1. INTRODUCTION

1.1 Background

A Working Group (WG) of experts and researchers, supported by ERIA since 2007, is engaged in research and discussions on "Sustainable Biomass Utilisation Vision in East Asia." The WG produced a report [1], which listed seven major policy recommendations for sustainability of bioenergy in the East Asian region.

Based on these policy recommendations and the background studies conducted by the WG, "Asia Biomass Energy Principles" were framed and reported to the East Asian Summit of Energy Ministers and endorsed by the Ministers in August 2008. The Ministers requested ERIA to develop a methodology for assessing the environmental, economic and social sustainability in production and utilisation of biomass taking into account specific regional circumstances at the meeting. In response to this, the WG initiated investigations for developing "Guidelines to Sustainability Assessment of Biomass Utilisation in East Asia."

1.2 Discussion

Sustainable development is of utmost importance and a serious concern world over. Any development activity that is not appropriately implemented and managed could lead to environmental disaster. There is a possibility of negative environmental impacts of using biomass as feedstock for production of biofuels. And therefore, policy makers should think about the sustainability of biomass projects prior to framing the relevant policies. The assessment methodology for the sustainability is a key decision-support tool. The WG adopted the definition of "sustainable development" from "Our Common Future" of the UN World Commission on Environment and

[1] "Sustainable Biomass Utilisation Vision in East Asia"; ERIA Working Group, ERIA Research Project 2007 No.6-3, pp1-148, 2007

Development (WCED) report published in 1987, which defines the sustainable development as the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

The triple bottom line approach, focusing on "People, Planet, Profit," is based upon economic, environmental and social criteria. To ascertain the sustainability of bioenergy development, these aspects are necessary and must be considered to overcome or at least minimise the problems that may occur with the expansion of biomass energy utilisation. In view of the above, the WG, continued research and discussions in 2008. Based upon this research and the previous year's achievements WG produced this report titled as "Guidelines to Assess Sustainability of Biomass Utilisation in East Asian Countries".

1.3 Biomass in East Asian Countries in 2008

Some of the major policy interventions on biomass utilisation, as adopted by selected countries in the East Asian region in 2008, are as follows.

(India)

The Union Cabinet approved the National Policy on Biofuel prepared by the Ministry of New and Renewable Energy in September, 2008. Salient features of the National Biofuel Policy are as follows:

- An indicative target of 20% by 2017 for the blending of biofuels, i.e. bioethanol and bio-diesel, has been proposed.
- Bio-diesel production will be taken up from non-edible oil seeds in waste / degraded / marginal lands.
- The focus would be on indigenous production of bio-diesel feedstock and import of Free Fatty Acid (FFA) based such as oil, palm etc. would not be permitted.
- Bio-diesel plantations on community / Government / forest waste lands would be encouraged while plantation in fertile irrigated lands would not be encouraged.
- Minimum Support Price (MSP) with the provision of periodic revision for bio-diesel oil

seeds would be announced to provide fair price to the growers. The details about the MSP mechanism, enshrined in the National Biofuel Policy, would be worked out carefully subsequently and considered by the Bio-fuel Steering Committee.

・Minimum Purchase Price (MPP) for the purchase of bio-ethanol by the Oil Marketing Companies (OMCs) would be based on the actual cost of production and import price of bio-ethanol. In case of biodiesel, the MPP should be linked to the prevailing retail diesel price.

・The policy envisages that bio-fuels, namely, biodiesel and bio-ethanol may be brought under the ambit of declared Goods by the Government to ensure unrestricted movement of biofuels within and outside the States.

・It is also stated in the Policy that no taxes and duties should be levied on bio-diesel.

(Indonesia)

Starting January 1st 2009, users and fuel distributors are obligated to use biofuel, with products such as biodiesel, bioethanol, and biokerosene. This mandatory use is stipulated in Minister of Energy and Mineral Resources Decree no 32/2008. "This mandatory use is a way of increasing biofuel usage for the transport, industry, and power sectors". Besides supporting the energy diversification program, this step is also expected to contribute in reducing fuel subsidy costs. The government mandates the use of biodiesel at a minimum of 1% for the transportation sector (both PSO i.e public service obligation and non PSO), while the industrial and commercial sectors are targeted at 2,5% and power plants at 0.25%.

The government has mandated the use of bioethanol at a minimum of 1% for the PSO transportation sector, 5% for the non PSO transportation sector, and another 5% for the industry and commercial sectors. Biofuel as a source of alternative energy is targeted to fulfil 0.25% of the power plant fuel needs, while low and medium rpm operating machines of the industrial and sea transport are targeted at 1% each, starting January 2010.

These numbers are set by the government in order to implement the targeted

usage of Biofuel of 5% by 2025. This biofuel will be domestically supplied, and not imported. Main problem on the implementation of biofuels' utilisation is their price. Fossil fuel price in Indonesia have subsidy, and therefore, biofuels are not competitive in the market. Government now has initiated a new regulation system like subsidy system for biodiesel and bioethanol.

Related to biomass waste from agro-industries, this year, Ministry of Environment, Republic of Indonesia, started developing a program "Agro-industry to zero-waste programs". The objectives of this program are to reduce negative impact of agro-industries (such as soil and water pollutions, GHGs emissions, etc.) and increase revenue from the utilisation of biomass waste from agro-industries.

(Japan)

Government of Japan launched "Technology Innovation Plan for Biofuels" in 2008. The final target of the plan is to achieve 50% reduction in the GHG emissions during the lifecycle of biofuels and the target cost is less than 40 Japanese yen per liter of the biofuels. Some R & D projects have been initiated to realise the above plan.

(Malaysia)

The National Biofuel Policy is the main biodiesel policy in Malaysia. It was launched by The Federal Government on 10th August 2005. The policy is primarily aimed at reducing the country's fuel import bill, promoting further the demand for palm oil, which will be the primary commodity for biofuel production (alongside regular diesel), as well as to shore up the price of palm oil especially during periods of low export demand.

The National Biofuel Policy is complemented by Malaysian Biofuel Industry Act 2007 (Act 666) that was enforced this year and will enable the orderly development and regulation of the industry. In addition, the Act also allows the Government to mandate the use of biofuel for any activity in the country. It prescribes the type of biofuel and its percentage by volume to be blended in any fuel. The Act also deals with

the provisions relating to revocation or suspension of biofuel plant license, It empowers the licensing authority to revoke or suspend any license if the licensee has ceased to carry on or operate any biofuel activity for which the license is issued

In October 2008, Malaysia implemented the mandate of a 5% palm methyl ester blend with fossil diesel (B5), gradually starting with its use in government vehicles in 2009 and extending it to the industrial and transportation sectors in 2010. The use of the B5 blend in the country would consume 500,000 tonnes of palm oil.

(The Philippines)

In the Philippines, the overall vision of the government on biofuels' use includes the reduced dependence on imported energy and broader resource base with an indigenous, inexhaustible and environmentally desirable options such as the use of renewable energy (RE) including biomass energy. Biomass will be used in "Support of Alternative Transport Fuels Program" of the government.

For the next decade, the country through the Department of Energy (DOE) is set to pursue an aggressive RE program and includes under its goals the following: increase renewable energy-based capacity by 100% in 10 years, use of 5% CME blend with diesel fuel for vehicles in 2010, and 10% ethanol blend with gasoline fuel for vehicles by 2007 to reach 25% in 2010. It also includes the installation of 130 to 250 MW capacity of biomass, solar and ocean energies. To support its objectives, the government passed two bills into laws, namely, RA 9367 or the Biofuels Law that mandates the use of biodiesel and bioethanol nationwide and RA 9513 or the Renewable Energy Act.

(Thailand)

The target proposed by the Ministry of Energy is "Increasing the proportion of using alternative energy to 20 percent of the national final energy consumption by 2022". The objectives are to reduce oil imports, enhance energy security, environmental benefits and energy efficiency.

The plan will be implemented in three phases, i.e.

Short Term (2008-2011): Focusing on promoting the proven alternative energy technologies with high potential sources such as: biofuels, heat and power generation from biomass and biogas. The financial support measures will be fully implemented.

Medium Term (2012-2016): Promoting the alternative energy technology industry and supporting the development on new prototype of alternative energy technology for a higher cost-effectiveness. This includes promoting new technologies for biofuel production.

Long Term (2017-2022): Promoting new technologies of alternative energy which are cost-effective. Supporting Thailand to become the hub of biofuel export and exporting the alternative energy technology in the ASEAN region

Table 1-1: Alternative Energy Target of Thailand

Alternative Energy Target of 20.4% in 2022 (data only for biomass)					
Energy Type	**Potential**	**Existing**	**2008-2011**	**2012-2016**	**2017-2022**
Electricity from biomass (MW)	4,400	1,597	2,800	3,235	3,700
Electricity from biogas (MW)	190	29	60	90	120
Electricity from MSW (MW)	320	5	100	130	160
Heat from biomass (ktoe)	7,400	2,340	3,544	4,915	6,725
Heat from biogas (ktoe)	600	79	470	540	600
Heat from MSW (ktoe)	78	1	16	25	35
Ethanol (mL/day)	3.3	1	3	6.2	9
Biodiesel (mL/day)	3.3	1.39	3	3.64	4.5

1.4 Worldwide Discussion on Sustainable Bioenergy

The EU adopted the “Directive on Renewable Energy” to set standards for biofuel with regard to reduction of greenhouse gas emissions and environmental impacts in December 2008. GBEP (Global Bioenergy Partnership), which was established by the G8 Summit, is developing international sustainability standards for biofuels. ISO (International Standardisation Organisation) is going to start discussion on standard

of “Sustainability Criteria for Biofuels”. Some other organisations are also discussing this issue worldwide and details of this are given in Chapter 2.

These discussions and developing criteria must be quite meaningful but the opportunity to participate in such discussions should be given to all stakeholders. Since the East Asian region has a large potential for production and consumption of biomass resources, the concerns of the region should be part of the above discussions. Also, such concerns should be backed by scientific considerations and local experiences as well as state of development. The discussion within the WG of the ERIA and this report are expected to contribute towards the scientific base and the concerns on bioenergy that may emerge from the region.