

## **SEAWEED SOLUTION: Sink and Swim!**

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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.

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## **SEAWEED: COASTAL CO<sub>2</sub> REMOVAL BELT IN KOREA**

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In Korea, marine algae are considered to be model organisms in research related to global warming because they fix a prodigious quantity of CO<sub>2</sub>. The project 'Algae and Global Warming (AGW): Greenhouse Gas (GHG) Emissions Reduction Using Seaweeds,' also known as 'Project: CO<sub>2</sub> Removal by Seaweed' or the 'Seaweed Clean Development Mechanism (CDM) Project,' funded by the Korean Ministry of Land, Transport and Maritime Affairs, has been ongoing since June 2006. The purpose of AGW is to utilize seaweeds as GHG emissions reduction instruments and to develop practical plans for the CDM – Project Design Document (PDD) in the Kyoto Protocol.

The first stage of AGW takes ground-breaking research on seaweed biology and ecology to establish new methodologies of baselines and monitoring plans and to create an international consensus that seaweeds should be recognized as a GHG sink.

Benchmarking of forests and Afforestation/Reforestation (A/R) in land is a good place to start for the Seaweed CDM. However, a new paradigm for marine A/R as well as for estimation of CO<sub>2</sub> removal by seaweeds should be presented.

In order to institute a practical seaweed CDM, the concept of the Coastal CO<sub>2</sub> Removal Belt (CCRB) has been newly developed. The concept behind the CCRB is that (1) it can be located in the vicinity of the coastal region; (2) it can be a natural and/or man-made plant community that conducts CO<sub>2</sub> removal like a forest, and (3) it is defined with respect to the various levels of the spatio-temporal scales. The operational definitions are as follows: (1) the CCRB should be an additionally constructed man-made marine plant community that is managed by the CDM Project participants; (2) the CCRB has a definite area or volume designated in the PDD with the CDM EB's approval; and (3) the CCRB is operated during

the proposed crediting period. As the above is a newly introduced concept, open discussion is required.

Recently, the Asian Pacific Phycological Association has launched a Working Group — ‘The Asian Network for Using Algae As a CO<sub>2</sub> Sink’ — for the purpose of collaborative R&D on the use of algae to remove CO<sub>2</sub>. In the near future, any country wishing to participate in the Seaweed CDM must designate a National CDM Authority to evaluate and approve projects and to serve as a point of contact. Although the Asian Pacific Phycological Association’s Working Group should provide general guidelines on baselines and additionality, each country has the responsibility to determine the national criteria for project approval. The national CDM Authority must issue the necessary statements that the project developers participate voluntarily in the project and also must confirm that the project activity assists the host country in achieving sustainable development.

As seaweeds have been recognized for their utility as CO<sub>2</sub> sinks, sustainable seaweed aquaculture has become an important prerequisite, and therefore, sustainable seaweed-integrated multi-trophic aquaculture could be a practical way to develop a CCRB in coastal waters.