

APPENDIX. SUPPLEMENTARY INFORMATION FOR SOCIAL PILLAR

1. Millennium Development Goals (MDG)

The Millennium Development Goals (MDG) and targets originated at the Millennium Declaration, signed by 189 countries, including 147 heads of State and Government, in September 2000 (MDGIs, 2011), and from further agreement by member states at the 2005 World Summit. The goals and targets are interrelated and should be seen as a whole. They represent a partnership between the developed countries and the developing countries “to create an environment – at the national and global levels alike – which is conducive to development and the elimination of poverty”.

- a) For monitoring country poverty trends, indicators based on national poverty lines should be used, where available.
- b) The actual proportion of people living in slums is measured by a proxy, represented by the urban population living in households with at least one of the four characteristics:
 - (a) lack of access to improved water supply;
 - (b) lack of access to improved sanitation;
 - (c) overcrowding (three or more persons per room); and
 - (d) dwellings made of non-durable material.

The official list of MDG indicators can be found at:
<http://mdgs.un.org/unsd/mdg/Default.aspx>

2. Comparison with GBEP Indicators for Social Pillar

Table 1 shows the relevance of the GBEP's Sustainability Indicators for social pillar to social factors observed in the pilot studies. Remarks on applicability to East Asian context in terms of quantification or observability are based on first hand experiences after conducting the pilot studies.

Table 1. Comparison with GBEP Indicators for Social Pillar

INDICATOR NAME	INDICATOR DESCRIPTION	EAST ASIAN CONTEXT
<p>Allocation and tenure of land for new bioenergy production</p>	<p>Percentage of land – total and by land-use type – used for new bioenergy production where</p> <p>A legal instrument or domestic authority establishes title and procedures for change of title; and</p> <p>The current domestic legal system and/or socially accepted practices provide due process and the established procedures are followed for determining legal title</p>	<p>Was not observed in the pilot cases</p>
<p>Price and supply of a national food basket</p>	<p>Effects of bioenergy use and domestic production on the price and supply of a food basket, which is nationally defined collection of representative foodstuffs, including main staple crops, measured at the national, regional, and/or household level, taking into consideration:</p> <p>Changes in demand for foodstuffs for food, feed, and fibre;</p> <p>Changes in the import and export of foodstuffs;</p> <p>Changes in agricultural production due to weather conditions;</p> <p>Changes in agricultural costs from petroleum and other energy prices; and</p>	<p>Changes in demand and supply of foodstuffs used as biofuel feedstocks could be observed; data may also be available but were not included in the pilot case study questionnaire</p>

	The impact of price volatility and price inflation of foodstuffs on the national, regional, and/or household welfare level, as nationally-determined	
Change in income	<p>Contribution of the following to change in income due to bioenergy production:</p> <p>Wages paid for employment in the bioenergy sector in relation to comparable sectors</p> <p>Net income from the sale, barter and/or own-consumption of bioenergy products, including feedstocks, by self-employed households/individuals</p>	Observable
Jobs in the bioenergy sector	<p>Net job creation as a result of bioenergy production and use, total and disaggregated (if possible) as follows:</p> <p>Skilled/unskilled</p> <p>Temporary/indefinite</p> <p>Total number of jobs in the bioenergy sector and percentage adhering to nationally recognized labour standards consistent with the principles enumerated in the ILO Declaration on Fundamental Principles and Rights at Work, in relation to comparable sectors</p>	<p>Observable but problems of double counting could happen especially that biofuel production entails a lot of existing independent activities from growing of the crops to processing</p> <p>May not create new jobs in case of farmers or other skilled workers in processing plants but could enhance “market reliability” as biofuel industry could be an additional market for</p>

		farmers to sell their produce or enhance “job security” for processing employees
Change in unpaid time spent by women and children collecting biomass	Change in average unpaid time spent by women and children collecting biomass as a result of switching from traditional use of biomass to modern bioenergy services	Observable though not critical in pilot cases; collection of firewood were done in their own farms (e.g. fallen leaves of coconut trees) and somewhat integrated to farmer’s activities
Bioenergy used to expand access to modern energy services	Total amount and percentage of increased access to modern energy services gained through modern bioenergy (disaggregated by bioenergy type), measured in terms of energy and numbers of households and businesses Total number and percentage of households and businesses using bioenergy, disaggregated into modern bioenergy and traditional use of biomass	Observable though except for Jatropha farmers, other farmers in the pilot cases were not able to use the end bioenergy product coming from their feedstocks Impact could be as effect of additional income from engaging in biofuel production, they could afford to shift to avail modern energy services
Change in mortality and burden of diseases attributable to indoor smoke	Change in mortality and burden of disease attributable to indoor smoke from solid fuel use, and change in these as a result on the increased deployment of modern bioenergy services, including improved biomass-based cookstoves	From the survey conducted in Jatropha pilot study site in Indonesia, it was difficult to establish the impact of indoor smoke to overall health (especially in cases where smoking

		<p>inside the house for adult males were common)</p> <p>Farm houses in Southeast Asia generally have kitchen windows or use light materials as wall so indoor smoke from cooking escapes though leaving black soot in the wall and cooking utensils</p>
<p>Incidence of occupational injury, illness and fatalities</p>	<p>Incidences of occupational injury, illness and fatalities in the production of bioenergy in relation to comparable sectors</p>	<p>Observable</p>

3. Qualitative Sub-Indicators for Social Assessment

In addition to the results of sustainability assessment of biomass utilisation for social pillar using the HDI and GDI, as have been highlighted in our previous report (ERIA, 2010), some other factors that may affect social changes due to the use of biomass energy were observed in four pilot studies, whose details are addressed again as follows:

- As food need of the growing population in all countries is more important than biofuels' development, it is necessary that enough safeguards be in place. It was observed that governments are careful about the "food versus fuel competition". For example, in India, national policy on biodiesel production focuses on use of waste lands for cultivation of *Jatropha* and other non-edible tree oils.
- Studies observed that it was difficult to convince farmers to take up the biomass plantation, as it was not economically viable for them. One way to encourage them is to explore the potential of linking biofuel plantation, which depend on energy crop planted, with afforestation measures, which may assign Certified Emission Receipts (CER) benefits to plantation projects resulting in an increase in farmers' income. Other possibility is to provide them financial help to initiate some ancillary activities along with biofuel crops so that they are able to survive during gestation (non-yield) period.
- Both direct and indirect social impacts were observed, although not measured, during the surveys. For example, in the *Jatropha* project site in Indonesia, women felt empowered to earn a side income and they were proud to be involved in the

government's Self Sufficient Energy Village (SSEV) project, which extends beyond their village. Similarly, the change in Human Development Index (HDI) among farmers at Jatropha plantation of tree oil farms in India may not be that significant but from personal interviews, it was noted that the opportunity to send their children to school was one of the benefits they cited after getting engaged in the farm. Such issues are important aspects of social assessment of biofuel production and should be considered.

- Additional social indices relevant at community level should be added even if they may not be quantified. For example, although the Thailand study found a negative change in HDI for the sugarcane plantation but still farmers involved in the process felt happy as their link with the sugar mill was more or less certain and annual income secured. Some other Social Development Indices (SDIs) at community level could be increased income of the employees, better education for the children, improved health conditions and probably improved relationship in the plant or community, among others.