



Course Outline

Online International Training Course via Zoom Meeting

Training on Global Warming Mitigation and Adaptation by Balancing Sustainable Energy Management (GSEM)

1. **Course Title:** Training on Global Warming Mitigation and Adaptation by Sustainable Energy Management 2022

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2. **Duration:** July 7th – July 27th 2022

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3. **Background and Rational:**

TICA: Thailand International Cooperation Agency

TICA is a national focal point for Thailand's international development cooperation. TICA was established in 2004 to realize Thailand's aspiration to be a contributor of development cooperation. Believing that global challenges are best addressed by international cooperation and global partnership, today we continue to strengthen our contribution to achieve global development agenda through various capacity-building and human resources development programmes. In response to the recent changes in the global landscape of development cooperation, especially through the concept of South-South and Triangular Cooperation, TICA continues to realign our focuses in order to deliver Thailand's commitment to be a relevant partner in global agendas including the 2030 Agenda for Sustainable Development.

Organization/Institution:

Faculty of Environmental Management, Prince of Songkla University

Rational:

Global Warming is the rising of the mean temperature of the Earth's atmosphere and oceans since the late 19th century. The average surface temperature has increased about 0.8 degree Celsius since the early 20th century. The primary cause is the increasing of the greenhouse gases from fossil fuel

and deforestation. The Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) is the international treaty developed in order to reduce the greenhouse gases. With limitation of commitment, it is not enough to stabilize the greenhouse gas.

The UNFCCC was adopted on 9 May 1992 and open for signature from 4 June 1992, during the United Nations Conference on Environment and Development (UNCED), or the Earth Summit, at Rio de Janeiro, Brazil. The Convention enters into force on 21 March 1994 and currently has 197 Parties. Thailand becomes a Party in the Convention on 28 March 1995, and thereafter participates in the Conference of the Parties (COP) to this day.

The post 2015 development agenda namely 17 Sustainable Development Goals (SDG). The SDG number 7 is the affordable and clean energy. The issue of energy is much more getting attention when various studies of global warming lead the people to the conclusion that the energy consumption is one the major causes for global warming. Referring to the Act of Energy Conservation and Promotion B.E. 2535 (1992) together with the Energy Conservation and Promotion Fund, Thailand has been revealing the consciousness and awareness in energy through various programs under the ministry of energy and its departments. The academic sector by many universities in the theme of energy in Thailand is directed toward to the part of mitigation by the technology of energy conservation and renewable energy. The emphasized technology is however caused the unbalance of environmental, social, and economical issues. Thailand is facing with the problem of energy consumption growth whereas the power supply by constructing the new power plant is in the difficulty of making people understand. There is always protest by local community during the preparation or construction of the new power plant. This reflects clearly to the unbalance of three pillars of sustainability.

This course pays attention to the area of the environmental, social and economic issues. A part of this program is the 2.5-week training on Global Warming Mitigation and Adaptation by Sustainable Energy Management.

The program aims at building the concept of balancing components in sustainable development. The output of this training is to have a training filling in the gap of the overview picture of the university and country. The participants will be able to disseminate and apply the concept of sustainable energy management aiming to solve the global warming in their countries. The sustainability in view of self-direction without support from world scheme is the expected outcome.

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4. Objectives:

The program is designed to:

- To learn the balancing of sustainability among economic, social and environmental aspects.
- To exchange the international idea of global warming mitigation and adaptation
- To create the network among all participants.

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5. Course Contents:

<i>Thursday 7 – July – 22</i>	
<i>09.00 – 09.08 a.m.</i>	VDO presentation: @Faculty of Environmental Management, Prince of Songkla University
<i>09.08 – 09.15 a.m.</i>	<i>Welcome, Introduction</i> <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>
<i>09.15 – 09.30 a.m.</i>	<i>Opening of the Training</i> <i>by representative from TICA</i>
<i>09.30 – 12.00 a.m.</i>	<i>Global Warming Climate Change</i> (1) VDO presentation: <i>Location: Southern-East Coast Meteorological Center /Earthquake Observation Division</i> <i>Address: Bo Yang Sub-district, Muang District, Songkhla Province /Thepha Sub-district, Thepha District, Songkhla Province</i> <i>Dr. Md. Shahariar Chowdhury, PSU</i>
<i>13.00 – 16.00 p.m.</i>	<i>Country Report</i> <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>
<i>Friday 8 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<i>Mitigation and Adaptation</i> (2) VDO presentation: <i>Location: Trans Thai-Malaysia (Thailand) Limited</i> <i>Address: Taling Chan Sub-district, Chana District, Songkhla Province</i> <i>Dr. Md. Shahariar Chowdhury, PSU</i>
<i>13.00 – 16.00 p.m.</i>	<i>Country Report</i> <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>

Monday 11 – July – 22	
09.00 – 12.00 a.m.	Sustainable Development Goals (SDGs) (3) VDO presentation: Location: <i>Price of Songkla University</i> Address: <i>Kho Hong Sub-district, HatYai District, Songkhla Province</i> <i>Assoc. Prof. Dr. Suchada Chantrapromma, PSU</i>
13.00 – 16.00 p.m.	Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>
Tuesday 12 – July – 22	
09.00 – 12.00 a.m.	Solar PV (4) VDO presentation: Location: <i>The Price of Songkla University Saving and Credit Cooperative Limited</i> Address: <i>Price of Songkla University, Kho Hong Sub-district, HatYai District Songkhla Province</i> <i>Dr. Md. Shahariar Chowdhury, PSU</i>
13.00 – 16.00 p.m.	Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>
Wednesday 13 – July – 22	
09.00 – 12.00 a.m.	Tourism Low Carbon (5) VDO presentation: Location: <i>Emerald Pool/ Krabi Resort/ Railay Beach / Krabi lucky Windmill</i> Address: <i>Khlong Thom Nuea Sub-district, Khlong Thom District, / Ao-Nang Sub-district, Muang District, / Sai Thai Sub-district, Muang District, Krabi Province</i> <i>Dr. Pharchyakorn Chaikot / Asst. Prof. Dr. Montri Luengchavanon, PSU</i>
13.00 – 16.00 p.m.	Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>
Thursday 14 – July – 22	
09.00 – 12.00 a.m.	Solar Recycling (6) VDO presentation: Location: <i>T Solar Power Company Limited</i> Address: <i>Khuan Lang Sub-district, HatYai District, Songkhla Province</i> <i>Dr. Md. Shahariar Chowdhury, PSU</i>
13.00 – 16.00 p.m.	Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>

<i>Friday 15 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Wind turbine (7) VDO presentation: Location: <i>Energy Absolute Company Limited / Provincial Electricity Authority (PEA) / Electricity Generating Authority (EGAT) (Wind len)</i> Address: <i>Hua Sai Sub-district, Hua Sai District, Nakhon Si Thammarat Province / Ranot Sub-district, Ranot District, Songkhla Province</i> <i>Asst. Prof. Dr. Montri Luengchavanon, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>
<i>Monday 18 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Low speed vertical axis wind turbine (8) VDO presentation: Location: <i>Krabi Provincial Administrative/ Ratchaprapa Dam</i> Address: <i>Sai Thai Sub-district, Muang District, Krabi Province / Khao Phang Sub-district, Ban Ta Khun District, Surat Thani Province</i> <i>Asst. Prof. Dr. Montri Luengchavanon, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>
<i>Tuesday 19 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Biodiesel (9) VDO presentation: Location: <i>New Bio Diesel Co., Ltd.</i> Address: <i>Sawiat Sub-district, Tha Chang District, Surat Thani</i> <i>Dr. Issara Chanakaewsomboon, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>
<i>Wednesday 20 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Biomass Power Plant (10) VDO presentation: Location: <i>PHATTHALUNG GREEN POWER COMPANY LIMITED</i> Address: <i>Pa Bon Sub-district, Pa Bon District, Phatthalung</i> <i>Asst. Prof. Dr. Arkom Palamanit, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>

<i>Thursday 21 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Fuel Cell (11) VDO presentation: Location: <i>Sirindhorn Building, Faculty of Engineering / Faculty of Environmental Management</i> Address: <i>Price of Songkla University, Kho Hong Sub-district, HatYai District Songkhla Province</i> <i>Asst. Prof. Dr. Montri Luengchavanon, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>
<i>Friday 22 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Nano Technology (12) VDO presentation: Location: <i>Faculty of Environmental Management</i> Address: <i>Price of Songkla University, Kho Hong Sub-district, HatYai District Songkhla Province</i> <i>Asst. Prof. Dr. Montri Luengchavanon, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>
<i>Monday 25 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Geothermal (13) VDO presentation: Location: <i>Kantang Hot Spring Nation Park/ Krabi Hot Spring Park</i> Address: <i>Onsen Bo Nam Ron Sub-district, Kantang District, Trang Province/ Khok Yang Sub-district, Nuea Khlong District, Krabi Province</i> <i>Asst.Prof.Dr. Helmut Josep Durrast, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>
<i>Tuesday 26 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Biomass Gasification (14) VDO presentation: Location: <i>Faculty of Engineering</i> Address: <i>Price of Songkla University, Kho Hong Sub-district, HatYai District Songkhla Province</i> <i>Assoc.Prof.Dr Arkom Palamait, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>

<i>Wednesday 27 – July – 22</i>	
<i>09.00 – 12.00 a.m.</i>	<p>Conclusion (15) VDO presentation: <i>Location: Planeet Farm Co. Ltd.</i> <i>Address: Klong U-Ta Phao Sub-district, HatYai District Songkhla Province</i> <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>
<i>13.00 – 16.00 p.m.</i>	<p>Country Report <i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i></p>

6. Participants Criteria:

Applicants must fulfill the following requirement:

- Be nominated by their respective government;
- Education: All related to Energy and Environment or has relevant working experience
- Language: proficiency in English (speaking, reading and writing)

7. Attendance and Evaluation

Participants who completed the online training will receive E-certificate base on:

- Real time Online Class (not less than 80%)
- Online class participation and discussion
- Online presentation and report
- Online evaluation

8. Venue: Songkhla: Faculty of Environmental Management, Hatyai, Songkhla

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9. Expected Results:

The participant will be able to be a balancer in the future and join with the faculty of environmental management to produce at least one case of global warming solving in their countries.

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10. Organization/ Institution:

▪ **Implementing Agency;**

Faculty of Environmental Management, Prince of Songkla University

▪ **Contact Person**

Dr. Kuaanan Techato,

Faculty of Environmental Management, Prince of Songkla University, Hat yai,
Songkhla, Thailand 90110, Tel + 66-7428-6843

Email: kuaanan.t@psu.ac.th Website: www.envi.psu.ac.th

11. Expenditure/Funding:

Thailand International Cooperation Agency (TICA)

Government Complex, Building B (South Zone), 8th Floor,

Chaengwattana Rd. Laksi District, Bangkok 10210 THAILAND

Website: <https://tica-thaigov.mfa.go.th/en/index>

Email: aitc@mfa.mail.go.th

Schedule for the Online Training Programme:

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Date/ Period /Topic	Time (Thailand time)	Content	Speaker	Note
Day 1 : Thursday 7 – July – 22				
	09.00 – 09.08 a.m.	VDO presentation: @Faculty of Environmental Management, Prince of Songkla University		
	09.08 – 09.15 a.m.	<i>Welcome, Introduction</i>	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
	09.15 – 09.30 a.m.	<i>Opening of the Training</i>	<i>by representative from TICA</i>	
Global Warming – Climate Change	09.30 – 10.30 a.m.	Global Warming – Climate Change (1) VDO presentation: <i>Location: Southern-East Coast Meteorological Center /Earthquake Observation Division</i> <i>Address: Bo Yang Sub-district, Muang District, Songkhla Province /Thepha Sub- district, Thepha District, Songkhla Province</i>	<i>Dr. Md. Shahariar Chowdhury, PSU</i>	
Country Report	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
Day 2 : Friday 8 – July – 22				
Mitigation and Adaptation	09.00 – 12.00 a.m.	Mitigation and Adaptation (2) VDO presentation: <i>Location: Trans Thai-Malaysia (Thailand) Limited</i> <i>Address: Taling Chan Sub-district, Chana District, Songkhla Province</i>	<i>Dr. Md. Shahariar Chowdhury, PSU</i>	
Country Report	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	

Date/ Period /Topic	Time (Thailand time)	Content	Speaker	Note
<i>Saturday 9 – July – 22: Official Holiday</i>				
<i>Sunday 10 – July – 22: Official Holiday</i>				
Day 3 : Monday 11 – July – 22				
Sustainable Development Goals (SDGs)	09.00 – 12.00 a.m.	Sustainable Development Goals (SDGs) (3) VDO presentation: Location: <i>Price of Songkla University</i> Address: <i>Kho Hong Sub-district, HatYai District, Songkhla Province</i>	<i>Assoc. Prof. Dr. Suchada Chantrapromma, PSU</i>	
Country Report	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
Day 4 : Tuesday 12 – July – 22				
Solar PV	09.00 – 12.00 a.m.	Solar PV (4) VDO presentation: Location: <i>The Price of Songkla University Saving and Credit Cooperative Limited</i> Address: <i>Price of Songkla University, Kho Hong Sub-district, HatYai District Songkhla Province</i>	<i>Dr. Md. Shahariar Chowdhury, PSU</i>	
Country Report	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
Day 5 : Wednesday 13 – July – 22				
Tourism Low Carbon	09.00 – 12.00 a.m.	Tourism Low Carbon (5) VDO presentation: Location: <i>Emerald Pool/ Krabi Resort/ Railway Beach / Krabi lucky Windmill</i> Address: <i>Khlong Thom Nuea Sub-district, Khlong Thom District, / Ao-Nang Sub-district, Muang District, / Sai Thai Sub-district, Muang District, Krabi Province</i>	<i>Dr. Pharchyakorn Chaikot / Asst. Prof. Dr. Montri Luengchavanon, PSU</i>	
Country Report	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	

Date/ Period /Topic	Time (Thailand time)	Content	Speaker	Note
Day 6 : Thursday 14 – July – 22				
<i>Solar Recycling</i>	09.00 – 12.00 a.m.	Solar Recycling (6) VDO presentation: <i>Location: T Solar Power Company Limited</i> <i>Address: Khuan Lang Sub-district, HatYai District, Songkhla Province</i>	<i>Dr. Md. Shahariar Chowdhury, PSU</i>	
<i>Country Report</i>	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
Day 7 : Friday 15 – July – 22				
<i>Wind turbine</i>	09.00 – 12.00 a.m.	Wind turbine (7) VDO presentation: <i>Location: Energy Absolute Company Limited / Provincial Electricity Authority (PEA) / Electricity Generating Authority (EGAT) (Wind len)</i> <i>Address: Hua Sai Sub-district, Hua Sai District, Nakhon Si Thammarat Province / Ranot Sub-district, Ranot District, Songkhla Province</i>	<i>Asst. Prof. Dr. Montri Luengchavanon, PSU</i>	
<i>Country Report</i>	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
<i>Saturday 16 – July – 22 : Official Holiday</i>				
<i>Sunday 17 – July – 22: Official Holiday</i>				

Date/ Period /Topic	Time (Thailand time)	Content	Speaker	Note
Day 8 : Monday 18 – July – 22				
<i>Low speed vertical axis wind turbine</i>	09.00 – 12.00 a.m.	Low speed vertical axis wind turbine (8) VDO presentation: <i>Location: Krabi Provincial Administrative/ Ratchaprapa Dam</i> <i>Address: Sai Thai Sub-district, Muang District, Krabi Province/ Khao Phang Sub-district, Ban Ta Khun District, Surat Thani Province</i>	<i>Asst. Prof. Dr. Montri Luengchavanon, PSU</i>	
<i>Country Report</i>	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
Day 9 : Tuesday 19 – July – 22				
<i>Biodiesel</i>	09.00 – 12.00 a.m.	Biodiesel (9) VDO presentation: <i>Location: New Bio Diesel Co., Ltd.</i> <i>Address: Sawiat Sub-district, Tha Chang District, Surat Thani</i>	<i>Dr. Issara Chanakaewsomboon, PSU</i>	
<i>Country Report</i>	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
Day 10 : Wednesday 20 – July – 22				
<i>Biomass Power Plant</i>	09.00 – 12.00 a.m.	Biomass Power Plant (10) VDO presentation: <i>Location: PHATTHALUNG GREEN POWER COMPANY LIMITED</i> <i>Address: Pa Bon Sub-district, Pa Bon District, Phatthalung</i>	<i>Asst. Prof. Dr. Arkom Palamanit, PSU</i>	
<i>Country Report</i>	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	

Date/ Period /Topic	Time (Thailand time)	Content	Speaker	Note
Day 11 : Thursday 21 – July – 22				
Fuel Cell	09.00 – 12.00 a.m.	Fuel Cell (11) VDO presentation: <i>Location: Sirindhorn Building, Faculty of Engineering / Faculty of Environmental Management</i> <i>Address: Price of Songkla University, Kho Hong Sub-district, HatYai District Songkhla Province</i>	<i>Asst. Prof. Dr. Montri Luengchavanon, PSU</i>	
Country Report	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
Day 12 : Friday 22 – July – 22				
Nano Technology	09.00 – 12.00 a.m.	Nano Technology (12) VDO presentation: <i>Location: Faculty of Environmental Management</i> <i>Address: Price of Songkla University, Kho Hong Sub-district, HatYai District Songkhla Province</i>	<i>Asst. Prof. Dr. Montri Luengchavanon, PSU</i>	
Country Report	13.00 – 16.00 p.m.	Country Report	<i>Assoc. Prof. Dr. Kuaanan Techato, PSU</i>	
<i>Saturday 23 – July – 22: Official Holiday</i>				
<i>Sunday 24 – July – 22: Official Holiday</i>				

Date/ Period /Topic	Time (Thailand time)	Content	Speaker	Note
Day 13 : Monday 25 – July – 22				
Geothermal	09.00 – 12.00 a.m.	Geothermal (13) VDO presentation: Location: Kantang Hot Spring Nation Park/ Krabi Hot Spring Park Address: Onsen Bo Nam Ron Sub-district, Kantang District, Trang Province/ Khok Yang Sub-district, Nuea Khlong District, Krabi Province	Asst.Prof.Dr. Helmut Josep Durrast, PSU	
Country Report	13.00 – 16.00 p.m.	Country Report	Assoc. Prof. Dr. Kuaanan Techato, PSU	
Day 14 : Tuesday 26 – July – 22				
Biomass Gasification	09.00 – 12.00 a.m.	Biomass Gasification (14) VDO presentation: Location: Faculty of Engineering Address: Price of Songkla University, Kho Hong Sub-district, HatYai District Songkhla Province	Assoc.Prof.Dr Arkom Palamait, PSU	
Country Report	13.00 – 16.00 p.m.	Country Report	Assoc. Prof. Dr. Kuaanan Techato, PSU	
Day 15 : Wednesday 27 – July – 22				
Conclusion	09.00 – 12.00 a.m.	Conclusion (15) VDO presentation: Location: Planeet Farm Co. Ltd. Address: Klong U-Ta Phao Sub-district, HatYai District Songkhla Province	Assoc. Prof. Dr. Kuaanan Techato, PSU	
Country Report	13.00 – 16.00 p.m.	Country Report	Assoc. Prof. Dr. Kuaanan Techato, PSU	