



# THE ASIAN NETWORK FOR USING ALGAE AS A CO<sub>2</sub> SINK THE ASIAN PACIFIC PHYCOLOGICAL ASSOCIATION




## Newsletter

Issue No. 7 October 1, 2011

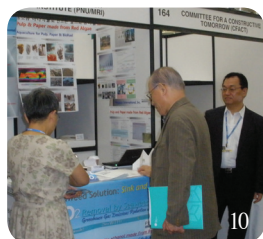
### *The Side Event of the Asian Network for Using Algae as a CO<sub>2</sub> Sink as Part of UNCCC*

The Asian Network for Using Algae as a CO<sub>2</sub> Sink of the Asian Pacific Phycological Association, Marine Research Institute, Pusan National University, Korea, and Pegasus International Inc. held an exhibition, entitled "Seaweed Solution - Sink & Swim" at Cancunmesse, Cancun, Mexico in the form of a United Nations Climate Change Conference (UNCCC) side event of the 16th session of the Conference of the Parties (COP 16) and the 7th Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 7), 29 November - 10 December, 2010.

The theme of the exhibition was as following; The Korean project 'GHG emissions reduction using seaweeds' proposes seaweeds/kelp forests as blue carbon are promising system as adaptation and mitigation measures against global warming - Seaweed sink, red algae pulp/paper and seaweed bio-fuel. The exhibition was convened by Professor Ik Kyo Chung (the side event organizer), Jin Ae Lee (the secretary, the Asian Network for Using Algae as a CO<sub>2</sub> Sink), Mr. Hack Churl You, CEO of Pegasus International, Inc. and Dr. Jong Kyu Kim, Team Leader of RCC Inc. 




1. The poster presented by the Asian Network for Using Algae as a CO<sub>2</sub> Sink of the Asian Pacific Phycological Association, Marine Research Institute, Pusan National University, Korea, and Pegasus International Inc. at the exhibition of side event held in COP 16.
- 2-3. The exhibition booth at the exhibition of side event held in COP 16.
4. The visual communication consultant, Ina Lee, worked for the exhibition.



5-11. Many professionals as well as government officials, businessmen and NGOs showed their strong interest in the exhibition.

*The Oceans Day at Cancun*  
*Essential to Life, Essential to Climate at UNFCCC COP 16*  
<http://www.oceansday.org>

The Oceans Day, co-organized by the Global Forum on Oceans, Coasts, and Islands, in association with the Global Environment Facility (GEF), the Secretaries of Environment and Natural Resources of the Mexican States of Campeche, Quintana Roo, and Yucatan, and the Secretariat of Environment and Natural Resources (SEMARNAT), Mexico was held at the Now Jade Riviera Hotel, in Cancun, Mexico on December 4, 2010. This event was the second Oceans Day in the UNFCCC context, and featured more than 20 speakers and panelists and 90 participants including representatives of governments, international organizations, business, academia and NGOs.

The 2nd Oceans Day emphasized the importance of considering oceans in the climate negotiations of the UNFCCC, featuring 3 panel discussions, 1) Implementation and financing strategies for mitigation and adaptation to climate change impacts on coastal communities and Small Island Developing States (SIDS), 2) Climate change and ocean acidification, 3) Linking the science and economics of Blue Carbon, noting the parallels between applying the concepts of REDD to blue carbon, carbon captured by marine living organisms in the coastal ecosystems for the purpose of coastal protection. <http://www.iisd.ca/download/pdf/sd/ymbvol186num1e.pdf> 




12. Biliana Cicin-Sain, Co-Chair and Head of Secretariat, Global Forum on Oceans, Coasts and Islands, opened the 2nd Oceans Day at the UNFCCC COP16, Cancun.
- 13-14. Korean delegates participated in the 2nd Oceans Day to share the importance of the science and economics of Blue Carbon with brochures related to the project “Algae and Global Warming.”



### *CO<sub>2</sub> negative solution of Bellona Foundation at UNFCCC COP 16*

The Bellona Foundation, an international environmental NGO based in Norway, organised a workshop at Moon Palace, Cancun, Mexico on Dec 6, 2010 during UNFCCC COP16. The workshop, titled “Negative emissions: Biomass CO<sub>2</sub> Capture and Storage,” presenting the solutions, so called, CO<sub>2</sub> negative solution, which capture and store biogenic CO<sub>2</sub> opens up for the possibility to produce energy and products in processes which withdraws more CO<sub>2</sub> from the atmosphere than they emit. Prof. Ik Kyo Chung was an invited speaker to the workshop and referred the uptake of CO<sub>2</sub> in the seaweeds. The Bio-CCS and Bio-coal, the Sahara Forest Project, Green energy from the

sea, and Green fuel in the air were also discussed in detail at the workshop ([http://bellona.org/articles/articles\\_2010/mustgo\\_carbonnegative](http://bellona.org/articles/articles_2010/mustgo_carbonnegative)). 



15. Prof. Ik Kyo Chung presented the uptake of CO<sub>2</sub> by seaweeds at the Bellona Foundation workshop of CO<sub>2</sub> negative solution at UNFCCC COP 16, Cancun.

### *International Symposium “Climate Change, Seaweed and CO<sub>2</sub> Sequestration”, Centum Hotel, Busan, Korea, 24-25 February, 2011*

The objective of the workshop was to 1) review the progress and development on the role of algae in climate change mitigation and adaptation, and 2) discuss on international cooperation on algae utilization, progress in marine bio-technology, CO<sub>2</sub> absorption and photosynthetic ecophysiology by seaweeds, ecological functions of seaweeds and other related topics. This symposium was supported by the Ministry of Land, Transport and Maritime Affairs (MLTM) of Korea through the Project AGW of the Marine Research Institute, Pusan National University.

#### **THURSDAY, FEB 24**

*Session 1: Current topics on the climate change related with marine vegetation*

Chairperson: Kihoon Song & Jin Ae Lee

13:30~14:00 Registration

14:00~14:10 Welcome

- 14:10~14:40 Prof. Dinabandhu Sahoo (University of Delhi, India): Current issues related climate change and algae in India
- 14:40~15:10 Dr. Vu Thanh Ca (VASI, Vietnam): Seaweed-culture and climate change mitigation in Vietnam
- 15:10~15:40 Dr. Wendy Nelson (NIWA, New Zealand): Current activities focusing on climate change and algal biodiversity
- 15:40~16:10 Dr. Arai Shogo (NIFTY, Japan): Kelp forests - restoration and management
- 16:30~17:00 Dr. Won-Tae Shin (KMI, Korea): Climate change related activities in the EAS region

17:00~17:30 Dr. Phaik Eem Lim (University of Malaya, Malaysia): Current activities of climate change and algae in Malaysia

17:30~18:00 Prof. Ik Kyo Chung (Pusan National University, Korea): Seaweed solution - mitigation and adaptation measures

#### FRIDAY, FEB 25

##### *Session 2: Round table discussion “Climate Change, Seaweed and CO<sub>2</sub> Sequestration”*

Chairperson: Dr. Won-Tae Shin

10:30~10:45 Invited Speaker: Prof. Ik Kyo Chung (PNU, Korea) Introduction of the Korean Project - Greenhouse gas emissions reduction using seaweeds

10:45~12:00 Panel discussion

Moderators: Dinabandhu Sahoo and Won-Tae Shin

Invited panels:

Prof. Dinabandhu Sahoo (Univ. Delhi, India)

Dr. Arai Shogo (NIFTY, Japan)

Dr. Won-Tae Shin (KMI, Korea)

Dr. Vu Thanh Ca (VASI, Vietnam)

Dr. Phaik Eem Lim (UM, Malaysia)

Dr. Wendy Nelson (NIWA, New Zealand)

Korea Project Participants:

Ik Kyo Chung, Jung Hyun Oak, Sang-Rae Lee (PNU)


Jin Ae Lee (Inje Univ.)

Kwang-seok Park, Heon-Woo Park (RIST)

Jong Kyu Kim (RCC)

Hack Churl You (Pegasus Int. Inc.)

Jong-Ahm Shin, Tae-ho Seo (CNU)

Kihoon Song (NA) 



16. Group photograph of the participants in the International Symposium “Climate Change, Seaweed and CO<sub>2</sub> Sequestration” at Centum Hotel, Busan, Korea, 24-25 February, 2011.


17. Prof. Ik Kyo Chung introduced the final product of the Korean Project - Greenhouse gas emissions reduction using seaweeds.

18. The participants having an preliminary meeting at Centum Hotel on Feb 23, 2011.

19. The second part of the symposium was the round table discussion “Climate Change, Seaweed and CO<sub>2</sub> Sequestration,” and the rapporteur was Dr. Wendy Nelson.

### *The 8th IOC/WESTPAC “Ocean Climate and Marine Ecosystems in the Western Pacific”*

The 8th IOC Sub-Commission for the Western Pacific (IOC/WESTPAC) convened International Scientific Symposium, entitled Ocean Climate and Marine Ecosystems in the Western Pacific at Paradise Hotel in Busan, Korea, 28-31 March, 2011. The objective of the Symposium was to bring together marine scientists, particularly young scientists inside and outside the region with a view to encouraging an interdisciplinary approach towards the management and sustainable development of coasts and oceans with growing challenges of climate change. The sub themes of the symposium were ocean and coastal observation, ocean and coastal acidification,


climate modeling and prediction, air-sea interaction and coupled air-wave sea modeling and prediction, anthropogenic impacts and climate change, marine remote sensing, adaptation to coastal disasters related to climate change, paleoclimatology, dynamics of coral reefs and changing forcing, sediment dynamical processes and coastal erosion, marine biogeochemistry, marine biodiversity and conservation, climate change impacts on fisheries, and environmentally sustainable aquaculture ([http://www.kocean.or.kr/westpac\\_symposium](http://www.kocean.or.kr/westpac_symposium)). 



20. The 8th IOC/WESTPAC convened international scientific symposium entitled “Ocean Climate and Marine Ecosystems in the Western Pacific” at Paradise Hotel in Busan, Korea, 28-31 March, 2011.
21. Prof. Ik Kyo Chung presented “Metagenomic analysis reveals cryptic plankton biodiversity from the coastal and oceanic seawater of Korea” as part of the product of the Project “Algae and Global Warming” at the 8th IOC/WESTPAC.



## What are the colors of the carbon?


What are the colors of the carbon? For more information, please refer to the GRID-Arendal (<http://www.grida.no>) and Nellemann et al. (2009). The print version of Blue Carbon translated into Korean language would be forthcoming soon by the Project “Algae and Global Warming-Greenhouse Gas Removal by Seaweeds”. Nellemann, C., Corcoran, E., Duarte, C. M., Valdées, L., De Young, C., Fonseca, L., Grimsditch, G. (Eds). 2009. Blue Carbon-The healthy ocean in binding carbon. United Nations Environment Programme (ISBN: 978-82-7701-060-1). 

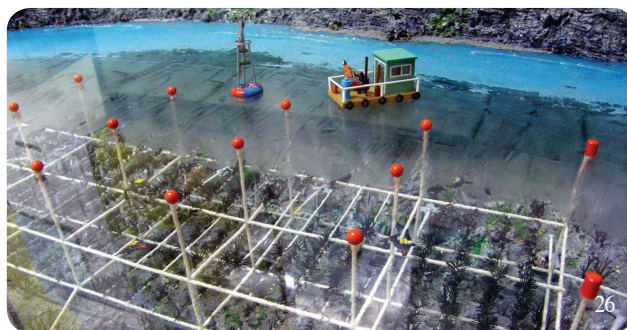
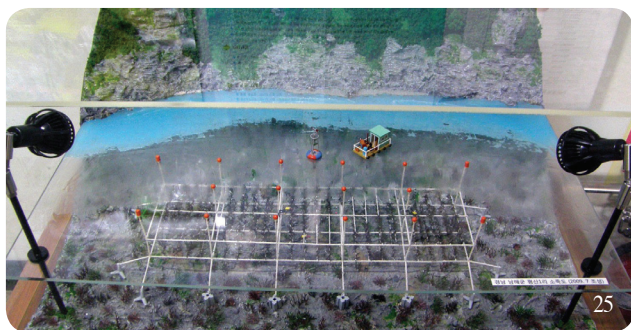


22-24. The selective photos on the blue carbon (Nellemann *et al.* 2009).

## Development of the Algae CDM Methodology and PDD Draft

Documentation of KERRC (Korean Emission Reduction Registry Center) project, writing the PDD draft of a pilot seaweed farm and the production of seaweed pulp has been carried out in the Project “Algae and Global Warming-Greenhouse Gas Removal by Seaweeds”. The document of the PDD draft of a pilot seaweed farm for prior consideration of the CDM to DNA and UNFCCC was submitted on 6th October, 2009. The project proponent was

Institute for Research & Industry Cooperation, PNU, Republic of Korea, and the estimated annual GHG reduction was 7.82 - 15.99 tCO<sub>2</sub>e/yr. The document of the PDD draft of the production of seaweed pulp for prior consideration of the CDM to DNA and UNFCCC was also submitted on 10th October, 2009. The applied methodology was AMS-II.D ver 7 and the project proponent was PEGASUS International. 



25-26. A scale model of the seaweed-CDM farm.

## UPCOMING EVENTS

- 1) **The 6th Asian Pacific Phycological Forum**, October 9-14, 2011, The Ocean Resort, Yeosu, Korea (<http://www.appf2011.org>)



- 2) **United Nations Climate Change Conference, COP17** (The 17th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), 28 November - 9 December 2011, Durban, South Africa ([http://unfccc.int/meetings/cop\\_17/items/6070.php](http://unfccc.int/meetings/cop_17/items/6070.php))

### *The media and the Asian Network for Using Algae as a CO<sub>2</sub> Sink, Asian Pacific Phycological Association*

Professors Ik Kyo Chung and Jin Ae Lee discussed the kelp forests and blue carbon promises adaptation and mitigation measures against global warming at UNFCCC Climate Change Studio, Climate Change-TV, COP16, December 2010 (<http://www.climate-change.tv/ik-kyo-chung-and-lee-jin-ae>).



27. Professors Ik Kyo Chung and Jin Ae Lee at Climate Change-TV.

### *The publication and the Asian Network for Using Algae as a CO<sub>2</sub> Sink, Asian Pacific Phycological Association*

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## Using marine macroalgae for carbon sequestration: a critical appraisal

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