Content

Welcome Remark

On behalf of the Institute of Green Products, Feng Chia University, our APEC-funded project “Empowering Indigenous Social Awareness on Renewable Energy and Increasing Inclusion Sustainability for Green Energy Applications in APEC Regions” (EWG 14 2021A) has been approved by APEC Budget and Management Committee. As stated in the proposal, the project objective is to hold the Green Technology and Social Awareness Events, including Policy Dialogue, Training Course, Workshops, and On-site Technical Practice (Self-Fund) in Chinese Taipei, on March 22-24, 2023.

The events will be held major in physical meetings for Policy Dialogue, Workshops and on-site participants in Chinese Taipei, and a hybrid format for online oversea participants in the Training Courses. The goal of APEC-EWG shall be to deliver the best practices, enhance energy access, and accelerate renewable energy technologies in indigenous community activities in APEC regions. This project meets the priorities of APEC New Zealand 2021, increasing inclusion and sustainability for recovery by building a better society for all people and generating green energy applications. It focuses on activities that will enhance energy resiliency, highlighted the importance at the APEC Energy Ministerial Meeting in 2015, and energy access underlined by the APEC Leaders Meetings in 2016, 2017, and 2020. We hold this 3-day event for all APEC economies to exchange ideas and share their progress, with the aim of the reproduction and sustainable development of human beings and other species. Apart from these, our goal is to realize APEC's policy of promoting a circular economy and sustainable communities and continue to contribute to the sustainable development of the world. We invited around 100 experts and participants from 14 APEC economies and 2 Non-APEC members such as China, Chile, Hong Kong China, Indonesia, Japan, the Republic of Korea, Malaysia, Papua New Guinea, The Philippines, Russia, Thailand, Chinese Taipei, USA, Viet Nam, Ecuador, and Italy to join the events. In the face of global issues, as members of the global village, let us take responsibility together and look forward to the future of mankind!

Hopefully, all of you may enjoy our 2023 Green Technology and Social Awareness Events.

Project Overseer

Prof. Dr. Chen-Yeon CHU

Director of Institute of Green Products,Feng Chia University, Chinese Taipei.

Organizers and Sponsors

Supervisor

Organizer

Implementer

Co-Sponsors

Project Team

Project Overseer	
Prof. Dr. Chen-Yeon CHU	Feng Chia University
Project Manager	
Dr. (cand) Alicia SINSUW	Feng Chia University
Consultant	
Prof. Dr. Keng-Tung WU	Chung Hsing University
Researchers	
Prof. Dr. Yi-Yuan William SU	Chief R&D Officer and Chief Legal Counsel Inceight Inc.
Prof. Dr. Ching-Ming LAI	Chung Hsing University
Dr. Pi-Fuang CHEN	CEO for Zolargus Co. Ltd.
Secretariat	
Mr. Yu-Hsuan CHIANG	Event Coordinator
Mr. Jayen Aris Kriswantoro	Event Assistant, FCU
Ms. Shih-Yun CHANG	Event Assistant, FCU
Ms. Diana Victoria Arellano Yasaca	Event Assistant, FCU
Ms. Kuan-Yin PAN	Event Assistant, FCU
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Mr. Chiung-Hao TSENG	Event Assistant, FCU
Mr. Cheng-Han Michael LIU	APEC ACABT
Ms. Hui-Chen Renee CHIU	APEC ACABT

Agenda

Asia-Pacific Economic Cooperation

EWG 14 2021A

APEC Workshop of Empowering Indigenous Social Awareness
on Renewable Energy and Increasing Inclusion Sustainability
for Green Energy Applications in APEC Regions

22-24, March, 2023 | Taichung City, Chinese Taipei

Wednesday, 22 March 2023 – Day 1	
08:30 – 09:20	Registration
09:20 – 09:50	Welcoming Remark ● Dr. Chi-Wen Liao, APEC EGNRET Chair ● Dr. Chung-Hsien Chen, Director, Bureau of Energy, Chinese Taipei. ● Prof. Dr. Chen-Yeon Chu, Project Overseer, Director of Institute of Green Products, Feng Chia University ● Group Photo
Policy Dialog	
09:50 – 10.30	Topic 1: Aboriginal land planning and climate change Utilization of thinning timber and its residues in indigenous cultural area of the Experimental Forest Speaker 1: Dr. Fang-Chih Chang, Research Fellow, NTU, Chinese Taipei. Speaker 2: Dr. Francesco Petracchini, Director CNR - IIA, Italy.
10:30– 10:40	Coffee Break
10:40 – 11:20	Topic 2: Agricultural waste management and bioenergy in the aboriginal area Speaker 1: Mr. Francisco Merino, Head of the Dialogue Processes and Indigenous Consultation and Participation Unit of the Ministry of Energy, Chile. Speaker 2: Assoc. Prof. Keng-Tung Wu, NCHU, Chinese Taipei.
11:20– 12:00	Topic 3: Renewable energy technology and regulations in the aboriginal area - Green Architecture in Indonesia Speaker 1: Prof. SANGKERTADI, Vice Rector, UnSRAT, Indonesia Speaker 2: Dr. William Yi-Yuan Su, Chief R&D Officer and Chief Legal Counsel Inceight inc.,

	Chinese Taipei.
12:00– 12:30	**Panel discussion (Moderator: Dr. William Yi-Yuan Su)** Expert 1: Assoc. Prof. Dr. Weerapon Thongma, President of Maejo University, Thailand. Expert 2: Ms. NGUYEN Thi Hieu, Multilateral Trade Policy Department, Ministry of Industry and Trade, Viet Nam. Expert 3: Ms. Liza V. Pangilinan, Supervsiing Sceince Research Specialist, Department of Energy, Renewable Energy Management Bureau, Philippines.
12:30 – 14:00	**Lunch**
Virtual/Physical Training Course	
14:00 – 14:20	**Topic 1**: Introduction to SDGs **Lecturer**: Dr. Cindy Hsueh, s.School, Feng Chia University, Chinese Taipei.
14:20 – 14:40	**Topic 2**: Introduction to renewable energy - GREEN ENERGY APPLICATIONS IN RURAL AREAS AND AWARENESS ON RENEWABLE ENERGY IN MEXICO **Lecturer**: Ms. Denise Yeazul Fernández Rojas, Urban Planning, UNAM, Mexico.
14:40 – 15:00	**Topic 3**: Indigenous cultural lifestyle **Lecturer**: Ms. Reiny Antonetha, TUMBOL, HEAD of International office in UnSRAT, Indonesia.
15:00 – 15:20	**Coffee Break**
15:20 – 15:40	**Topic 4**: Increasing indigenous inclusions of renewable energy technology and regulations for green energy applications **Lecturer**: Dr. William Yi-Yuan Su, Chief R&D Officer and Chief Legal Counsel Inceight inc., Chinese Taipei
15:40 – 16:00	**Topic 5**: Agricultural waste management from indigenous cultural activities Sustainability of building material: A study case of fiber banana reinforced concrete in Manado region. Prof. Dr. Ir. ELLEN JOAN KUMAAT, Former Rector, Sam Ratulangi University, Indonesia.
16:00 – 16:20	**Topic 6**: Symbiosis energy model in the rural area Ms. Alicia Sinsuw, Assistant Professor, Electrical Engineering Dept., Universitas Sam Ratulangi, Indonesia.
16:20 – 16:30	**Closing Remark & survey**
16:30 – 18:00	**Spare time**
18:00 – 20.30	**Dinner (invited only)**

Thursday, 23 March 2023 – Day 2 Workshop I	
08:30 – 09:00	**Registration**
09:00 – 09:30	**Topic 1**: Bioenergy from Biomass for Rural Community- BIOMAN. Biogas Manado Dr. Liny Tambajong, Manado Eco Green Community & Circular Economy, Indonesia
09:30 – 10:20	**Topic 2**: Green Cultural Life Speaker 1: Prof. Dr. Hanilyn Aguilar Hidalgo, Professor, College of Economics and Management, Central Bicol State University of Agriculture, Philippines. Speaker 2: Mr. Yuan-Horng, NA, Manager, Jin-Du Restaurant, Chinese Taipei.
10:20 – 10:40	**Coffee Break**
10:40 – 11:10	**Topic 3**: Sustainable Renewable Energy for Indigenous People Speaker 1: Dr. Cristhian Chicaiza-Ortiz, Assistant professor at the Universidad Regional Amazónica IKIAM (Amazon Regional University IKIAM), Ecuador.
11.10 – 12:00	**Topic 4**: SME Entrepreneurship Speaker 1: Dr Eros Manzo, Responsible of international cooperation of CNR-IIA, Italy. **Topic 8**: Scale-up Agricultural waste of bioenergy technology Prof. Dr. Dwi Susilaningsih, Senior Researcher at the BRIN, Indonesia.
12:00 – 13:30	**Lunch**
13:30 – 14:00	**Topic 5**: Green Vehicles Application in rural areas Assoc. Prof. Dr. Ching-Ming Lai, NCHU, Chinese Taipei.
14:00 – 14:30	**Topic 6**: Microgrid applications in the rural area; **Topic 9**: Integration of Renewable energy into microgrid system Mr. Kenny Tseng, CEO for Mobii Green Energy Co., Ltd., Chinese Taipei.
14:30 – 15:00	**Topic 7**: Scale-up of solar PV in the rural area Dr. Pi-Fuang Chen, CEO for Zolargus Co. Ltd., Chinese Taipei.
15:00 – 15:20	**Coffee Break**
15:20 – 15:50	**Topic 2**: Green Cultural Life-Introduction to Taiwan Indigenous Tribe Contemporary Artist (Indigenous expert/speaker) Speaker 3: Mr. Yosifu Kacaw, Taiwan Indigenous Amis tribe Contemporary Artist, Chinese Taipei.
15:50 – 16:20	**Topic 4**: SME Entrepreneurship (Indigenous expert/speaker) Speaker 2: Dr. Wei-Chieh Hua, General Manager, Splendid Marketing LtD., Chinese Taipei.
16:20 – 16:50	**Closing Remark & survey**
18:00 – 20.30	**Dinner (Banquet)**

Prof. Dr. Ir. Ellen Joan Kumaat

Former Rector, Sam Ratulangi University, Indonesia

Agricultural waste management from indigenous cultural activities- Sustainability of building material: A study case of fiber banana reinforced concrete in Manado region

I Data Pribadi

Nama Lengkap	:	*Prof DR Ir Ellen Joan Kumaat MSc DEA*
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II Data Pekerjaan

Nama Perusahaan/Kantor	:	*Universitas Sam Ratulangi*
Jabatan	:	*Rektor / Staf Pengajar / Guru Besar*
Bidang/Spesialisasi	:	*Teknik Sipil / Teknik Struktur*
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III Status

Pernikahan	:	*Menikah*
Nama Suami	:	*Prof DR Ir Hieryco Manalip MSc DEA*
Pekerjaan Suami	:	*Pegawai Negeri Sipil / Staf Pengajar*
Pendidikan Terakhir Suami	:	*Doktor / Strata 3*
Anak-anak	:	

No	Nama	Pendidikan	Pekerjaan	Status
1	*Teguh Andrew Ivan Manalip BEng MEM*	*Strata 2*	*Pegawai*	*Menikah*
2	*Christine Virginie Manalip BPodM*	*Strata 1*	*Podiatrist*	*Belum Menikah*

IV Pendidikan

No	Tingkatan	Nama	Tempat	Tahun Lulus	Gelar	Keterangan
1	*SD*	*RK II Teresia*	*Manado*	*1972*		
2	*SLTP*	*RK I Bersubsidi*	*Manado*	*1975*		
3	*SLTA*	*RK Bersubsidi*	*Manado*	*1979*		
4	*S1*	*Universitas Sam Ratulangi*	*Manado*	*1984*	*Ir*	
5	*S2*	*Institut Teknologi Bandung*	*Bandung*	*1988*	*MSc*	
		Institut National des Sciences Appliquées	*Perancis*	*1990*	*DEA*	
6	*S3*	*Institut National des Sciences Appliquées*	*Perancis*	*1994*	*DR*	

V Kemahiran Bahasa Asing

No	Bahasa	Kemampuan : aktif / pasif		
		Menulis	Bicara	Mendengar
1	*Bahasa Inggris*	*Aktif*	*Aktif*	*aktif*
2	*Bahasa Perancis*	*Aktif*	*Aktif*	*aktif*

Agricultural waste management from indigenous cultural activities - Sustainability of building material: A study case of fiber banana reinforced concrete in Manado region

Ellen Joan Kumaat

Abstract

Indonesia's banana production ranks third after India and China with a total of 8 million metric tons or around 9% of world production in 2020(https://ekbis.sindonews.com). Generally, the environmental conditions of banana plantations are filled with banana stems which are left scattered and rotting after being cut down for the fruit. This concern for environmental issues that has encouraged the development of environmentally friendly alternative materials, through research on use of banana stem fiber as a substitute for steel fiber in ferrocement concrete as well as to reduce the amount of carbon dioxide (CO2) gas and other toxic gases released into the environment. Utilization of banana stem fiber in the composition of the ferrocement concrete mixture of 0.05% by weight of cement makes a significant contribution to the increase in tensile strength, which is around 70% at the age of ferrocement concrete 28 days. On the other hand, there was no significant decrease in the compressive strength of ferrocement concrete at 28 days of age, which was around 10%. Another benefit that can be obtained from the use of banana stem fiber is that besides providing additional income for banana farmers, it will also reduce the release of CO2 gas and environmental pollution.

Keywords: *Banana Stem Fiber, Ferrocement Concrete, Tensile Strength, Compressive Strength, Carbon Dioksida*