

Keynote Speech
Thailand's Policies to Promote Bio-plastics
By
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Deputy Secretary-General
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**Excellencies,
Distinguished Guests and Participants,
Ladies and Gentlemen**

1. It is a great honor for me to take part in this important event – an event important for the innovation in general and for Thailand in particular. I had the opportunity to walk through the many exhibitions here and I am very impressed to see the variety of technologies and products of bio-plastics used in our daily life and environment. I am sure the activities lined up in three days will reveal the enormous possibilities Thailand has to offer in innovation of bio-plastics, both for research and for industry. And I also thank you for giving me to share my experience on bio-plastics industry policy. [1]

Ladies and Gentlemen

2. Let me start my presentation today with the world plastic situation and its environmental problems in order to see the future trend of bio-plastic production. At present, the global plastic consumption is more than 200 million tons a year and is growing at a rate above 5%. Although plastic products are convenient and cheap, they do not degrade easily. A large amount of plastics have been used resulting in a large quantity of plastic waste, which makes it difficult to handle. Plastic related problems stemmed from the use of CFCs which destroyed ozone in the atmosphere and created problem concerning nondegradable plastic waste left to become national and international environment problems. Therefore, plastic waste problems currently receive more attention. [2/3]

3. There are 2 major types of plastic waste management technology namely the complete destruction method and the recycling method. The recycling method was very interesting among developing countries since it could reduce plastic waste as well as conserve natural resources. The kinds of innovation adopted in Thailand are the landfill and incineration method for plastic waste and the appropriate plastic recycling and degradation. In the past, recycling of the plastic waste under global standard was proposed, the economic viability, however, obstructs the implementation. Combining the current situation of the crude oil price and the realization of the finite petroleum resources with international and national environmental issue, the biodegradable plastics have introduced their own opportunity as alternatives to petroleum-based plastics. [4/5/6]

4. Furthermore, during the past decade, the success of the biodegradable plastic technologies has motivated the rapid growth of bio-plastic products in the market. Let me just give you a few example. In EU, the shares of the specific biodegradable products such as packaging, agricultural films, bottles, and service-ware are remarkable and already reached one percent of the total plastic products. The current global production capacity for biodegradable materials is approximately 300,000 tons and it is estimated that total will be as high as 550,000 tons in 2008. [7]

Ladies and Gentlemen

5. The impact of plastic waste problems and of the biodegradable plastic technologies success on economies and societies are considered as an opportunity for our country –Thailand - to support its economic restructuring because Thai government recognize the need for biodegradable plastics and the potential for rapid growth. Thailand's strengths to support the development of bioplastic industry are in five areas as follows. [8/9]

6. **First**, Thailand is a biomass-rich country where our production capacity of agricultural raw materials such as rice, cassava, and sugar cane is ranking at the top in the world market. Compared to the other agricultural raw materials, cassava starch is the most competitively priced raw material. At present, cassava production is about 17 million ton a year or 8% of total world production. About 73.5% of the production is exported and is the world's largest exporter. The most important market is the European Union (EU). Thus cassava becomes one of the most important cash crops of Thailand. [10/11/12/13]

7. **Second**, the well-established and strong plastics industry and business is another supportive factor to initiate the new wave biodegradable plastic industry as evidenced from its export value record of as high as US\$1.5 billion in 2003. Thailand's plastic industry has been largely growing up in response to the overseas sharp-rising demands. Market value grew nine fold during 1996-2003 while production quantities grew five fold in the same period. At present total market value is more than 200,000 million baht (or 5 billion US\$). Therefore, share of plastic products could reach up to 4 percent of the world plastic products and become the Asia's largest producer. [14/15/16]

8. **Third**, Thailand also has its own potential of the technology development as the universities and research institutes have started the researches in productivity from upstream to downstream of key technologies such as bioseparation and biotransformation technologies. The government gives priority to produce adequate manpower for science and technology as well as to grant financial support with directive research areas. Many Thai universities and government institutes conduct research and development in these areas such as MTEC, BIOTEC, and Kasetsart University and so on. Thailand, therefore, has fair achievements in R&D in these areas, mostly at adaptive level. Also in the near future, we are going to have more than 100 researchers and 400 students. [17/18]

9. **Fourth**, yet another strength relates to the issue of international alliances, particularly. Thailand recognizes that working closely with international alliances is an important supportive factor to speed up technology licensing and transfer from abroad. Many companies are attaching more importance to technology as a factor in competitiveness. [19/20]

10. **Fifth**, according to the global situation and Thailand's strengths as mentioned above, Thai government has pursued bio-plastic industry policy and strategy so as to create demand for bio-plastic products, and to reshape a better and highly competitive structure for this industry. The current policy emphasize both hardware and software infrastructures. To be more precise, the Board of Investment (BOI) is a sole authorized agency who grants investment incentives through tax concessions and other privileges. BOI has recently revised the policy to give more emphasis on strengthening of technology, especially by providing incentives for import of new and more efficient machinery and technology, transfer of technology to Thai personnel and establishment of R&D programs. Other incentives for technology development include a higher depreciation rate for imported machinery for R&D purposes. Low-interest rate loans for R&D and venture capital for small and medium-size business are also available from the National Science and Technology Development Agency (NSTDA) and the Ministry of Science and Technology. [21/22]

Ladies and Gentlemen

11. For recent actions to provide the base for sustainable development, Thai government has restructured its industry and attached more importance to technology/knowledge as a factor in competitiveness. This is because Thai industries have traditionally relied on abundant raw materials and a cheap labor force in which these two factors are now losing to competitors in the region. [23]

12. Therefore, the government consigned NESDB to set national economic and social restructuring framework for 4 years (2005-2008) which was endorsed by the Cabinet on January 11, 2005 and consigned NESDB to formulate industrial restructuring strategy. On January 12, 2006, the Industrial Restructuring Committee endorsed those strategies and authorized NESDB to cooperate with other government agencies concerned to develop a roadmap for potential and new wave industries. [24]

13. One of the new wave industry endorsements is the development of biodegradable plastic industry. The ultimate goal in the next 15 years is that Thailand will be one of the regional principal leaders in the biodegradable plastic industry. In order to achieve the goal, NESDB has cooperated with the National Innovation Agency, the Ministry of Science and Technology to develop "National Roadmap of the Development of biodegradable plastics industry and business for 15 years". [24]

14. The roadmap is separated into three phases: [25/26]

Phase I 2006-2011, the vision for this phase is that the development of biodegradable plastics as a New Wave Industry is accelerated.

Phase II 2012-2016, the vision is that the technology and cooperation are developed and biodegradable plastics becomes a major industry.

Phase III 2017-2021, the vision is that Thai biodegradable plastics business becomes competitive on global scale.

15. Strategies roadmap for the initial phase in the first 5 years starting from 2006-2011 is formulated to achieve related technologies, industries, investment and market share, which will lead to the business models for over 5 billion baht of economic value. The Roadmap proposes 4 concrete strategies on the following. [27]

16. Firstly, supply of agricultural raw materials, there are 4 action plans to ensure sufficient and continuous supply of agricultural raw materials namely, [28]

- Productivity improvement of raw materials,
- Creating pioneer farming zones to maximize productivity and efficient supply to industry,
- Transferring necessary agricultural knowledge and technology to farmers, and
- Providing suitable agricultural input, and managing supply of raw material in sufficient quantities to meet industrial demand.

17. Secondly, development and invention of technology, three aims for this strategy, including to obtain, develop necessary technologies and to create intellectual property with value in the commercial market. In order to achieve these goals, six action plans are [29]

- Studying feasibility of technology, industry and business,
- Supporting industry to license necessary technology,
- Supporting knowledge transfer to private sector to create skilled workforce,
- Building strong research community,
- Creating biodegradable plastics research and technology database, and
- Supporting filing of intellectual property developed.

18. Thirdly, innovation of industry and business with three aims include establishing plants for industries, obtaining investment in biodegradable plastic industries and business, and developing domestic and foreign markets for biodegradable polymer resins and products. To achieve the goals, six action plans are [30]

- Supporting joint ventures between Thai and foreign manufacturers for the establishment of plants for upstream and intermediate industries,

- Supporting Thai downstream manufacturers to expand their business into the area of biodegradable plastics industrial estate,
- Supporting establishment of biodegradable plastics industrial estate,
- Creating industrial and business information center,
- Promoting biodegradable plastics products to the public such as using media advertisements, and
- Supporting establishment of Thai Bio-plastics Society

19. Fourthly, establishment of supportive infrastructure, three aims include: facilitating private sector to establish biodegradable plastics industry, promoting environmental protection, and supporting private sector to set their biodegradable standards and test centers. To achieve the goals, four action plans include: [31]

- Reviewing and revising the law and regulation that can be barrier to private sector for establishment of biodegradable plastics industry,
- Promoting and creating demand for biodegradable plastics such as in packing, electronics appliances, automobile and so on,
- Enhance awareness of biodegradable plastics contribution to environment protection such as exhibitions and campaigns, and
- Establish biodegradable standards and test centers.

20. This roadmap will be endorsed by the Industrial Restructuring Committee in the forthcoming meeting as soon as possible.

21. To summary, the linkage between agriculture and manufacture sector for value creation of agricultural products is one of conceptual development framework for the Tenth National Economic and Social Development Plan (2007-2010). This national plan will be another direction to support this industry and business because agricultural products are its main raw material. If value chain of cassava could be fully created, it is expected that the value of cassava will be increased by 350%. [32]

Ladies and Gentlemen

22. With our concerted efforts among government agencies, private sector, and academic communities, I am confident that the biodegradable plastic industry will be one of our future industries that would contribute greatly with high value to our green and wealthy society in the next five years in Thailand. [33]

Thank you very much for your kind attention.