Development of Biomass Utilization in Asia

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Promotion of the Asian Environment and Energy Partnership

With booming economic development spurring energy consumption in Asian countries, it is estimated that this region will be the biggest global energy consumer by 2030. A global environment forecast is that by 2030, China will surpass the United States as the country with the highest CO_2 emissions in the world. And it is estimated that CO_2 emissions in developing countries will increase to be three times those of developed countries by 2100.

In the common and urgent "environment and energy" issues in Asia, it is important that relevant organizations from each country promote projects such as an integrated technical system, integrated evaluation techniques, and the introduction of standards and specifications, with the view of fostering mutually complementary relationships, the creation of new industries, and the establishment of international standardization. These projects should take into consideration biomass, a distributed energy network (including the use of fuel cells, photovoltaics, biomass, and hydrogen energy), clean fuels and engines that contribute to the improvement of the atmospheric and global environment, environmental friendliness, energy efficiency, and economic production efficiency. AIST also is concluding comprehensive research agreements with principal organizations.

The Asian region has the largest biomass resources in the world. Important tasks in this region are the promotion of sustainable biomass production, the creation of a circulation system of renewable energy and useful products, and to make this system practical by the mutual collaboration of Asian countries and research institutions (including the collaboration between agricultural and industrial sectors) with the aim to prevent global warming and improve energy efficiency. AIST is collaborating with individual research institutes from each country, and also multi-nationally promoting the development of "Biomass-Asia." We believe that AIST can contribute to the creation of a sustainable and global industrial structure by promoting an Asian environment and energy partnership.

Strategic Development of Biomass-Asia

The conventional mass production/mass consumption/mass disposal social system dependent on fossil resources has worsened various environmental problems such as global warming, waste, and toxic substances. Therefore, the utilization of biomass that is a renewable organic resource has become more important.

To advance "Biomass-Asia" (Fig. 1) leading to a post-petroleum society, AIST is promoting the collaboration between the agricultural and industrial sectors, and also between industry, the academic world, and governmental services in Japan. We are making efforts to create a network with the administrative bodies and principal research institutions of Asian countries, and to establish biomass utilization strategies by collaborating with Asian countries.

Asia is endowed with abundant biomass resources (Fig. 2) due to its climate, etc., with more than 30% of the world's biomass resources distributed in this area. However, it is worrying that in many Asian countries, rapid economic development and rising population result in increased energy

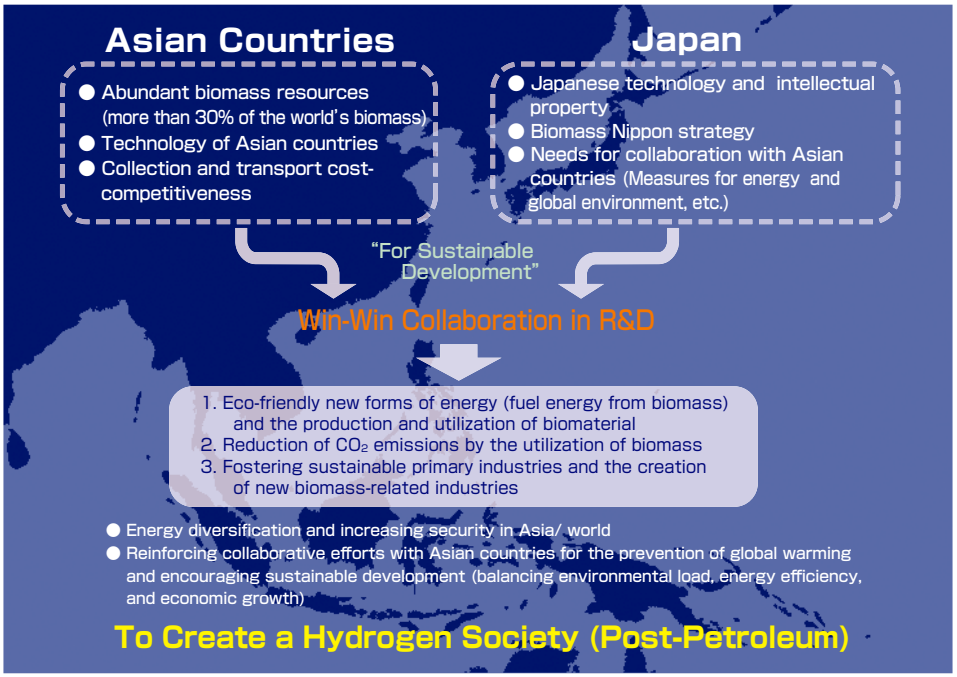

Fig.1 : Diagram of Biomass-Asia Outline

consumption and greenhouse gas emissions. The destruction of land in some parts of Asia is accelerated by desertification and deforestation. Therefore, there is a growing need to create a biomass production system aimed to prevent desertification and to help in the regeneration of forests. The establishment of biomass utilization techniques, the creation of a well-grounded recycling-based and sustainable eco-friendly society, and designing sustainable agriculture, forestry, and fishing industries in the Asian region are essential.

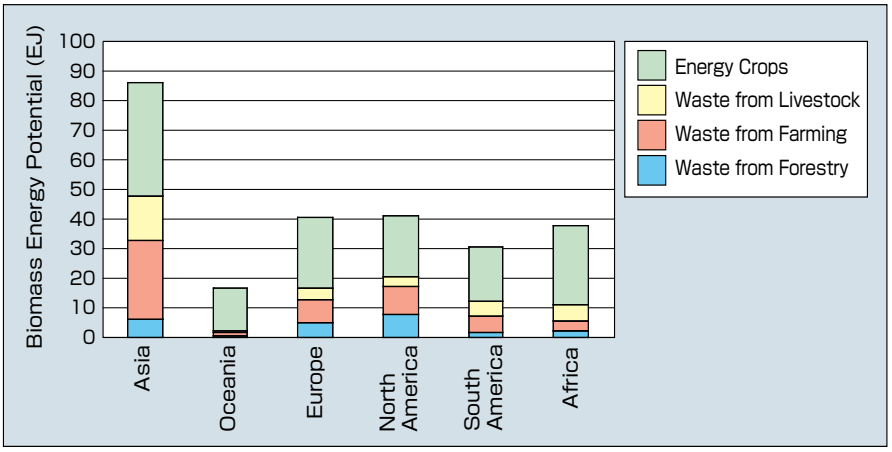

Fig.2 : World Biomass Energy Resources by Region
EJ (Exajoule) = 10^{18} Joule. 1 EJ is equivalent to 26,200,000 kL of crude petroleum.

As a concrete solution to the issues, with the initiative of AIST, the "Biomass-Asia Workshop 2005" was held in Japan in January, 2005. It was a large-scale project attended by administrators and researchers related to biomass utilization in Asian countries and Japanese related organizations, e.g. Ministry of Agriculture, Forestry and Fisheries (MAFF), Ministry of Economy, Trade and Industry (METI), Ministry of Education, Culture, Sports, Science and Technology (MEXT), AIST, 5 MAFF related institutes, University of Tokyo, Research Institute of Innovative Technology for the Earth (RITE), and Japanese organizations from the industrial sector. For detailed information, please refer to http://unit.aist.go.jp/internat/biomassws/01workshop/. In the workshop, the establishment of a network with each country was discussed and the course of industrial and agricultural policies as well as future research and development in the biomass field were clarified through an exchange of opinions and technical expertise. For the first time in Asian countries, this workshop made possible the establishment of a network between government bodies and research institutes in the biomass field. It revealed the actual progress of activities related to biomass and the technical issues facing each country and organization.

The second workshop (Photo. For detailed information please refer to http://unit.aist.go.jp/internat/biomassws) was held in Thailand in December, 2005. Under the initiative of the Minister for Science and Technology in Thailand, the structure to promote the development of Biomass Asia was established with collaboration between related Thai ministries. Each country's governmental representatives presented their political course in the area of biomass and their best trial cases of biomass utilization, with the exchange of opinions concerning R&D (research and development) on specific issues.

The third workshop to expand on the topics will be held in Japan in November, 2006.

Photo : The Second Biomass-Asia Workshop (held in Thailand, December, 2005)
Prof. Nakajima, Vice-President of AIST is the third from the right.

Further Network Reinforcement

In the future AIST will initiate the creation of a network and the establishment of a partnership for "Biomass-Asia", promote the planning of international joint projects which are mutually complementary and benefit both Japan and Asian countries, contribute to the sustainable development of our country through energy diversification and security stabilization in Asia and the world, contribute to the prevention of global warming and forge collaborative reinforcement activities with Asian countries.

Especially in the creation of a network, we regard as important a highly skilled personnel network and will promote the exchange of qualified human resources in Asia by using the AIST fellowship program begun in 2005 and JICA's new group training course "Research on Biomass Technology" which will begin in 2006.