

臺大百年國際森林碳匯與循環經濟方法學工作坊

2023 NTU Centennial International Workshop on
Forest Carbon Sink and Circular Economy Methodology



Workshop Proceedings



National
Taiwan
University



College of
Bioresources and
Agriculture, NTU



The Experimental
Forest, NTU

Opening Address

CEO Nielsen, Deputy Representative Hattori, Dean Lin, Director Tsai, and all of our distinguished guests, Good morning!

On behalf of National Taiwan University, I would like to welcome you to attend NTU Centennial International Workshop on Forest Carbon Sink and Circular Economy Methodology. Nowadays, the critical issues of global warming and climate change have captured a widespread attention. Their far-reaching impacts not only affect the ecological systems but also threaten humanity's survival. To mitigate greenhouse gas emissions, "nature-based solutions" is gaining prominence, with "tree planting" being recognized as a mean to store carbon and alleviate the greenhouse effect. To address the important issue of climate change, the CEO of world climate foundation Dr. Nielsen and several distinguished speakers from Japan will discuss the fundamentals and applications of forest carbon sink in this workshop.

It has been nearly a century since National Taiwan University (NTU) was established in 1928. Away from Taipei, the Experimental Forest covers approximately one percent of Taiwan's land area. Established in 1902, the Experimental Forest manages over 32,000 hectares of forests and has devoted itself to achieve carbon neutrality ahead of its peer institutions. Also, it helps NTU to take a significant step closer to a sustainable future.

The workshop reflects NTU's awareness of the importance of forest carbon sequestration and carbon trading issues. Finally, I extend my best wishes for a successful workshop, and may all participants leave with enriched insights as the workshop concludes.

Thank you very much and enjoy the workshop!

Dr. CHEN Wen-Chang
President, National
Taiwan University



2023 NTU Centennial International Workshop on Forest Carbon Sink and Circular Economy Methodology

臺大百年國際森林碳匯與循環經濟方法學工作坊

Red Building Conference Room,

Xitou Nature Education Area, The Experimental Forest, NTU

臺大實驗林溪頭自然教育園區 紅樓國際會議廳

September 7-8, 2023

Program 議程

Time (UTC+08:00)	Thursday, September 7		
0830-0900	Registration 報到		
0900-0920	Opening Ceremony 開幕式	Opening Address 長官及來賓致詞 Dr. CHEN Wen-Chang President, NTU 臺灣大學 陳文章 校長 Dr. LIN Yu-Pin Dean, College of Bioresources and Agriculture, NTU 臺灣大學生農學院 林裕彬 院長 Mr. NIELSEN Jens CEO, World Climate Foundation 世界氣候基金會 尼爾森 主席	
Keynote Speech 開幕講座			
0920-0940	The Role of WCF (World Climate Foundation) in World Biodiversity and Climate Change WCF 在全球多樣性及氣候變遷中之角色 (Video Presentation)	Mr. NIELSEN Jens, CEO, World Climate Foundation 世界氣候基金會 尼爾森 主席	Moderator Dr. TSAI Ming-Jer Director, The Experimental Forest, NTU 臺大實驗林 蔡明哲 處長
0940-1000	Climate Change and Japan's Green Growth Strategy 氣候變遷與日本綠色成長戰略	Dr. HATTORI Takashi Deputy Representative, Japan-Taiwan Exchange Association 日本臺灣交流協會 服部 崇 副代表	Moderator Dr. SHYU Yuan-Tay Professor, Department of Horticulture and Landscape Architecture, NTU 臺灣大學園藝暨景觀學系 徐源泰 教授
1000-1030	Group Photo and Coffee Break 團體照及中場休息		
1030-1110	Climate Change Response Act and Net-Zero Transition Strategy in Taiwan 氣候變遷因應法與臺灣的淨零轉型戰略	Dr. HSU Hsu-Cheng Technical Superintendent, Ministry of Environment 環境部 徐旭誠 技監	Moderator Dr. SHYU Yuan-Tay Professor, Department of Horticulture and Landscape Architecture, NTU 臺灣大學園藝暨景觀學系 徐源泰 教授
Introduction and Application of J-Credit Scheme			
J-Credit 碳交易制度介紹及應用			

1110-1150	<p>Trends and Issues on the J-Credit Scheme and Corresponding J-Credit 制度之趨勢和議題及其在日本相應之碳抵換</p>	<p>Prof. HIROSHIMA Takuya Lab. of Global Forest Environmental Studies, Department of Global Agricultural Sciences, Graduate School of Agricultural and Life Sciences, The University of Tokyo, Japan 日本東京大學生命科學院全球農業科學系全球農業環境研究室 廣嶋 卓也 教授</p>	<p>Moderator Dr. KO Chun-Han Deputy Director, The Experimental Forest, NTU 臺大實驗林 柯淳涵 副處長</p>
1150-1210	General Discussion 綜合討論		<p>Moderator Dr. KO Chun-Han Deputy Director, The Experimental Forest, NTU 臺大實驗林 柯淳涵 副處長</p>
1210-1310	Lunch 午餐		
1310-1350	<p>A Case of Carbon Offset Through Energy Use of Forest Residues in Ashoro Town, Hokkaido, Japan 日本北海道足寄町森林剩餘物能源利用之碳抵換案例</p>	<p>Prof. KOGA Shinya Research Institute of Kyushu University Forest, Japan 日本九州大學演習林研究所 古賀 信也 教授</p>	<p>Moderator Dr. KO Chun-Han Deputy Director, The Experimental Forest, NTU 臺大實驗林 柯淳涵 副處長</p>
1350-1430	<p>Recent Revision of Forest Management Methodologies Under the J-Credit Scheme J-Credit 方案下森林管理方法之近期修訂</p>	<p>Mr. AGA Yoshihiko Assistant Director, Forest Multiple Use Division, Forestry Agency, Japan 日本林野廳林野綜合利用課 英賀 慶彦 課長補佐</p>	<p>Moderator Dr. KO Chun-Han Deputy Director, The Experimental Forest, NTU 臺大實驗林 柯淳涵 副處長</p>
1430-1510	<p>Promoting Wood Use in Buildings – Japan’s Policy and Experience 建築木材利用推廣 - 日本之政策與經驗 (On-line Presentation)</p>	<p>Ms. KUMAGAI Yuri Assistant Director, Wood Industry Division, Forestry Agency, Japan 日本林野廳木材產業課 熊谷 有理 課長補佐</p>	<p>Moderator Dr. KO Chun-Han Deputy Director, The Experimental Forest, NTU 臺大實驗林 柯淳涵 副處長</p>
1510-1530	Coffee Break 中場休息		
1530-1610	<p>Practical Aspects of J-Credit in Misato-chō in Miyazaki Prefecture by NTT West NTT West 於日本宮崎縣御鄉町之 J-Credit 實作案例 (Video Presentation)</p>	<p>Prof. MITSUDA Yasushi Faculty of Agriculture Department of Forest and Environmental Sciences, Miyazaki University, Japan 宮崎大學農學部森林綠地環境科學系 光田 靖 教授</p>	<p>Moderator Dr. KO Chun-Han Deputy Director, The Experimental Forest, NTU 臺大實驗林 柯淳涵 副處長</p>
1610-1650	<p>VCS Overall Process and Development of the Verified Carbon Standard 驗證碳標準之整體過程及發展 (On-line Presentation)</p>	<p>Mr. KUMAR Ashok Regional Representative (Asia-Pacific), Regional Engagement, Verra Verra 亞太區代表 阿修克 庫瑪先生</p>	<p>Moderator Dr. LEE Tzong-Ru Professor, Department of Marketing, National Chung Hsing University 中興大學行銷學系 李宗儒 教授</p>

1700-1730	General Discussion 綜合討論	Moderator Dr. KO Chun-Han Deputy Director, The Experimental Forest, NTU 臺大實驗林 柯淳涵 副處長
1800-2000	Dinner 晚餐	
Time (UTC+08:00)	Friday, September 8	
0830-0900	Registration 報到	
Government and Enterprises Exchange Forum on Carbon Reduction and Future Economy 減碳與未來經濟-政府與企業交流座談會		
0900-0930	A Win-Win Strategy for Enterprises and Agriculture by ESG Implementation 農業助攻產業永續之 ESG 合作模式	Dr. JUANG Lao-Dar Director, Department of Resources Sustainability, Ministry of Agriculture 農業部資源永續利用司 莊老達 司長
0930-1000	Private Sector: Enabling Net Zero Transition in a Challenging World 私部門推動淨零轉型的責任與挑戰	Ms. CHENG Sophia Chair of Asia Investor Group on Climate Change, Chief Investment Officer of Cathay Financial Holdings 國泰金控 程淑芬 投資長
1000-1020	Coffee Break 中場休息	
1020-1040	Enterprise's Challenge and Experiences Sharing (CASE 1, E. Sun FHC - Finance) 企業挑戰及經驗分享 (玉山-金融)	Mr. HUANG Tim Senior Vice President, E. Sun FHC 玉山金控 黃庭威 資深經理
1040-1100	Enterprise's Challenge and Experiences Sharing (CASE 2, Innolux - Optoelectronics) 企業挑戰及經驗分享 (群創-光電)	Mr. HSU Yao-Pao Senior Manager, Corp. ESH & Sustainable Development Division Group, Innolux Corporation 群創光電股份有限公司中央環安暨永續發展總處 許躍寶 資深經理
1100-1120	Enterprise's Challenge and Experiences Sharing (CASE 3, Wistron NeWeb Corporation - Telecommunications) 企業挑戰及經驗分享 (啟碁-通訊網路) (Video Presentation)	Ms. LIN Molly CSO and spokesperson, Wistron NeWeb Corporation 啟碁科技股份有限公司 林夢如 永續長暨發言人
1120-1150	Government-Enterprise Dialogue for Perspective 政府與企業展望與對談 (與談人-臺大實驗林 蔡明哲 處長、柯淳涵 副處長)	
1150-1220	General Discussion 綜合討論	

1220-1230	Closing Ceremony 閉幕式	Moderator Dr. TSAI Ming-Jer Director, The Experimental Forest, NTU 臺大實驗林 蔡明哲 處長
1230-1330	Lunch 午餐	
1330-1600	Excursion 會後參觀	Group 1 Distinguished Guests and Speakers 國內外貴賓及演講者 Wood Utilization Training Factory 木材利用實習工廠 Group 2 General Participants 一般與會者 Xitou Nature Education Area 溪頭自然教育園區

Keynote speech

The Role of WCF (World Climate Foundation) in World Biodiversity and Climate Change

Mr. NIELSEN Jens,
World Climate Foundation

Abstract

The world continues to change rapidly, demonstrating alarming signs of environmental degradation. Ongoing energy and economic crises, rising costs of living and global political tension – are just a few of the social impacts of these changes. We must come together for swift and global action and find the best solutions to these threats. This presentation introduces the role the World Climate Foundation plays in the global arena of biodiversity restoration and climate change, the fundamental interconnection between the two, and the solutions that the organisation explores to address both crises.

We are certain that nature, and particularly the implementation of Nature-based Solutions, is a key to our ability to solve contemporary global challenges. The role of biodiversity in climate change, adaptation and mitigation cannot be overstated. Therefore, it is of great importance that the link between Nature and Climate will be at the forefront of global negotiations and become one of the top priority topics at this year's COP28.

According to the Paris Agreement, at least 30% of the required emission reductions can be achieved through the correct implementation of Nature-based Solutions which can significantly mitigate the effects of climate change by conserving and restoring forests, peatlands, wetlands, and other ecosystems. Therefore, climate action must be aligned with the Post-2020 Global Biodiversity Framework adopted last December in Montreal.

To implement this, sufficient financing in nature is required. However, so far only 3% of climate finance goes to Nature-based Solutions and is sourced mainly from the public sector. Therefore, there is an urgent need to expand the focus to include biodiversity and nature in climate funds and to promote the engagement of the private sector.

Building on this, the work of the World Climate Foundation is aimed at bridging climate and biodiversity global agendas and accelerating finance and action for climate and nature solutions as an overarching principle. Our approach has leveraged the power of cross-sector collaboration and public-private partnerships that drive impactful change through our impact platforms, investment coalitions and key activities, such as the upcoming World Biodiversity Summit. Through the Summit, we engage global industry leaders, decision-makers, scientists and international organisations in solutions-oriented discussions, exchange of expertise and best practices and accelerating investments in Nature-based Solutions to tackle biodiversity

and the climate crises.

In line with the key topic of today's workshop, forests as carbon sinks, forest restoration, particularly regenerative forestry, sustainable land use, and food systems will be the focus of the World Biodiversity Summit this year. The World Climate Foundation has also helped develop the Climate Investment Coalition, which has mobilised a total collective commitment of \$130 billion US dollars for clean energy and climate solutions by 2030. Replicating this experience, we are working to mobilise investments in Nature-based Solutions and accelerate green finance for emerging and developing markets.

Addressing the environmental challenges of our time requires a comprehensive and collaborative approach involving all countries, sectors and innovations. We are extremely pleased to have the National Taiwan University Experimental Forest join the World Climate Foundation as a Global Headline Partner, and a participant of our World Climate Summit taking place at COP28 in December. World Climate Summit – The Investment COP will be a culmination of our year-long roadmap of activities on a collaboration for climate and nature action and a milestone event alongside COP28.

With a century of history, the National Taiwan University Experimental Forest is known for its commendable dedication to climate and biodiversity research pertaining to Nature-based Solutions. I believe by harnessing our collective power, knowledge and resources, together we can accelerate action on forest restoration and advance a Circular Economy and drive more commitments to achieving a net-zero and nature-positive future.

Keynote speech

Climate Change and Japan's Green Growth Strategy

HATTORI Takashi

Japan-Taiwan Exchange Association

Abstract

Climate change is one of the biggest challenges in Japan, Taiwan, and in the world. Both Japan and Taiwan announced the carbon neutrality goals. Both Japan and Taiwan implements various policies and measures to realize the carbon neutrality by 2050. In June 2021, Japan formulated Green Growth Strategy to realize the carbon neutrality by 2050. The Green Growth Strategy considers the innovation and social implementation of innovative technologies as its core and emphasizes benefits to people's lives that go beyond carbon dioxide emission reduction.

The Green Growth Strategy selected 14 sectors that were expected to grow towards the year 2050. Strengthening international competitiveness by setting high goals and steadily implanting action plans according to the phase of technology is the key to achieve the goals. The economic effect in 2050 is expected to be about 290 trillion yen, and the employment effect is expected to be about 18 million people. The selected 14 sectors are: (1) offshore wind/solar/geothermal power, (2) hydrogen/fuel ammonia, (3) next-generation heat energy, (4) nuclear, (5) automobile/battery, (6) semiconductor/information and communication, (7) shipping, (8) logistics, people flow and civil engineering infrastructure, (9) food, agriculture, forestry and fisheries, (10) Aircraft, (11) carbon recycling/material, (12) housing and building/next-generation power management, (13) resource circulation0related, and (14) life style-related.

The Green Growth Strategy intends to leverage all of the people and do the best to encourage companies to take on positive challenges towards innovation. It covers: (1) budget, (2) tax systems, (3) finance, (4) regulatory reform and standardization, (5) international cooperation, (6) promotion of university initiatives, (7) Expo 2025 Osaka, Kansai, Japan, and (8) Youth Working Group.

Food, agriculture, forestry, and fisheries industry is one of the 14 sectors: In 2050, zero carbon dioxide emission from fossil fuels in agriculture, forestry, and fisheries sectors. Formulating the Strategy for Sustainable Food Systems, MeaDRI (Measures for achievement of Decarbonization and Resilience with Innovation) (May 2021) as a new policy to enhance productivity potentials and ensure sustainability in a compatible manner of food, agriculture, forestry and fisheries sectors through innovation. Setting targets for innovative technologies and production systems to achieve carbon neutrality, and promoting their development and social implementation.

In the Green Growth Strategy, these are some claims to be benefits to people's lives in 2050. The image is: incorporating wood into daily life will contribute to more comfortable living, such as higher sleep efficiency, and increased consumption of Japanese food will contribute to the extension of healthy life expectancy.

The Green Growth Strategy considers international cooperation as one of the basic tools to achieve the carbon neutrality goals by 2050. It states that strengthening Japan-US cooperation, strengthening Japan-EU cooperation, sending messages internationally through Tokyo "Beyond-Zero" Week, promoting energy transitions in emerging countries in Asia and elsewhere, and leading discussions at the WTO.

In conclusion, both Japan and Taiwan needs to develop and implement innovative policies and measures to achieve the carbon neutrality goals by 2050. Japan's Green Growth Strategy may include some good references for Taiwan's further development of various policies and measures.

Keynote speech

Climate Change Mitigation Laws and Taiwan's Net Zero Transition Strategy

HSU Hsu-Cheng

Technical Superintendent, Ministry of Environment

Abstract

President Tsai declared on Earth Day on April 22, 2021 that the “2050 Net-Zero Transition” is Taiwan’s goal as well as a global consensus. To achieve the net zero transition by 2050, the premise is that the goal of energy transition must be firmly implemented. In March 2022, Taiwan officially published “Taiwan’s Pathway to Net-Zero Emissions in 2050”, which provides the action pathway to achieve “2050 Net-Zero Emissions”. Taiwan’s 2050 net-zero emissions pathway is based on the 4 major transition strategies of “Energy Transition”, “Industrial Transition”, “Lifestyle Transition”, and “Social Transition”, as well as the 2 governance foundations of “Technology R&D” and “Climate Legislation”, and is supplemented by “12 Key Strategies”. It aims to develop action plans for key areas of expected growth with regard to energy, industrial, and life transition to implement net zero transition goals.

To build the nation’s legal framework for climate change towards net zero emissions, the President announced the amendment to revise the Greenhouse Gas Management Act as the Climate Change Response Act in February 15, 2023 to cope with global climate change and ensure the sustainable development of the nation. The key elements of the amendment includes: incorporating the 2050 net-zero emissions target, establishing authority and responsibility among agencies, adding the section of just transition, strengthening emissions control and incentive mechanisms to enable emissions reduction, introducing carbon fee with dedicated usage of revenues, adding a chapter on climate change adaptation, incorporating carbon footprint and product labelling management scheme, as well as improving information transparency and citizen participation mechanisms. The Ministry of Environment has preliminarily counted 12 relevant sub-laws that are prioritized to promote, and has completed the announcement of 1 sub-law and the draft notice of 4 sub-laws. We will actively discuss with all walks of life, and after soliciting opinions from all walks of life, we will go through the public hearing procedure for the discussion, so as to facilitate the smooth implementation of relevant systems and reduction measures.

The Ministry of the Environment and the Climate Change Administration were officially inaugurated on August 22, 2023, and have become special agencies responsible for climate change. In the future, we will be committed to strengthening five major tasks: climate

governance, and promoting net-zero transformation; implementing inventory management, and working with enterprises to reduce carbon; promoting the carbon emissions valuable and expanding the incentives for reduction; improving the capacity of adjustment and building a resilient Taiwan; creating climate dialogues and encouraging the participation of all people, so as to achieve the vision of Taiwan becoming a "net-zero sustainable and resilient homeland".

Trends and issues on the J-credit scheme and corresponding carbon offset in Japan

HIROSHIMA Takuya & TAKITA Yuta

Dept. Global Agricultural Sciences, the University of Tokyo (UTokyo)

Abstract

Carbon offset is a voluntary action to contribute to climate change mitigation by individuals/businesses. For that purpose, carbon credits are used to offset the unavoidable CO₂ emission by the individuals/businesses. Here, carbon credits are defined as a tradable financial instrument to represent emission reductions and removals that can be bought or sold. Generally, carbon credits are certified and issued by governments or independent certification bodies according to a specific methodology which determines project boundary, baseline scenario, additionality, quantification of CO₂ emission reductions and removals, monitoring methods, etc. In this context, forest carbon credits can be defined as carbon credits certified according to the methodology relevant to removal by forest sink. Currently carbon credits are classified into roughly two types: One is Certified Emission Reductions (CER) and Article 6.4 Emission Reductions (A6.4ERs) certified by the United Nations under the Clean Development Mechanism (CDM) in the Kyoto Protocol and the Article 6.4 mechanism in the Paris Agreement. Another one is Verified (voluntary) Emission Reductions (VER) certified by governments or independent certification bodies mainly used for voluntary carbon offsetting. Currently VERs are overcrowded over the world such as Verified Carbon Standard (VCS), Gold Standard (GS), American Carbon Registry (ACR), Architecture for REDD+ Transactions (ART), Global Carbon Council (GCC), Climate Action Reserve (CAR), City Forest Credits (CFC) Plan Vivo, Eco Registry, J-Credit, etc. These carbon credits are traded in two kinds of markets: One is a compliance market regulated by regional, national, or international regimes of emission reduction targets. Another is a voluntary market where credits are traded to offset emission reductions voluntarily.

In the presentation, general trends of carbon credits are introduced based on two different trading markets of global one and Japanese domestic one, where the latter includes J-credit scheme operated by Japanese government. In addition, to provide a detailed picture of carbon credits, a certification process of forest carbon credits is introduced by showing the case study of UTokyo forest carbon projects implemented in early 2010's. Finally, several issues on forest carbon credits are pointed out from three viewpoints of methodological, socio-economic and project implementation aspects: Methodological issues include additionality, permanence,

leakage and co-benefit matters. Socio-economic issues include asymmetric knowledge, certification cost and credit price matters. Project implementation issues include monitoring, reporting and verification matters respectively.

Introduction and Application of J-Credit Scheme

A case of carbon offset through energy use of forest residues in Ashoro Town, Hokkaido, Japan

KOGA Shinya

Research Institute of Kyushu University Forest, Japan

Abstract

We started research on wood pellet fuel from forest residue for heat utilization in Ashoro town, Hokkaido, as part of the project “Regional development through forest biomass and livestock waste power generation for carbon cycle and environmental conservation” between 1999 and 2001. A wood pellet cooperative by local private companies there began producing and selling them in 2007, and Ashoro town has used them as heating boiler fuel at several facilities from that time. Ashoro town proposed a CO₂ emission reduction project to J-VER scheme, and it was registered in 2009.

Recent revision of forest management methodologies under the J-Credit Scheme

AGA, Yoshihiko

Forest Multiple Use Division, Forestry Agency, MAFF of Japan

Abstract

As Japan aims to achieve net zero emissions by 2050, the J-Credit Scheme, a carbon crediting scheme administered by the Japanese government, is now expected to play an increasingly important role in offsetting emissions from businesses, with forest-based removal credits gaining more attention. Of the dozens of methodologies approved and available under the Scheme, however, only 2% of the total credits certified to date have been derived from the forest removal methodologies. Given the increasing importance of carbon removal credits in the coming decades, it is vital to maximize the potential of the forestry sector to provide carbon credits through sustainable forest management activities.

Against this backdrop, in August 2022, the rules for forest management projects were revised by the Steering Committee of the J-Credit Scheme building on the outcome of months-long deliberations through the ad-hoc Forest Sub-Committee, with the aim of making it easier for forest owners and managers to engage in the J-credit scheme as well as maximizing the forest sector's contribution toward achieving the net zero goal for 2050. The revision was in line with the government's policy priorities to promote the cyclic use of domestic forest resources, particularly by reforestation after final felling to create young forest stands, while ensuring and enhancing long-term removals nationwide.

The major elements of the revision include 1) streamlining of additionality assessment, 2) introduction of a special credit calculation option for final felling and subsequent reforestation activities, 3) inclusion of harvested wood in the carbon pools for credit calculation, and 4) establishment of a new methodology for third-party reforestation activities. Details of these elements are described below.

- 1) While all proponents must demonstrate that the project shows a predictable financial deficit throughout the crediting period to meet additionality requirements, certain types of projects with high probability of economic barriers, e.g. those where reforestation activities (tree planting) are planned after final felling rather than leaving them for natural regeneration, are now exempt from demonstrating additionality.
- 2) A special credit calculation option has been introduced for reforestation activities after final

felling, whereby the amount of carbon stocks achieved by the time the planted trees have grown to the legal “standard cutting age” (typically 30-40 years for Japanese cedar) can be deducted from the amount of emissions associated with its antecedent final felling. Compensation measures for possible reversals have also been introduced for the option.

- 3) The scope of carbon pools to be accounted for has also been extended to include the harvested wood carbon pool, in addition to the above and below ground biomass pools. The revision allows project proponents to report the volume of roundwood produced from the project area to include in their credit calculation the amount of carbon that remain stored in products for 90 years or longer, which can be deemed a reasonable time period to ensure permanence based on historical data analysis (e.g. 16.7% of carbon stored in wood products used in buildings remain their life for 90 years).
- 4) A new methodology for reforestation activities (FO-003) has been established, where third-party proponents form a project to execute reforestation and subsequent silvicultural practices in lieu of the forest owners who are unwilling to continue forest management practices after final felling. Under this methodology, only those not involved in the final felling decision or actual implementation are eligible to become project proponents.

Introduction and Application of J-Credit Scheme

Promoting wood use in buildings – Japan’s policy and experience

KUMAGAI, Yuri

Wood Industry Division, Forestry Agency, Ministry of Agriculture, Forestry and Fisheries of Japan

Abstract

Forests cover two-thirds of the land area of Japan and perform multiple functions that are indispensable for people’s lives. One such function is provision of wood, which has traditionally been used as the key building material in Japan. The share of domestic wood in the country’s wood supply and demand, however, went on a long decline following the post-war reconstruction period, until it was down below 20% in 2002. Since then, with the growth of forests planted after the war, the production of domestic wood has been increasing steadily and now exceeds the share of 40% in the market.

The government’s policy has played an important role in driving those changes in Japan’s wood supply and demand situation. In more recent years, the policy has placed a strong emphasis on promoting the use of wood in buildings, in order to expand the demand for domestic wood: i) in low-rise houses which are already mostly wooden but using much imported wood; and ii) in non-residential and mid-to-high-rise buildings which are still dominated by non-wood structures. Increasing domestic wood demand is in turn expected to propel the cycle of sustainable forest management in Japan, which contributes to climate change mitigation through absorption of carbon from the atmosphere by the forest and storage of the carbon in harvested wood products (HWP).

The momentum for wood use in buildings has been accelerated by the ‘Act on Promotion of Wood Use in Public Buildings’ which was enacted in 2010 and revised in 2021 to expand its scope to include private buildings. Addressing the global challenge of climate change, the revised Act also clearly recognises the importance of building with wood towards achievement of a net-zero society, as it enables not only long-term carbon storage but also reduction of buildings’ embodied carbon. Under this Act, the government of Japan has fostered further collaboration across the ministries and between the public and private sectors, in promoting wood use in buildings.

The key policy measures implemented by the Forestry Agency of the Ministry of Agriculture, Forestry and Fisheries of Japan in this regard include, among others:

- promoting wood use in public buildings;
- supporting the development of high-performance structural wood products, such as cross-

laminated timber (CLT), and their demonstrative uses in buildings;

- expanding the use of Japanese Agricultural Standard (JAS)-graded structural wood with assured quality and performance;
- strengthening collaboration among stakeholders of wood supply chains with a focus on sustainability; and
- developing tools to effectively communicate the positive impacts of building with wood to building owners and investors as well as the general public.

In light of globally increasing demand for sustainability in the building sector and coupled with the policy support, Japan has been experiencing a growing interest in building with wood and the trend is expected to continue in the coming future.

Introduction and Application of J-Credit Scheme

Methodology for accounting forest carbon absorption by forest management in the J-Credit Scheme

MITSUDA Yasushi

Agriculture Department of Forest and Environmental Sciences, Miyazaki University, Japan

Abstract

J-Credit is a scheme by the Japanese Government for certifying the amount of greenhouse gas emissions reduced and removed through several efforts to use energy-saving devices and manage forests. "Forest management activity" (FO-001) is a method for getting carbon credit in the forestry section of J-Credit Scheme. It is important for managing J-Credit projects that the activities of J-Credit projects should be deficit operations because the J-Credit Scheme was established to promote commercially negative efforts to reduce carbon emissions and increase carbon absorption. In the forestry sector, forest owners incur high costs for forest operations prior to harvesting. This has caused an increase in unmanaged forests, where several ecosystem services have declined. Therefore, J-Credit FO-001 can be regarded as a way to encourage forest owners to manage their forests not only for climate change mitigation by forest carbon absorption, but also for sustainable forest management. Forests registered in J-Credit FO-001 should fulfill following requirements: 1) Forest Management Plan (FMP) have already been assigned and sustained during the certification period, and 2) forestry operations (thinning) are scheduled during the certification period, or 3) forest operations have been applied after 1990 and forest protection activities (monitoring forest condition, watching diversion for other land-use) are scheduled during the certification period. FMP is part of the forest management planning system in Japan. Private forest owners plan forest management operations for five years as FMP and submit them to the local governments. Forest areas included in a J-Credit project should be measured by field surveys or GIS using orthophotos. The annual amount of CO₂ absorption by registered forests in a J-Credit project is simply estimated using yield tables describing forest conditions (average tree size, tree density, and stocking stem volume) under standard forest management. Prefectural Governments prepared yield tables for major merchantable coniferous planting species and natural forests for each site class. To utilize these prepared yield tables, J-Credit project managers are needed to investigate the species, age, and average dominant tree height for each stand. Prefectural Governments also prepared site curves (diagrams representing the dominant tree height growth curve with stand age) for each planting species. J-Credit project managers can determine the planting species and stand age for each stand by referencing forest registers managed by Prefectural Governments and investigate dominant tree height by field surveys. Recently, LiDAR data and digital surface models have been used to measure dominant tree height. Thus, J-Credit project managers

could select a suitable yield table for each stand. Using the selected yield table, the annual stand volume growth was estimated as the difference in stocking stem volume. The estimated stand volume growth was converted to an increase in above- and below-ground biomass, an increase in carbon stock, and the amount of absorbed CO₂ using the conversion coefficients prepared by the Japanese Government (for the Kyoto Protocol of the UNFCCC). The office of the J-Credit Scheme provides an Excel spreadsheet for calculating the amounts of absorbed CO₂ the above procedure.

Verra's Standards/Programs - The Key to Combating Climate Change and Achieving Environmental and Sustainable Development Benefits

KUMAR Ashok

Regional Engagement Team, Verra

Abstract

The urgency to combat climate change led to the creation of strict standards/programs for measuring and confirming reductions in greenhouse gas emissions. The Verified Carbon Standard (VCS) Program is the world's most widely used greenhouse gas (GHG) crediting program. It drives finance toward activities that reduce and remove emissions, improve livelihoods, and protect nature. VCS projects have reduced or removed more than one billion tons of carbon and other GHG emissions from the atmosphere. The VCS Program is a critical and evolving component in the ongoing effort to protect our shared environment. The jurisdictional & Nested REDD+ framework is another program under VCS that enable stakeholders to use carbon finance for protecting their forest. Verra's other programs like Climate Community and Biodiversity (CCB), Sustainable Development Verified Impact Standard (SD VISta), and The Plastic Waste Reduction Program (Plastic Program) enable stakeholders to verify the other co-benefits for the environment, community, biodiversity, and sustainable development.

As the Regional Representative for Asia Pacific at Verra, I have the privilege to provide a comprehensive overview of Verra's standards and programs, including their verified benefits, project development cycle, eligible sectors for project development, approved methodologies, the methodologies approval system, accreditation of VVB, and the functioning of the Verra registry. The presentation will also provide comprehensive coverage project registration and issuance process.

A Win-Win Strategy for Enterprises and Agriculture by ESG Implementation

JUANG Lao-Dar

Department of Resources Sustainability, Ministry of Agriculture

Abstract

In recent years, human beings have deeply realized that climate change has caused rapid environmental changes, and ecological, social and economic systemic changes and impacts. It is recognized internationally that enterprises can promote sustainable development and should share the responsibility. To make enterprises shoulder their responsibilities, it has become a global consensus to solve environmental and social problems with their good economic means. Green finance and green investment have gradually become mainstream, leading to Attract funds to invest in sustainable indicators (SDGs) that are friendly to the environment and the development of all human beings. Enterprises concretely present their sustainable actions and achievements through their sustainability reports, and ESG is an important item for evaluation. In order to strengthen green investment, the China Financial Regulatory Commission has successively launched Green Finance Action Plan 2.0 and 3.0. From this year (2023), listed companies with a capital of more than 2 billion yuan are required to disclose ESG information, and all listed companies are required to disclose ESG information by 2027. Complete the greenhouse gas inventory work. In the international supply chain, more and more companies require the supply chain to comply with sustainable development norms, which shows that the demand for ESG disclosure by companies is becoming more and more urgent.

Agriculture is based on a healthy natural environment. In addition to food security, there are also external benefits that have not been valued, which can provide a good field for companies to practice ESG. The Ministry of Agriculture proposes three major areas of agricultural sustainable ESG: "net zero sustainability", "ecological conservation" and "heart-warming countryside". The areas include afforestation, circular agriculture, green agriculture and food, terrestrial habitats, and sea habitats , Specific species, zero hunger, rural culture, skill inheritance, etc., the company's participation in 9 projects can not only correspond to the environment (E), but also combine the core capabilities of the enterprise and product service expertise to extend the benefits to the social (S) and Corporate governance aspect (G), and corresponding sustainable development indicators (SDGs).

The Agricultural Sustainable ESG Promotion Department matches with the competent authority

and the industry according to the needs of enterprises, and guides both parties to discuss and cooperate. The agricultural side puts forward ideas on the projects, cooperation models and highlights that can be given back by enterprises in their own fields, and adopts customized methods. Program planning, introducing corporate resources to assist agricultural development, responding to corporate ESG disclosure needs, and creating a win-win and mutual benefit.

Government and Enterprises Exchange Forum on Carbon
Reduction and Future Economy

**Private Sector: Enabling Net Zero Transition in a Challenging
World**

CHENG Sophia

Investment Officer of Cathay Financial Holdings

Abstract

Government and Enterprises Exchange Forum on Carbon
Reduction and Future Economy

**Enterprise's Challenge and Experiences Sharing (CASE 1, E.
Sun FHC - Finance)**

HUANG Tim

E. Sun FHC

Abstract

I Company background: E.SUN, The Highest Mountain; the Best Bank. In 1992, Chairman and founder Yung-Jen Huang brought together a dedicated team of like-minded professionals to create a "banker's bank" which possesses a sense of purpose to operate the best bank.

I Road to 2050 Net Zero: E.SUN establishes a climate change governance structure in accordance with international standards such as TCFD, PCAF, and SBT. In addition to continuously improving energy efficiency, we also incorporate climate risk into business and adjust our portfolio to a lower-carbon emission structure by financing renewable energy and green buildings, phasing out coal related industries, and establishing an internal carbon pricing mechanism; realizing our goal of net-zero emissions by 2050 one step at a time.

I Preserve Nature Project with NTU: E.SUN and NTU aimed at planting 100,000 Taiwanese cypress trees to in ten years. On the other hand, E.SUN collaborates with NTU to promote the Millet Revitalization Project, successfully reintroducing 28 native millet varieties from the United States Seed Bank to Taiwan and revitalizing them in Xinyi Township, Nantou County.

**Enterprise's Challenge and Experiences Sharing (CASE 2,
Innolux - Optoelectronics)**

**Challenges and insights for Enterprises Pursuing Net-Zero
Carbon Emissions**

HSU Yao-Pao
Innolux Corporation

Abstract

The impact of climate change has the level of concern among global citizens' for initiatives aimed at mitigating its effects. This heightened awareness has sparked a global surge in companies adopting low-carbon transitions for sustainable development. Notably, effective Carbon risk management is a top priority task, and it also shows the company's competitive edge. The company must transform the carbon reduction capability into the company's soft power and thereby enhancing the brand image and strengthening the commitment to sustainable operation.

Innolux, one of the top five flat-panel display manufacturers in the world, with production facilities located in Taiwan and mainland China, including more than 10 TFT-LCD FABs and over 5 display module assembly plants. Greenhouse gas emissions within the facilities is mainly the process of using FCs gas (including NF₃, SF₆, N₂O and other gases), and the use of energy. The percentage of greenhouse gas emissions is about 10% in Scope 1 and about 90% in Scope 2. Among them, the use of FCs in Scope 1 accounts for about 8%, and the remaining 2% is attributed to emissions from fuel, refrigerant and domestic sewage.

Innolux's 5 steps to implement net-zero greenhouse gas emissions and carbon reduction:

- (1) Establishing the organization: Setting up a Carbon Risk Management Committee.
- (2) Strategies Developing: Developing carbon reduction strategies corresponding to all emission sources and supply chain, formulate carbon reduction management systems.
- (3) Preparing the Resource: Planning carbon reduction budget, training net-zero carbon reduction personnel and seeking cooperation professionals.
- (4) Goals setting: Defining short-, medium-, and long-term representative goals.
- (5) Ideating implementation plans: Each function formulates a net-zero carbon reduction action plan and proposes net-zero carbon reduction measures for achieving zero-carbon emissions.

The net-zero greenhouse gas emission and carbon reduction measures planned by Innolux

coverall stages of overall production activities, including raw material input, product design and manufacturing, raw material and product distribution and transportation, product use, waste treatment, etc.

Innolux collects and analyzes short-, medium- and long-term available carbon reduction technologies for net-zero greenhouse gas emission action countermeasures, and shaping Innolux's net-zero emissions and carbon reduction paths.

Currently, Innolux's short-term carbon reduction goals are mainly saving energy and improving energy efficiency in factory utility systems and manufacturing processes, the efficiency of raw materials and fuel use, and implementing a dual-track approach involving wind and solar energy. Attention is also given to forests and soil carbon sink methodology, low-GWP process FCs gas manufacturing technology. By all good means, we aim at achieving low-carbon transformation and the vision of net-zero emissions.

Government and Enterprises Exchange Forum on Carbon
Reduction and Future Economy

**Enterprise's Challenge and Experiences Sharing (CASE 3,
Wistron NeWeb Corporation - Telecommunications)**

LIN Molly

Wistron NeWeb Corporation

Abstract

Wistron NeWeb Corporation (WNC) specializes in the design, development, and manufacturing of cutting-edge communications products. Headquartered in Taiwan's Hsinchu Science Park, WNC has an overseas presence in the US, the UK, Germany, Japan, China, and Vietnam. Leveraging its expertise in antenna/RF design and system integration, WNC is a key supplier of networking brands, tier-1 telecom operators, automakers, and automotive electronics companies.

In recent years, improving climate resilience and implementing sustainability goals have been major corporate development policies of WNC. In addition to the establishment of a sustainability committee to track energy-saving and waste-reduction quantitative indicators, the company has also increased its use of renewable energy. In August 2023, WNC joined RE100 and SBT, committing to 100% renewable energy use by 2040 and net-zero emissions by 2050. The company is establishing modes of cooperation with suppliers and developing low-carbon, green design products and technologies to become the strongest sustainable partner of customers. In terms of social participation, the company will build on its core values, fostering a virtuous cycle through care for the land, young people, and smallholder farmers.

On World Earth Day, April 22, 2023, over a 100 senior WNC staff planted native Taiwanese saplings alongside the banks of the Zhuoshui River as a focus of its care for the land. The WNC Forest Park, covering approximately 1.4 hectares, is expected to mitigate the effects of dust and smog brought by the northeastern monsoons. In addition to improving the quality of life for these residents, it will also contribute to carbon fixation and restoration of ecological habitat.

The Executive Yuan has set a target of net-zero emissions by 2050 and announced the Taiwan 2050 Net-Zero Emissions Pathway Blueprint in 2023. With carbon reduction policies at the forefront and the establishment of a carbon trading market, it is our hope that the competent authorities can simplify procedures with regards to carbon credits deriving from tree planting initiatives and thus create more opportunities and modes for business participation. This includes revitalizing state-owned forests with corporate resources, and realizing the common goal of net-zero emissions.