Kuribayashi Kenji, JFE Engineering Yangon Office Discussion
15:15-15:30	Break
15:30-16:50	Part 2: The role of regional cooperation to ensure resource security in Myanmar Chair: Peter King, Senior Policy Advisor, IGES Bangkok Office Presentation: - Regional cooperation under the framework of Joint Credit Mechanism (JCM) : Policy Researcher, Mr. Kenta Usui, Policy Researcher, Climate and Energy Area, IGES - Capacity building for low-carbon growth in ASEAN: Mr. Satoshi Iemoto/ Dr. Jakkanit Kananurak, Capacity Building and Outreach Office Thailand Greenhouse Gas Management Organization(JICA/TGO) - Opportunities of providing off-grid energy solutions in Myanmar and in the region : Mr. Debajit Palit, Associate Director and Fellow, Lighting a Billion Lives Programme, Social Transformation Division, TERI Discussion
16:50	Closing - Hideyuki Mori, President, IGES

The Session addressed “practical solutions to address the water-energy nexus” and “The role of regional cooperation to ensure resource security in Myanmar” and delivered the following four key messages.

(i)Overarching national policy and coordination mechanisms are needed

Given the cross-cutting nature of environmental concerns and regional diversity in Myanmar, the need for overarching national policies were emphasized. These include land use policy (MOECAF), energy policy (Myanmar Engineering Society), and green national development plans (IGES). Speakers also stressed the need to establish mechanisms to coordinate multiple authorities to work on cross-cutting environmental concerns (Food security working group and IGES).

(ii) Technology is critically important, but needs to carefully reflect local context

The important role of technologies was emphasized by many speakers, including some who introduced specific technologies to address water-energy-food nexus in Myanmar. These include waste-to-energy incineration plants (JFE Engineering) and photovoltaic solutions for rural electrifications (TERI). In addition, speakers noted that technologies need to carefully reflect local context and enabling conditions noting an example that cellphones may not fully function in places where electricity is not available (TERI).

(iii)Climate change poses both challenges and opportunities for Myanmar

The cases of recent maga-scale typhoon in the Philippines and cyclone Nargis 5 years ago in Myanmar demonstrate that the impact of climate change is a considerable threat to Myanmar. Furthermore, given Myanmar's dependency on hydroelectric power, climate induced seasonal change of water availability may negatively affect energy supply (IGES). At the same time, the current level of greenhouse gas emission by Myanmar is negative. There may be opportunities for Myanmar to harness increasing scale of climate change finance, including Japanese Joint Crediting Mechanism, for Myanmar's sustainable development (IGES).

(iv) Regional cooperation in Asia can assist Myanmar's pursuit of green growth.

Several speakers noted possible options for regional cooperation with Myanmar. These include city-to-city cooperation with Japanese City of Kitakyushu, off-grid technology cooperation with Indian TERI, capacity development programme with Thai Greenhouse gas Management Organisation, and Low-carbon development partnership with Japan. North-south cooperation can play a role to provide incremental cost to finance green growth as well as advanced technologies. South-south cooperation may also play an important role to address issues specific to developing countries, such as rural electrification.

FINAL Agenda Parallel Session 2-3 *"Green , Sustainable, Resilient and Smart Built Systems"*

"*Introducing the Session"* Frank Dalene, Almost one year apart Super Storm Sandy in the Atlantic Ocean struck the USA and Super Storm Haiyan in the Pacific slammed into the Philippians. This is no coincidence. Confirmed by the IPCC Fifth Assessment Report, Warming of the climate system is unequivocal and human influence on the climate system is clear. To reverse this trend the lowest hanging fruit is found in the construction industry. There is the Fierce Urgency For How: How to make buildings greener, how to make buildings more sustainable, how to make buildings more resilient, how to make buildings smarter, how to make buildings consume less energy, how to make buildings use less electricity, how to make buildings emit less greenhouse gases, how to make buildings use less water and how to make buildings use less resources. A distinguished panel from around the world will share their experience to explain "How".

"Design Methodology as the Insurance for the Greenest, Most Resilient Planning & Construction" Bill Chaleff, The green design and construction community has been having a wild romance with new building materials & technologies. Wall and roof strategies have been completely re-thought, and more importantly – reprogrammed. The exploration of new frontiers that have been opened up in the name of biophilia or

efficiency or dynamic infrastructure has called on structural and mechanical engineers to go where previously architects and engineers have feared to tread. The USA took the single family dwelling and used it as the building block to invent Suburbia just around the turn of the last century, but put the idea on steroids after WWII. If we could uncouple the physical and environmental impacts from our built environment – meaning we could build in any settlement pattern we wished just to satisfy our social needs – what would our built environment look like? Planning and designing communities requires the participation of all who would live, work, or interact with the proposed community. The Material that merits exploration and testing for different climatic regions within Myanmar is Compression-formed Masonry such as RamRock. One cannot solve a Technical Problem with an Adaptive Solution, nor an Adaptive Problem with a Technical Solution. Adaptive Problems must and can only be solved with Adaptive Solutions.

"An approach towards sustainability - experiences from architectural practice in Germany and South East Asia" Walter Stolz, Green Sustainable codes in Germany, DGNB – German Sustainable Building Council; Environmental Quality, Economic Quality Sociocultural Quality, Technical Quality and Process Quality. Another, The Passive House Institute; Thermal Insulation, Passive House Windows, Confort Ventilation with High Heat Recovery, Airtightness, Thermal-Bridge-Free. Walter showed various examples of designs from projects he did in Germany and Asia explaining how each adapted to local requirements and needs.

"Architecture of engagement – A transdisciplinary approach towards a sustainable built environment" Knut Bjorgum, Transpositioning the Snohetta firm emphasizes collaboration working as a group in an open office, eating lunch together bringing together different disciplines working together. The design philosophy is "Form Follows Environment". Buildings take their cues from the surroundings and fit into the environment. The form of the building is generated by what is around it. For example a retail development has cultivated farms on rooftops so farmland is not destroyed by development. Sustainable Urbanism integrates environment into the design of the building. Design incorporates the past, present and future. Various designs are shown to illustrate design concepts. Design integrates public space with buildings. Example is Opera House in Oslo where the outside and roof of the building has public access for public use. Talked about 9/11 monument and museum. Redesigning Broadway in New York City. Design combines nature with culture. An example is the observation and cultural center on Snohetta Mountain. Talked about the concept of Powerhouse, The Powerhouse Alliance. POWERHOUSE is a building that during its lifecycle produces more renewable energy than it consumes for production of building materials, construction, operation and demolition of the building. The building will be built within commercial conditions. 1 - Minimizing energy consumption 2 - Producing energy on site 3 - Optimal energy use. Energy efficient volume, Superinsulated building envelope, Hybrid ventilation, Daylight optimization, Heat exchange with the seawater, Reduction of embodied energy, Local energy production with PV.

Intelligence and Efficiency at Work: The Transformational Power of Lighting" Ms. Meike De Shepper, Myanmar's rapid growth will be sustainable if it balances cultural

identity, people's well-being and energy use. Intelligent and Efficient Lighting Solutions can transform cities, ensuring safety and well being and conserving energy. Lighting in Myanmar consumes 743,600 MWH of electricity each year – this will increase with infrastructure investments. Myanmar could save up to 263,800 MWH a year by transitioning to energy efficient lighting. The transition to energy efficient lighting would save Myanmar up to US$9.7 million a year. Strategy 1: Lamp Upgrade - The easiest way to save energy is to upgrade your light source. Strategy 2: Luminaire Upgrade - To achieve significant energy savings, upgrade to higher efficient technology and retrofit luminaires in your facility. Strategy 3: Lighting Control Plus - Cutting down on usage is the best way to save energy. We believe light is potential. Light is possibility. Light is transformational. We want to bring these transformations to life.

U Sun Oo introduced the presentations by winners of the Myanmar Affordable Green Homes Competition. The presentations were impressive, focusing on traditional designs, incorporating local materials and floor plans taking into consideration traditional family living. Buildings incorporated passive design features for ventilation cooling. The designs were thoughtful taking into account modern sustainable design integrated with local traditional living.

Recommendations:

- The presentations of the design competition winners were awesome. Perhaps an entire session with the presentations of the design winners and presentations of the winners of the photographs, cartoonists would be incredible. If time allows bringing in other student work in sustainability especially when the centers of excellent become established.
- While it is important to focus on design because that is where it all begins, the session would have benefitted from input from contractors or builders who perform the hands on implementation of the design. Possibly highlighting demonstration projects that would be relevant to Myanmar building requirements.
- In addressing transformational technologies perhaps including a look into the future with presentations addressing what is being worked on with materials using bio-mimicry and nano-technologies in built systems would be interesting.

FINAL Agenda Parallel Session 2-4 *"Bioenergy and other Renewable Energy Resources in the Greening and sustainable development of Myanmar*"
Coordinated by Klima 2020., Norway.
1. *"Status for the production and consumption of energy in Myanmar today. Potentials and barriers for modern use of BioEnergy"*
Speaker: U Win Khaing, President Myanmar Engineering Society
.2 ***"****Bioenergy options for decentralized applications."*
Speaker: Ms. Arpita Bisht, TERI, India
Summary:
Currently 80% of the energy use in the country comes from biomass, and given that the majority of the population lives in rural areas, the country provides extensive opportunities for decentralized energy supply. However, current patterns of biomass use are inefficient and polluting with significant health implications for those exposed to

cooking with biomass, which constitutes the majority of the population. Women and children are particularly vulnerable on this account.
An improvement in the efficiency of use of biomass and a reduction in air pollution would have substantial benefits for the population, and would also be a useful means to bring about conservation of forest resources and other sources of biomass. The presentation covered.
*Introduction to and information on dissemination of improved cookstoves, details of which was provided based on TERI's experience with improved cookstove design and dissemination.
*Improved lighting using photovoltaic through the dissemination of solar lanterns and the installation of smart grids in rural areas, such as developed by TERI in India.
*Use of biomass gasifiers for decentralized power generation as well as production of heat. TERI has already installed 16 biomass gasifiers in Myanmar, some details of which was provided.

In addition, Myanmar could also launch biofuel research and development activities. The presentation suggested the development of a detailed roadmap for an efficient biomass future to meet Myanmar's energy demand in the years ahead.

3. "Bio pellets and power. Projecting for own use, and/or export."
Speaker: Ole Kårvåg, Founder and executive board member MRBB, Norway
Summary:

Norway has for decades been the world leader in fish feed pelleting. Based on this knowledge, MRBB has developed a "state of the art" technology for using various types of moist biomass for energy pellets, mainly wood pelleting by use of timber and wood residue, such as bark, roots, branches and tree tops as well as sawmill and building materials residue.
MRBB has developed full scale economic models for logistics and the processing of wood pellets in combination with small/medium-sized power plants (CHP, combining heat and power), including steam for the drying process of biomass for the pellet plant and excess power for external use/sale.
Based on a complete business plan MRBB takes responsibility for all agreements, testing and documentation - from securing raw materials to technical and commercial projecting, incl. building the plants, hiring and training employees, plant testing and start-up, and also the sale of the products, locally or internationally.
4. *Competence, knowledge and capacity building* as a tool for increased production and use of sustainable BioEnergy in Myanmar**.**
Speaker: Professor Dr. Odd Jarle Skjelhaugen, Director, Norwegian Centre for Bioenergy Research,, University of Life Sciences, Ås, Norway
Summary:
Research as competence and knowledge driver
The Bioenergy Innovation Centre is our most cross disciplinary bioenergy research program, involving industry and international research institutions. It addresses the entire value chains from biomass to heat produced in district heating plants and homes. The objective is to develop a sustainable and cost-effective bioenergy industry. Energy

efficiency and profitability has been increased and climate gas emissions have been decreased. In separate biogas and biorefinery research projects we are developing effective technologies for converting biomass to fuels for transportation. As for instance Liquid Biogas LBG for buses and Bioethanol for cars. The results and lessons learned are relevant for the Green Growth in Myanmar.

Education for capacity building

UMB offers Bachelor, Master and PhD study programs within renewable energies and environment in an international setting. Two of the student programs are especially designed for international students, meeting the needs for capacity building in the student's homeland. The students are recommended to stay at least one semester abroad. For conducting their thesis they can choose topics relevant for knowledge transfer and a job at home. They often will have two supervisors, one from UMB and one from another university, for instance in Myanmar.

5.*The Energy Farm Center in Myanmar* - how can the center contribute as a part of a Center of Excellence for modern use of BioEnergy?

Speaker: Manager Erik Eid Hohle, The Energy Farm – Center for BioEnergy in Norway

Summary:

The Energy Farm in Norway described in a presentation how a bioenergy center based on their concept has played a role in increasing the knowledge within modern use of bioenergy - in theory and practice. There is a great need all over the world for practical, grass root competence and capacity building on the production and use of biomass for food preparation and other heating purposes as well as bio power and biofuels for transport. Possible means and methods on how to implement an Energy Farm Center in Myanmar was presented.

The Energy Farm concept:

(i) Learning, Research and Demonstration module:

Establish a learning, research and a demonstration center for renewable energy, energy efficiency and climate adaptation

(ii) Consulting module:

Provide technical support and build capacities for producers, providers and users of renewable energy services

(iii). Marketing place module:

Provide a market place for technology suppliers to present relevant products and services, and sales of bioenergy from the EFC.

(iv)Outreach and Information module:

Promote outreach and dissemination of information on bio-energy and other renewables

(v) Linkages module:

Enable linkages and strategic collaboration with relevant stakeholders and partners

6. *Promoting and financing of activities and investments in the green and renewable energy sector. How can Innovation Norway contribute***?**

Speaker: Country Representative Thailand and Myanmar for Innovation Norway, Axel Blom

Summary:

Innovation Norway is the Norwegian government's official trade representative abroad and works in tandem with the Royal Norwegian Embassies abroad. The agency was created to support Norwegian businesses in Norway and to assist them in finding new markets abroad. The presentation will focus on proven green solutions developed by Norwegian companies and why foreign companies should consider doing business with Norway. Norway's longstanding work and commitment to the renewable energy sector was presented as well as public support and financing models.

7. Panel and plenary discussions.
Points from the discussions:

- The old order "Growth first, then training" is a wrong order. Myanmar will do the opposite and jump directly to the most sustainable solutions without doing all the "Western steps"
- Knowledge and capacity building by learning from other countries is crucial to realize the slogan "power to the people"
- The government talks a lot about strategies, but they need help to develop and realize them
- Myanmar is in a transition process from central economy to market economy, the banking and the markets are not yet ready for business
- Many countries and companies are looking for new markets in Myanmar
- Myanmar have many small companies that should be clustered
- Myanmar looks at Norway as kind, number 1 choice for collaboration
- Energy efficiency along the value chains being stressed by several speakers
- Smart to have the nexus (connections) energy – water – food in mind when assessing BioEnergy LCAs
- Important sectors to develop: building, transport, forestry, agriculture,
- Energies: A. hydro, bio including biogas, biopower and liquid biofuels, solar. B. wind, fossil
- Strong need for sustainable waste handling in the towns (Cambi and Oslo EGE)
- Has some bioethanol from sugar cane
- Bio resources: forest (a lot of tree species), rice husk, elephant grass, energy crops in plantations

8. Conclusions and follow up recommendations
Session objectives with corresponding achievements and follow up recommendations
Objective 1: *Support to the development of a national strategy for efficient use of BioEnergy in Myanmar*
Achievements:
The seminar, attended by 50-60 representatives from national and regional authorities as well as academic institutions and NGOs, had its key focus on efficient use of BioEnergy in Myanmar. The presentations can be used later on as background information for preparation of a national BioEnergy strategy.
Follow-up:
The Energy Farm and Teri will prepare a short summary paper addressing key issues on the future *development of BioEnergy in Myanmar*
Objective 2: Advance plans for development of an Energy Farm in Myanmar

Achievements:
Following discussions with Dr. U Win Khiang, the following sketch could be an option for establishing an Energy Farm in Myanmar:
Political home: Myanmar Ministry of Rural Development and Myanmar Ministry of Energy
Location: Existing government owned farm near University of forestry in NayPyiTaw
Thematic ideas: Biogas for light and cooking, effective cooking stoves, solar lamps, biopellets for export, effective water pumps
Knowledge base: from Campus Ås (UMB, Bioforsk, Skog&landskap) in Norway, from UoForestry and other universities in Myanmar, from the international science, from leading companies
Organising: the model farm is now lead by a committee, GEGG can be a driver in the starting period
Unclear: existing committee members, need a new board with members from the stakeholders, how to involve farmers form the beginning,
Critical: a well-motivated driver with mandate and possibilities to make the energy farm a success
Follow-up:
The Energy Farm through Mr. Erik Eid Hohle will seek funding for the preparation of a feasibility study for the development of an Energy Farm in Myanmar within half a year. This should include business plan, stakeholders list, thematic priorities and how to involve farmers.

Contact person in Myanmar will be U Win Khiang
Objective 3. Contribute to development of the concept for a Center of Excellence (CoE) for Renewable Energy in Myanmar
Achievements:
It was understood that the CoE would not be a scientific centre, but a centre for match making and connecting people, with 3-4 staff. As such the CoE could be an important hub for facilitating the development of concepts and projects for renewable energy in Myanmar, in particular within the nexus of Food, Water and Energy.

FINAL Agenda Parallel Session 2-5 "*Exploring the Ayeyarwady Futures in the Context of Energy – Water – Food Nexus for Multi- Stakeholder Collaboration",*
Stockholm Environment Institute.

Time	Activities	Speaker/Moderator
11:30-11:40	Introduction to the Session	Dr. Chayanis Krittasudthacheewa (SEI)
11:40-12:15	Understand current situation, challenges and ongoing efforts in resources management and development in the Ayeyarwady River Basin in the context of water-food-energy nexus.	Dr. Chayanis Krittasudthacheewa (SEI)

	Adaptation to the Environmental Change: The Case Study of Thanbo Island, Ayeyarwady River.	Ms. Khin Ohnmar Htwe, Myanmar Environment Institute (MEI)
12:15-12:30	What are the most important issues for water, food and energy in the Basin? Discussion in working groups	Dr. Chusit Apirumanekul (SEI) Dr. Louis Lebel (USER/SEI) Dr. Chayanis Krittasudthacheewa (SEI) Dr. Eric Kemp-Benedict (SEI) Asso. Prof. Chantana Banpasirichote Wungaeo (Chulalongkorn University) Mr. Hakimul Batih (JGSEE)
12:30-13:30	Lunch Break	
13:30-14:30	Exploring plausible futures/visions for the Ayeyarwady River Basin in 2040	Dr. Louis Lebel (USER/SEI)
14:30-15:15	Introduction to the new initiatives to support strategic planning and IWRM in the Ayeyarwady River Basin : - Ayeyarwady Futures Project by SEI and BMF - Strategic Study to Develop the Basic Elements for Myanmar National IWRM Strategy by Dutch Government - Other initiatives	Dr. Chayanis Krittasudthacheewa (SEI) Ms Carola Baller, Head of the Netherlands Economic Mission in Yangon All participants
15:15-15:45	Coffee Break	
15:45-16:50	What to expect? Challenges for a balanced resource management in Myanmar Brainstorming on opportunities and challenges as well as strategies for an informed and participatory process for strategic decision making – working group discussion	Prof. Joakim Öjendal (Gothenburg University) Asso. Prof. Chantana Banpasirichote Wungaeo (Chulalongkorn University) Dr. Chusit Apirumanekul (SEI) Dr. Louis Lebel (USER/SEI) Dr. Chayanis Krittasudthacheewa (SEI) Dr. Eric Kemp-Benedict (SEI) Mr. Hakimul Batih (JGSEE)
16:50-17:00	Reflection, Conclusion, Questionnaires and Closing	Dr. Chayanis Krittasudthacheewa (SEI)

Recommendations

The session was very successful in engaging with many participants from the government, CSO and academic groups but not so many from the private sector. For a preparation of the GEGG Forum next time, it would be useful if the GEGG forum could attract more participants from the private sector to join the forum. Also, the participants to our session seem to be very interested in participating in the interactive session where they have a role to play beyond just listening and asking the questions and also the session that has Myanmar experts jointly presented. The GEGG forum organiser may wish to consider this format for the next forum.

For a wider context to support Myanmar to move forward to the sustainable development considering the context of water, food and energy nexus, our session participants feel that we should promote more on the opportunities and develop the strategies for an informed and participatory process for strategic decision making in the development based on the evidence. Since this goal is ambitious, concerned Myanmar stakeholders as well as Myanmar supporters from the international communities should seek to collaborate with each other to minimize potential duplication or conflict in their efforts. To deal with a difficulty in nexus thinking that originates from the interactions between different resources and their uses between sectors, actors and scales, we will need to strengthen (1) **communications:** transparency and openness, fostering trust, (2) **dialogue**: ongoing discussions and negotiations between key stakeholders (as long as one talks, anything is possible), and (3) **governance**: rule-based legitimate political decisions, carried out from capable and recognizable institutions.

FINAL Agenda Parallel Session 2 -6 *"Adaptive and sustainable management of local resources through mobilising social partnership and collective actions - Nurturing ecosystem services for human security and promoting innovation for building a sustainable society"*

Organized by the Yokohama National University and United Nations Environment Programme Regional Office for Asia and the Pacific

Programme

11:00 – 12:30

Moderators: Mr. Manesh Lacoul, Programme Coordinator, United Nations Environment Programme Regional Office for Asia and the Pacific and Prof. San Win, Pro-Rector, University of Forestry, Myanmar

Guest remarks by Prof. Emil Salim, Advisor to the President of Indonesia and former Minister for Environment of Indonesia

"Ecosystem and environmental risk assessment – Approach to involving stakeholders and empowering communities" by Mr. Masanori Kobayashi, Associate Professor, Yokohama National University Graduate School of Environment and Information Sciences

"A new ecological farming for sustainable production – its impacts on biodiversity and livelihood" by Prof. Nobuhiro Kaneko, YNU-GSEIS

"Achievements and challenges in promoting environment and forest management and livelihood improvement in Myanmar" by Prof. San Win, Pro-Rector, University of Forestry, Myanmar

"Forest management for biodiversity conservation and community empowerment" by Mr. U Ohn, Secretary-General, Forest Resource Environment Development and Conservation Association (FREDA)

Lunch break

13:30 – 15:30
Moderator: Dr. Jonathan Shaw, Extension Director, Asian Institute of Technology

"Thinking about Mangrove Resource Management: From a fieldwork in the AYWD mangrove area" by Dr. Katsuhiko Ono, Research Fellow, YNU-GSEIS

"Ecological risk assessment of alien plant species in Myanmar" by Ms. .Thiri Aung, Doctor Course Student, YNU-GSEIS

"Multi-stakeholder partnership for harmonizing rice production and wildlife conservation" by Mr. Tom Clements and Mr. Ashish John, Country Programme Director of the Wildlife Conservation Society Cambodia Program

15:30-15:45 Break

15:45 – 17:45
Moderator: Mr. Masanori Kobayashi, YNU-GSEIS

"Achievements and challenges in promoting environment and forest management and livelihood improvement in Myanmar" by Prof. San Win, Pro-Rector, University of Forestry, Myanmar

"Community-based Educational and Partnership Action - Carbon Neutral Initiative for Community Empowerment and Climate Change Mitigation through Micro Hydro Development" by Mr. Agus Syriap Hidayat, Head, Center for Economic Research, Indonesian Institute of Science, Indonesia

"Strategies for capacity building towards sustainable natural resource management and livelihood improvement" by Dr. Jonathan Shaw, Extension Director, Asian Institute of Technology

"Addressing household water security through Nadi Water filters" by Mr. Manesh Lacoul of UNEP-ROAP on behalf of Mr. A. Khurshid Bhatti, President and CEO, Association for Humanitarian Development, Pakistan

Wrap-up and concluding remarks by Mr. Masanori Kobayashi, YNU-GSEIS

Some of the key recommendations that emanated from this parallel session :

vi) Reinforcing policies, programmes and social capacity development for sustainable ecosystem management and natural resource use,
vii) Bolstering and operationalizing integrated and participatory approaches to ecosystem management and social capacity development aimed at sustainable natural resource use and alternative livelihood promotion,
viii) Promoting and supporting innovative natural resource use such as participatory forest and mangrove management, indigenous/endemic species restoration, ecological agriculture and non-tillage farming, agroforestry and multi-cropping agriculture, micro-hydro power generation, labelling schemes for ecological agriculture products and bio-filtering for drinking water,
ix) Facilitating the decentralization of ecosystem and natural resource use management to local communities while ensuring macro-level enabling policies and their compliance, and
x) Supporting partnership including those between universities for research, education and leadership development aimed at sustainable use of natural resources and ecosystem management.

Yangon Segment THREE 22 November

FINAL Agenda Parallel Session Session 3-1 "*Integrated Waste Management: Technology and Management for Energy-Water-Food Nexus"*
Coordinated by UNEP – IETC, Osaka, Japan
Background**:** Discarded materials and liquids are termed as "waste". Due to rapid urbanization and economic growth, waste and wastewater generation levels in cities are growing exponentially. In view of rapid depletion of natural resources, most of the waste could be recycled back to resources to support energy-water-food security at local level. Moreover, proper management of hazardous and toxics wastes can improve the food safety and reduce the water contamination including arsenic contamination of water. This will also help to reduce the negative impacts of waste such as public health, air pollution, water and soil contamination, and methane emissions. Technologies play a vital role in waste management and waste recycling. This session is designed to highlight waste management and related technologies for source segregation, collection and transportation, sorting and recycling, treatment and recovery, and final disposal.
Objective:

1. To share information waste management systems and related technologies

2. To identify various avenues for international cooperation on waste management involving technology support and capacity building
3. To seek understanding on support for national waste strategy in Myanmar and integrated waste management in Yangon

Session Plan:

Time	Co-chairs of the session: (Mr. Surendra Shrestha, Dr. Khin Maung Lwin,)	**Speaker/Moderator**
10:30	Opening remarks	Mr. Surendra Shrestha, UNEP IETC
10:45 – 12:00 20 minutes for each presenter	Presentations: 1. Challenges in managing waste and water contamination 2. Geogenic asrsenic contamination in groundwater: A thret to wate and food security in South and Southeast Asia 3. Application of Johkasou in Myanmar 4. Water treatment technology using membrane	Dr. Mushtaq Ahmed Memon, UNEP IETC Dr. Bijon Kumer Mitra, IGES Mr. Tsuyoshi Suzuki, Kubota Corporation, Yangon Branch Mr. Atsushi Kitanaka, Pt Toray Industries Indonesia
12:00 – 13:30	Lunch Break	
13:30 – 15:00 20 minutes for each presenter	Presentations (continued): 5. "Waste-to Energy" Technology: An appropriate treatment alternative towards sustainable development 6. Waste to Electric Renewable Energy Projects in Myanmar 7. Financing for environmental technologies 8. Holistic approach to develop integrate solid waste management plan for Yangon and national waste strategy for Myanmar Question and Answers	Mr. Ken Okubo, Hitachi Zosen Corporation, Bangkok office Mr. Loo Boon Teong, Mr. Choo Chee Fai, Tai Kar Global Sdn. Bhd. , Malaysia Ms. Akiko Ishii, Mitsubishi UFJ Morgan Stanley Securities Co., Ltd. Dr. Mushtaq Ahmed Memon, UNEP IETC
15:00	Panel discussion with presenters and participants to: • highlight emerging challenges due to rapid generation of wastes including hazardous and toxic waste streams; • identify the possible management solutions including technologies for	Mr. Surendra Shreshta, UNEP IETC

	integrated waste management; and • draw a roadmap for formulating national waste strategy in Myanmar and integrated solid waste management system in Yangon	
16:30	Concluding remarks	Mr. Surendra Shreshta, UNEP IETC
16:40 – 17:00	Closing remarks	Participants

FINAL Agenda Parallel Session 3-2 *Land – The Nexus of Energy – Water- Food for Greening and Cooperation"*
Organized by: the Global Mechanism, the United Nations Convention to Combat Desertification (UNCCD)
Moderator: Prof. John Soussan (OSLO Consortium)

SLM is successfully applied in different countries across the world. Several examples were presented by international experts, drawing from the experience of the Global Mechanism of the UN Convention to Combat Desertification (UNCCD)[1], the OSLO (Offering Sustainable Land-use Options) Consortium[2], the 3PL (People, Planet, Profit Leaders) Network[3], University of Leeds' Sustainability Research Institute[4], WWF Greater-Mekong[5], the Global Green Growth Institute (GGGI)[6], and the Impact Investment Exchange and Shujog Asia[7].

The importance of **engaging the private sector** – by and large the biggest land user – in the transition to a green economy in Myanmar emerged as a crucial success factor. In this connection, the session emphasized the role that private capital investors can play in supporting, for example, social enterprises. Social enterprises are organizations that are specifically established to deliver good to the society and/or the environment. In South-East Asia there are tremendous opportunities for social enterprises, thanks to government incentives, growing corporate social responsibility (CSR) concerns, and rapidly increasing impact investments. However, there are some challenges too: skills gap, lack of infrastructure, lack of tailored policy support, slow transition to a market-driven mind-set, lack of investments. These challenges require adequate solutions.

In the establishment of enabling conditions for private sector engagement, regulators can resort to a variety of **incentives and market based mechanisms** (IMBM) to stimulate responsible investments in SLM. A score card approach that enables governments to identify the most efficient measures to use in each context was presented. **Spatial**

[1] www.global-mechanism.org
[2] www.theOSLO.net
[3] http://www.capacitybuildingoslo.com/
[4] www.see.leeds.ac.uk/research/sri/
[5] www.panda.org/greatermekong
[6] gggi.org/
[7] www.asiaiix.com/

planning tools (such as InVEST and Marxan) for understanding and applying nexus solutions at the ground level were also presented. Through scenario-based analyses, these tools allow to quantify the outcomes of alternative policies.

Another key instrument to promote SLM investments is the **valuation of land and natural capital**, which has been neglected in GDP-led economic systems. Several countries (e.g. through Natural Capital accounting) and corporations (e.g. through the publication of Environmental Profit & Losses accounts) have started to include these values in their accounting and decision-making processes. Interestingly, these techniques demonstrate that returns from green practices are higher than under business-as-usual scenarios.

As an example, the **Payment for Forest Ecosystem Services** (PFES) introduced in Vietnam in 2010 was presented. A study of the PFES scheme conducted using the OSLO valuation approach revealed that hydropower protection (i.e. a watershed function) generates the lowest returns in terms of value ($32m) when compared to provisioning services ($299m), biodiversity ($105m) and carbon sequestration ($373m).

The MOCAF presented plans for 2014 to promote **forest land investments** for domestic and foreign investors. This will probably require the intermediation by the OSLO consortium and the 3PL partnership and the establishment of enabling conditions such as insurances to abate the investment risk and land use policies. Partners like WWF and the Global Mechanism could provide capacity building and assist with knowledge management initiatives to accompany this process.

Other specific recommendations that emerged during the session included:

(i)The need to address a number of **uncertainties**, around policies, legislations, institutions, financial resources, investments (e.g. returns, risks, guarantees, etc.), e.g. through:

a. Concrete guidelines on what is allowed and not on land use;

b. Landscape approach embedded in the teaching of disciplines that link to particular land uses (e.g. forestry, agriculture, mining);

c. Role for NGOs in bridging the information and knowledge gap at the local level;

d. The dissemination of information on financial opportunities for SLM in Myanmar (e.g. with the support of the Global Mechanism).

(ii)The need to provide the right **incentives** are needed for people and businesses to change (e.g. from unsustainable to sustainable land management practices).

(iii)The need to understand and mitigate the investment risk, so that domestic and foreign **capital investors** can come in. Both the government and development partners can play a key role here.

(iv)The need to **prioritize**. Experience suggests that it is much better to start small and then scale up. Pilots are important in that sense. So are champions to scale up pioneering approaches.

(v)The role of the **financial system** is central to accompany the green growth, but changes are needed in the sector to make this happen. It is essential to engage more representatives from the financial industry (e.g. accountants, bankers, etc.) in upcoming GEGG Forums.

(vi)The need to build **awareness**, knowledge and understanding for all the stakeholders of the goals, rationale, practices, alternatives, options, and possibilities in the transition to a green economy. For this, it is imperative to assess the real value of natural resources, the costs of land degradation and benefits of SLM in economic terms, using the available tools;

(vii)The need to understand **what should not be done**, in order not to make the transition to a green economy impossible. Overregulation for example can be a killer. It can turn into a complex burden that paralyses the market.

All the session presentations and background material will be made available online at www.capacitybuildingoslo.com.

MORNING SESSION – GREEN GROWTH OPPORTUNITIES FROM SUSTAINABLE LAND MANAGEMENT		
11:00 – 12:00	Setting the scene (opening remarks)	- **Introduction: from global to local** Mr Simone Quatrini, Global Mechanism of the UNCCD - **Landscape approach and SLM in key economic sectors** Prof. Lindsay Stringer, University of Leeds - **The state of play of green economy in the Greater Mekong Subregion and Myanmar** Peter Cutter, WWF
12:00 – 13:00	Opportunities from sustainable land management (SLM) (presentations followed by panel discussions)	- **What is SLM in Myanmar** Mr. Ba Kaung, Ministry of Environmental Conservation and Forestry - **Social enterprise development in Myanmar** Ms Durreen Shahnaz, Impact Investment Exchange (IIX)

12:00 – 13:00	**LUNCH**	
AFTERNOON SESSION – SCALING UP GOOD PRACTICES		
13:00 – 15:00	Tools and approaches to scale up (presentations followed by panel discussions)	- **Challenges and opportunities** Juhern Kim, GGGI - **Economic Valuation of Land – the OSLO approach and case study in Vietnam** Prof. John Soussan (OSLO Consortium) - **Spatial planning tools and analytical work** Peter Cutter, WWF - **Incentives and market based mechanisms for private sector engagement** Ms. Siv Oystese, Global Mechanism of the UNCCD
15:00 – 15:30	**COFFEE BREAK**	
15:30 – 17:00	From theory to practice (open discussion)	**Perspectives from:** **The private sector:** Mr Aye Thiha, Royal tree service **The public sector** Mr. Ba Kaung, UNCCD Focal Point, Ministry of Environmental Conservation and Forestry **The financial sector** Ms Durreen Shahnaz, Impact Investment Exchange (IIX) and Shujog Mr Simone Quatrini, Global Mechanism of the UNCCD Ms Siv Oystese, Global Mechanism of the UNCCD **The scientific community:** Prof. Lindsay Stringer, University of Leeds **The civil society:** Peter Cutter, WWF

FINAL Agenda Parallel Session 3-3 ***"Making it Work – Energy, Water and Food Security in a Coherent Strategic Framework"***

Hosted by WWF

The session recognized that Myanmar has made clear its intention to develop a green economy with sustainability and equity at its core. To uncover critical policy requirements in a coherent framework, the session addressed cross-sectoral linkages

important to Myanmar: land/food, land/energy, trade/energy, and water/energy. All the presentations are available at www.panda.org/greatermekong/greeneconomy.

The Land/Food Security Nexus discussion highlighted the importance of forests to Myanmar's sustainable development. Community forestry (CF) utilizes the plants and animals from forests to provide important nutrient-rich supplements for rural households. Food security programs have focused on volume rather than quality, but hunting, gathering and fishing are vital adjuncts to farming. Community managed non-timber forest products (NTFPs) provide options for enhancing food security and helping fight poverty through economic enterprises. It was recommended that appropriate land use policies balance CF opportunities and high-value NTFP areas with the land conversion to other uses. A review and revision can be undertaken of the Community Forestry Instruction (CFI), with consideration of amendments to target the poorest and allow the CFI to be locally adapted.

The Land/Energy Nexus discussion underscored the fact that currently only 26% of Myanmar has grid electricity coverage. There is great potential to upgrade access by the majority of the population using local clean energy sources of solar, biomass and micro-hydro in decentralized mini-grid systems. They can provide a reliable, safe and environmentally friendly power supply to households, communities, and small and medium enterprises (SME), in some circumstances at cheaper rates than national grid extended electricity. It was recommended that strong government policy and initiatives jump-start action to support renewable off-grid energy. The country's Power Development Plan is vital for upgrading the existing grid, but should also include a parallel priority action plan on decentralized mini-grids powered by renewable energy sources.

The Trade/Energy Nexus discussion noted the current challenge of establishing adequate energy supply in the short term on the path to a sustainable energy future. It was proposed that responsible use of natural gas can help meet Myanmar's immediate needs while establishing safeguards for sustainable hydropower development. However, there is a projected shortfall in gas supply before new sources become available. Opportunities exist for significant improvement in the efficiency of current gas fired generation facilities. The UK's example of a low carbon policy and green rational provides a valuable benchmark. Their lessons suggest the crucial need for a vision and sustained political leadership, such as through a high-level green growth and climate strategy, and for government to ensure real, significant action on the ground.

The Water/Energy Nexus discussion postulated that hydropower could contribute 72% of Myanmar's sustainable electricity supply by 2030. The challenge is to build the right hydropower projects in the right way. This could be guided by the recently developed Hydropower Sustainability Assessment Protocol (www.hydrosustainability.org). The role of hydroinformatics was emphasized as one tool that can solve water problems in a systematic, holistic, ethical and people-centered way by emphasizing the importance of integrating indigenous knowledge, local knowledge and water sciences. The *Nexus Dialogue on Water Infrastructure Solutions for Water, Energy and Food* is a platform for

knowledge exchange on practical action in optimizing multipurpose water infrastructure, (www.waternexussolutions.org).

The importance of natural capital and ecosystem services (wetlands, forests, pollination of crops, etc.) to Myanmar's sustainable development was highlighted throughout the session. Several countries have been developing integrated frameworks for green economies, such as the Mozambique Green Economy Roadmap, that guide decisions on natural capital use and build green economy visions and policies, providing excellent examples for Myanmar's consideration

Time	Topic
10:30	**Welcoming Remarks** ➢ **Chair: Professor Dr. Khin Ni Ni Thein** President and Founder, Water Research and Training Centre (WRTC), Yangon, Myanmar ➢ **Co-Chair: Michelle Owen** Conservation Program Manager, WWF, Yangon, Myanmar
10:40	**Overview of Parallel Session 3-3** **Moderator: Roger Gill** Principal Consultant, Hydro Focus Pty, Ltd., Hobart, Australia
	Opening Remarks
10:45	**Eoin Sinnott** Director and Proprietor, Tri-Ecos, Ltd., Inhambane, Mozambique **'Adopting a green economy policy for national and regional water, energy and food security'** Natural capital underpins economic progress, public well being and national security. A national green economy policy can create the conditions for effective stewardship of natural capital and promote an inclusive and resilient economy. Formulating a green economy policy that responds to national interests and capacities is vital.
	Land/Food Nexus
11:00	**Dr. Maung Maung Than** National Director, RECOFTC, Yangon, Myanmar **'Sustainable Forest Management through community participation in Myanmar'** Community participation is essential in Sustainable Forest Management (SFM) in Myanmar. There are many challenges for communities to actively participate in SFM. Hidden opportunities, however, are available for local communities to be involved in Community Forestry supporting SFM. The potential of Community Forestry is reviewed for developing SFM for the future.
11:20	**Rex Edward Genato A. Dela Peña**

	Non-Timber Forest Product (NTFP) Enterprise Development Area Coordinator, NTFP – Exchange Programme, Philippines **'Philippines community NTFP enterprise experience – scaling up and models of linking to resource management in ancestral domains, community managed areas and landscapes'** The lack of development for Indigenous Peoples (IP) in the Philippines places huge pressure on their natural resources - their main source of livelihood. Poverty weakens their social and economic capabilities to protect their forests while burdened with trying to meet their daily needs. They live with the threat of displacement from their ancestral lands in favor of forest resource commercialization, i.e. logging and mining. IP communities are at risk if they are not empowered to seek rightful stewardship of their ancestral lands. Community managed NTFPs and related Community Enterprises may address/contribute to the development goal of fighting poverty while opening up economic opportunities through Resource Management, Policy Advocacy and Community Enterprise Development.
11:40	**Audience and Panel Interaction** **Panelists:** Eoin Sinnott, Maung Maung Than, Rex Edward Genato A. Dela Peña
11:55	**Preview of Afternoon Session,** Roger Gill
12:00	**Lunch**
	Water/Energy Nexus
1:00	**Dr. Rowena Watson** Foreign Affairs Officer, Office of Conservation and Water; Bureau of Oceans and International Environmental and Scientific Affairs; U.S. Department of State, Washington, D.C., USA **'Building Partnerships and Dialogues for Innovation in Water, Energy and Food Security'** The Nexus Dialogue on Water Infrastructure Solutions offers a space for discussion of the linkages across water, energy and food security. The goal is to change the way in which the global community manages physical and natural infrastructure for greater economic, social and environmental benefits and to improve food and energy security. The challenge is to bring together the rich array of experience and practical knowledge across professional fields, including farming, energy-production, natural resource management, and engineering, to provide a platform for learning, knowledge exchange and inspiration. Regional dialogues are happening in Nairobi, Bogota and Bangkok and a rich collection of best-practices and lessons learned is being developed that can help guide future water-related infrastructure development.
1:20	**Cameron Ironside** Program Director, International Hydropower Association (IHA), Auckland, New Zealand **'Incorporating sustainability into hydropower planning and development: the Hydropower Sustainability Assessment Protocol'**

	The presentation will explore options that enable integration of sustainability criteria into hydropower development planning, before considering in detail one particular tool available to guide sustainable hydropower development: the Hydropower Sustainability Assessment Protocol.
	Land/Energy Nexus
1:40	**Aung Myint** General Secretary, Renewable Energy Association Myanmar (REAM), Yangon, Myanmar **'Off-grid Clean Energy Perspective in Myanmar'** At present, Grid Electricity coverage of Myanmar is only 26% of the country. The remaining 74% is in Off-grid areas and almost all of the rural villages and villagers have no standard and systematic electric energy supply. But their self reliance attempts to meet their basic energy need are remarkable. There is great potential to improve and upgrade energy access by the majority of the population by using clean energy sources of Solar, Biomass and Micro-hydro Power. Review of the Off-grid Clean Renewable Energy perspective in Myanmar.
2:00	**Audience and Panel Interaction** **Panelists:** Dr. Rowena Watson, Cameron Ironside, Aung Myint
	Trade/Energy Nexus
2:25	**David Vincent** Head. SE Asia Climate Change and Energy Network, UK Foreign and Commonwealth Office, British High Commission, Singapore **'The UK's Green Growth Journey'** The imperatives and opportunities of green growth and how the UK is embracing this agenda, including through national targets and legislation, climate and energy policy, and specific low carbon initiatives.
2:45	**Ken Tun** CEO, Parami Energy Group, Yangon, Myanmar **'Powering Myanmar with Natural Gas in short and medium term'** Responsible use of natural gas is an important contribution to meeting the nation's immediate needs while undergoing the process of establishing safeguards and a sustainable hydropower plan within a national distributed energy plan. Reflections on Parami Energy's belief that business brings not only profit, but also helps to develop society and the environment.
3:05	**Audience and Panel Interaction** **Panelists:** Ken Tun, David Vincent
3:20	**Coffee Break**
	Final Synthesis Panel
3:45	**Green Growth/Green Economy Framework for the Energy-Water-Food Nexus**

	➢ **Dr. Andrea Marcello Bassi,** Founder and CEO, KnowlEdge Srl. The green economy promotes resilient economic growth, while minimizing impacts on the environment. The approach proposed (1) merges bottom up and top down analysis, (2) identifies win-win strategies for the short, medium and longer term, and (3) provides insights on policy formulation, at several levels, integrating sustainability, efficiency in the use of natural resources, resilience, and inclusiveness, while emphasizing the need for coherence across the government. ➢ **Dr. Khin Ni Ni Thein,** President of the Water, Research and Training Centre (WRTC), Yangon, Myanmar Review of the energy potential of Myanmar, particularly in the context of water resources management. In Myanmar, promoting and improving access to research and training opportunities and education in the water and the rural sector in Myanmar and abroad is an essential component of green growth in a green economy.
4:15	**Audience and Panel Interaction**
4:45	**Chair and Co-Chairs' Summary and Concluding Remarks**
5:00	**END OF SESSION**

Recommendations

(i) A coherent strategic framework, such as a national green development plan or strategy, is needed. A strategic framework would enable concerted and systemic action to be integrated in development policy, planning and implementation across the water-energy-food security nexus.

(ii) Myanmar's public and private sectors can gain useful insights on how to develop a national Green Economy integrated framework from examples of other countries that have recently developed national green economy roadmaps, strategies and action plans, such as the UK, Mozambique, Greece, Vietnam and Ethiopia.

(iii) The national Power Development Plan is vital for upgrading the existing grid, but could be strengthened by including a priority action plan on decentralized mini-grids powered by renewable energy. In addition, building the right hydropower projects in the right way in the plan could be guided by the recently developed Hydropower Sustainability Assessment Protocol (www.hydrosustainability.org).

(iv) Myanmar can undertake a review of the Community Forestry Instruction (CFI) and consider amendments to target the poorest and allow the CFI to be locally adapted.

(v) Land use policies should balance community forestry opportunities and high-value non-timber forest product areas with other options for land conversion.

FINAL Agenda Parallel Session 3- 4 *"Energy, Greenhouse Gas and Climate Change: Capacity Development in ASEAN Countries"*

Co-organizers: TGO and JICA

Introduction

Currently, the important and trend of socio-economic development has been increasing in South East Asia region, foreign investments are flowing more to ASEAN countries including Myanmar. Even though this rapid economic development in the region is a good sign and benefit to foster the economic development. However, if not properly implement, it could result in environmental damage. In addition, the impact of climate change has been becoming extremely serious in the past decade which can be observed in various unexpected situations such as temperature and sea level rise, more frequent occurring of extreme storms and floods, as well as increased illnesses and diseases. Myanmar is one of the most vulnerable countries to climate change according to Global Climate Risk Index 2010.

With all the above mentioned, we believe that the co-operation in climate change's capacity development, knowledge transfer and sharing of mitigation and adaptation issues under the umbrella of low carbon society will support ASEAN countries in expediting an appropriate plan and implementation strategies to contribute to green economy development. Therefore, Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) with support from Japan International Cooperation Agency (JICA), has established **"Climate Change International Technical and Training Center (CITC)"** in order to provide training service in the area of climate change mitigation and adaptation, establish networking platform for ASEAN countries, to be a learning resource center and disseminate knowledge on climate change mitigation and adaptation ASEAN countries.

Session Objective

The objective of this session is to share knowledge and discuss gaps and needs as well as possible collaboration to support capacity development for moving towards low carbon society development in Myanmar

The first part of the session: **"Contribution of GHG mitigation actions under low carbon society to green economic development"**, 4 presentations will provide overview of best practices and lessons learned from developed and developing countries on GHG mitigation actions in different sectors under low carbon society concept which contribute to green economic development.

In the second part: **"The important role of capacity building and knowledge sharing in supporting green economic development"**, overview of current situation on GHG mitigation

actions, Thailand's action for establishment of Climate Change International Training Center, low carbon society development of Myanmar and Japan's supporting programs will be presented, followed by discussion on gaps and needs on moving towards low carbon society.

The expected outputs from the session are as follows;

- Summary of gaps and needs for supporting capacity building on moving towards low carbon society development in Myanmar
- Summary of possible linkage with ASEAN to facilitate useful training programmes

Time	Topic
13:00 – 13:30	***Registration***
13:30 – 13:45	**Opening Remarks** *Dr. Jakkanit Kananurak , Thailand Greenhouse Gas management Organization (PO): TGO* *Mr. Satoshi Iemoto, Japan International Cooperation Agency: JICA*
13:45 – 15:00 **(20 min x 4)** **(QA: 15 min)**	**Part 1: Contribution of GHG mitigation actions under low carbon society to green economic development** ***Presentation*** **1. Thailand Low carbon society towards sustainable development policies & strategies** *Dr. Jakkanit Kananurak, TGO* **2. Thailand lessons learned, GHG Mitigation in Thailand** *Mr. Rongphet Bunchuaidee, Senior Official, TGO* **3. Japanese best practice: Low Carbon Society development** *Ms. Keiko Sasaki, Kitakyushu Asian Center for Low Carbon Society, City of Kitakyushu* **4. Myanmar mitigation direction towards for Green Economy and Green Growth** *Prof. Nay Htun, Stony Brook University in New York* ***Q & A (15 min)***
15:00 – 15:15	***Coffee Break***

Time	Topic
15:15 – 16:45 **(10 min x 5)** **(Discussion: 40 min)**	**Part 2: The important role of capacity building and knowledge sharing in supporting green economic development** ***Presentation*** **1. Introduction to Climate Change International Technical and Training Center (CITC)** *Dr. Jakkanit Kananurak , TGO* **2. JICA's supporting programme for climate change issue in ASEAN region** *Mr. Satoshi Iemoto, JICA Expert* **3. Lessons learnt from Capacity development activities in developing countries** *Mr. Kenta Usui, Climate and Energy Area, Institute for Global Environmental Strategies (IGES)* **4. Current activities of private sectors in Myanmar towards green growth** *Mr. U Win Khaing, President of Myanmar Engineering Society* **5. Capacity building for green growth** *Dr. Khin Maung Sint, Manager, Myanmar Timber Enterprise* ***Discussion*** **- Training gaps & needs from Myanmar**

	- **Linkage with ASEAN to facilitate useful training programmes** *Facilitator: Dr. Jakkanit Kananurak, Director of Capacity Building and Outreach Office, TGO*
16:45 – 17:00	**Closing Remarks** *Dr. Jakkanit Kananurak, Thailand Greenhouse Gas management Organization (PO): TGO*

FINAL Parallel Session 3-5 "*Applying Practical Techniques for Low Emissions Development Strategy (LEDS)"* , Coordinated By Dr. Eric Kemp-Benedict, Stockholm Environment Institute (SEI).

11:30-11:40 **Introduction to the Session** [Dr. Eric Kemp-Benedict (SEI)]

11:40-12:30 **National experiences**

- Indonesia: Lowering emissions with demand side management [Mr. Hakimul Batih (JGSEE)]
- Vietnam: The Vietnam Green Growth Strategy [Dr. Bach Tan Sinh (NISTPASS)]
- Opportunity for lower emission development in Myanmar [U Myint Soe (Myanmar expert, Resource person for UNFCCC-INC Project)]

12:30-13:30 *Lunch*

13:30-13:40 **Approaches to designing LEDS** [Dr. Eric Kemp-Benedict (SEI)]

13:40-15:00 **Participatory scenarios** [Dr. Louis Lebel (USER/SEI)]

With the assistance of:

- Dr. Eric Kemp-Benedict (SEI)
- Mr. Hakimul Batih (JGSEE)
- Dr. Chayanis Krittasudthacheewa (SEI)
- Dr. Chusit Apirumanekul (SEI)
- Asso. Prof. Chantana Banpasirichote Wungaeo (Chulalongkorn University)
- Dr. Bach Tan Sinh (NISTPASS)

15:00-15:10 **Putting numbers to a scenario** [Dr. Eric Kemp-Benedict (SEI)]

15:10-15:40 *Coffee Break*

15:40-16:40 **Using models for LEDS** [Dr. Eric Kemp-Benedict (SEI)]

- Brief introduction to LEAP
- Work in groups:

  (i) Short exploration of LEAP

  (ii) Entering parameters

  (iii) Collecting and discussing outputs from LEAP

  (iv) Plenary discussion

With the assistance of:

- Mr. Hakimul Batih (JGSEE)
- Dr. Louis Lebel (USER/SEI)

Recommendations

The workshop was successful in engaging the participants who attended, but unsuccessful in attracting a large number of participants. This experience leads to both positive and negative lessons, and the following recommendations:

- The participants appreciated the hands-on activities of scenario building and model exploration. In future GEGG Forums, this format might be recommended to session coordinators.
- The session used software (LEAP) that had been introduced at the 2nd GEGG Forum. This provided a certain amount of continuity from one forum to the next. In future GEGG Forums, session coordinators might be encouraged to build on topics of previous GEGG forums.
- The theme of the 3rd GEGG Forum, the Water-Energy-Food Nexus, was not sufficiently emphasized in the session description, which probably contributed to the low turnout. If the coordinator of this session were to submit a session proposal next year, he would work harder on communicating how it connects to the forum theme.
- There were substantial last-minute changes to the program. Some of these were avoidable, but some could have been introduced earlier. The final program was probably much more interesting to forum attendees than the original program, and if it had been in place then attendance might have been better.

FINAL Agenda Parallel Session 3-*6* *"Strategies for Maintaining Myanmar's Natural Capital and Building Resilience for Sustainable, Inclusive and Equitable Development."*
Organized by MoECAF , UNDP, UNEP and Smithsonian Institution

Myanmar's aspirations for green policies to safeguard and sustainably manage its rich natural resources are well articulated by the country's key Leadership. Natural resources, well-endowed in Myanmar, are central to greening for sustainable, inclusive and equitable development benefits for current and future generations. In order to realize the Government's vision, coherent strategies are needed to plan and manage Myanmar's rich natural resources. This session will introduce different strategies that can be employed for building the foundation for natural resource Stewardship for sustainable, inclusive and equitable development.

Sr.	Time	Theme	Speaker
1.	10:30-10:40	Key note opening remarks to introduce the parallel session	Dr. Nay Htun, GEGG
2.	10:40-10:50	The government's vision and strategy on natural capital management in Myanmar	U Hla Maung Thein, Deputy Director General, Environmental Conservation Department, MoECAF
Part I. Strategies for Biodiversity and Ecosystem Management Facilitator: Lat Lat Aye, Team Leader (Pillar II), UNDP			
3.	10:50-11:10 11:10-11:25	Capacity development for generation and application of biodiversity knowledge Question and answer	Steven Monfort, Director Smithsonian Conservation Biology Institute
4.	11:25-11:45 11:45-12:00	Integrated protected area land and seascape management for sustainable development Question and answer	Midori Paxton Regional Technical Adviser, UNDP
5.	12:00-13:00	Lunch	
Part I – Strategies for Biodiversity and Ecosystem Management (continued) Facilitator: Mr. Paul Steele, Environment Advisor, UNDP			
6.	13:00-13:15 13:15-13:30	Mainstreaming biodiversity in plantation estate to protect high conservation value forest in Tanintharyi Question and answer	Frank Momberg Myanmar Programme Director, Fauna and Flora International

7.	13:30-13:45 13:45-14:00	Safeguarding natural capital for building resilience in Myanmar Question and answer	Lat Lat Aye, Team Leader (DRR, Environment, Energy) UNDP
8.	14.00-14.30	Tea break	
Part II – Management of investment in natural resources for sustainable and inclusive development Facilitator: Daniel Kostzer, Senior Economic Advisor, UNDP			
9.	14:30-14:45 14:45-15:00	Managing investment in natural resources – experience from agricultural investment in South East Asia Question and answer	Grace Wong, Senior Scientist Centre for International Forestry Research
10.	15:00-15:15 15:15-15:30	Issues related to investment in land in Myanmar Question and answer	Swe Set, Coordinator Project Coordinator – DANIDA, ActionAid on behalf of Land Core Group
11.	15:30 – 16:00	Synthesis Wrap-up	Co-chairs