



Convention on Biological Diversity

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ORIGINAL: ENGLISH

REGIONAL WORKSHOP FOR ASIA AND THE
PACIFIC ON WAYS AND MEANS TO
PROMOTE THE SUSTAINABLE
PRODUCTION AND USE OF BIOFUELS
25-27 November 2009, Bangkok

REPORT OF THE MEETING

INTRODUCTION

1. At its ninth meeting, in May 2008, the Conference of the Parties to the Convention on Biological Diversity, in its decision IX/2 on agricultural biodiversity: biofuels and biodiversity, called upon Parties, other Governments, the research community, and invited other relevant organizations to continue to investigate and monitor the positive and negative impacts of the production and use of biofuels on biodiversity and related socio-economic aspects, including those related to indigenous and local communities, and requested the Executive Secretary to further compile this evidence and to make it available through the clearing-house mechanism of the Convention and other appropriate means.
2. The Conference of the Parties further encouraged Parties and other Governments, indigenous and local communities, and relevant stakeholders and organizations, to *inter alia* share their experiences on the development and application of tools relevant to the sustainable production and use of biofuels, in relation to promoting the positive and minimizing the negative impacts on biodiversity, taking into account their full life-cycle as compared to other fuel types, by, *inter alia*, submitting examples to the Executive Secretary; and requested the Executive Secretary to disseminate these experiences through the clearing-house mechanism, and to compile them for consideration by the Subsidiary Body on Scientific, Technical and Technological Advice. Accordingly, the Executive Secretary issued notification 2008-100 to this effect.
3. In paragraph 12 of decision IX/2 the Conference of the Parties requested the Executive Secretary to convene regional workshops on the sustainable production and use of biofuels aiming at considering ways and means to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity, taking into account relevant guidance from the Convention. The reports of these workshops will also be considered by the Subsidiary Body on Scientific, Technical and Technological Advice at its fourteenth meeting when preparing recommendations for consideration by the Conference of the Parties at its tenth meeting in 2010.
4. With financial support from the European Commission, the Executive Secretary convened this regional workshop for representatives from Asia Pacific. It was the second of a series of regional workshops which are being carried out throughout 2009.

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ITEM 1. OPENING OF THE MEETING

5. A representative of the Executive Secretary opened the meeting at 9 a.m. on Wednesday 25 November 2009. He welcomed the participants and presented a statement on behalf of the Executive Secretary. He thanked the Government of Thailand for hosting this meeting and for arranging the field trip on Friday 27 November to enable participants to witness firsthand Thailand's efforts towards greater sustainability biodiesel and oil palm production. The outcomes of this meeting would serve as a point of reference for the next meeting to be held for the Africa Region. It would also provide useful background for discussions on the next steps at the 14th meeting of the Convention's Subsidiary Body on Scientific, Technical and Technological Advice, to be held in Nairobi in May 2010. In closing he drew attention to the International Year of Biodiversity 2010 and the celebration of the Year on 8 January 2010 in Curitiba.

6. Minister H.E. Mr. Suwit Kunkitti, Minister for Natural Resources and Environment, Thailand, then welcomed participants and gave opening remarks on behalf of the host country. The Minister began by endorsing several opening remarks of the Executive Secretary, in particular agreeing that the context in which biofuel production and use should be discussed was one of sustainable development, poverty reduction and climate change. He stressed that that was a need for all interests to work together to this end.

ITEM 2. ORGANIZATIONAL MATTERS

2.1. Election of officers

7. In accordance with the established tradition that meetings be chaired by the host country, the Group elected Mr. Boonrod Sajjakulnukit as Chair. The meeting then elected Ms. Baraa Sharaf Aldeen Al-Nakeeb from Iraq as its co-chair.

2.2. Adoption of the agenda

8. The provisional agenda prepared by the Executive Secretary (UNEP/CBD/ RW-SPU-BIO/2/1) was adopted without amendment.

2.3. Organization of work

9. The meeting agreed to organize its work based on the provisional agenda and retain flexibility. The language of the meeting was English.

ITEM 3. EXPERIENCES ON THE PROMOTION OF THE SUSTAINABLE PRODUCTION AND USE OF BIOFUELS

10. A representative from the Secretariat of the Convention on Biological Diversity provided a brief overview of the experiences submitted by Parties and other Governments, indigenous and local communities, and relevant stakeholders and organizations in response to decision IX/2 through notification 2008-100. Participants were introduced to [document UNEP/CBD/RW-SPU-BIO/1/2](#) providing this information. Of almost [50 submissions received just under 20 were from Parties to the Convention](#).

11. A member of the Food and Agriculture Organisation Regional Office for Asia-Pacific then gave an overview of activities with regards to biofuel in the region. Workshop participants were then invited to present their experiences in promoting the sustainable production and use of biofuels within the region. These experiences are summarised in Annex I.

12. After the presentations the Chair then opened the meeting for general discussions and conclusions. At this juncture the workshop participants agreed that that starting point for their further deliberations would be the outcomes of the earlier Brasil workshop (document UNEP/CBD/RW-SPU-BIO/1/3).

**ITEM 4. WAYS AND MEANS TO PROMOTE THE POSITIVE AND
MINIMIZE THE NEGATIVE IMPACTS OF THE
PRODUCTION AND USE OF BIOFUELS ON BIODIVERSITY**

13. A representative from the Secretariat of the Convention on Biological Diversity provided a brief review of relevant guidance developed under the Convention based on more detailed information contained in document UNEP/CBD/RW-SPU-BIO/1/2. This included: The precautionary approach; the Addis Ababa Principles and Guidelines for the Sustainable Use of Biological Diversity and their further elaboration; the ecosystem approach; the voluntary guidelines on biodiversity-inclusive impact assessment; the Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessments Regarding Development on Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities; all of the relevant CBD programmes of work; the Global Strategy for Plant Conservation; the guiding principles on alien invasive species; the application of sustainable forest management and best agricultural practices in relation to biological diversity; National Biodiversity Strategies and Action Plans; and relevant guidance developed under the Cartagena Protocol on Biosafety.

14. The group then considered how to organize its observations and findings into a framework which would enable the consideration of relevant subjects in context, based on the need to consider many inter-related and complex subjects and issues and ways and means to address them. The group agreed that it would: (i) use annex II of the Brasil workshop report (UNEP/CBD/RW-SPU-BIO/1/3) as a starting point; and (ii) break into three working groups for this purpose and that the outcomes from each group would be approved in plenary.

15. The following working groups were established:

(a) *Small Islands Developing States (SIDS)* - comprised of Kiribati, Nauru, Niue, Samoa, Solomon Island and Timor-Leste;

(b) *Countries with relatively high rainfall and water availability* - comprised of Bhutan, Cambodia, India, Thailand, Philippines, Viet Nam and Wetlands International - Malaysia Office; and

(c) *Arid countries* - comprised of Iran (Islamic Republic of), Iraq, Kuwait, Kyrgyzstan, Mongolia and Pakistan.

16. Each working group used as a basis of its deliberation the same Annex II from the Brasil workshop (UNEP/CBD/RW-SPU-BIO/1/3) and elaborated it by providing additional perspectives from their group. After discussions in plenary it was decided to keep the outcomes from each group separate since if they were to be combined much relevant information would be lost. The outputs from each group simply reflect the main issues noted by each group within the short time available. It was agreed in plenary that the workshop endorsed collectively the outcomes from each group and that the absence or inclusion of any particular points in any of the three outcomes did not necessarily reflect any disagreements between the three groups.

17. The results of this process are provided in Annex II of this document. There are significant differences between the outcomes of each group. As might be expected, the SIDS working group emphasised capacity and resource constraints and the need for regional approaches to address these. They also stressed the need to harmonise biodiversity into the biofuels/agriculture framework and the need for all interests to work together. Traditional land use systems in SIDS are also a major consideration in

biofuel development planning. The outcome of the high-rainfall countries group built upon a number of areas identified in Brazil. Amongst arid countries two sub-groupings were identified: those with energy security and those without it. For the arid countries group, as anticipated, competition between biofuels and water under water scarce conditions was a major concern (SIDS also noted that water resources was a major issue in their group). These perspectives from each group were considered a very useful outcome of the workshop reflecting that biofuel considerations, issues and solutions were influenced heavily by the social, resource, economic and environmental setting of any particular country.

ITEM 5. OTHER MATTERS

18. There were no other matters raised by participants.

ITEM 6. ADOPTION OF THE REPORT AND CLOSURE OF THE MEETING

19. The Co-Chairs provided a summary of the structure and main content of the report based upon a draft prepared by the Secretariat. The Co-Chairs explained that the final report would include the agreed outcomes of the last session of the meeting (essentially as provided in Annex II) and that the report would be circulated amongst participants in the usual fashion prior to final approval.

20. The meeting closed at 6 pm on Thursday, 26 November, to be followed by the field visit on Friday 27 November.

Annex I

SUMMARY OF PRESENTATIONS

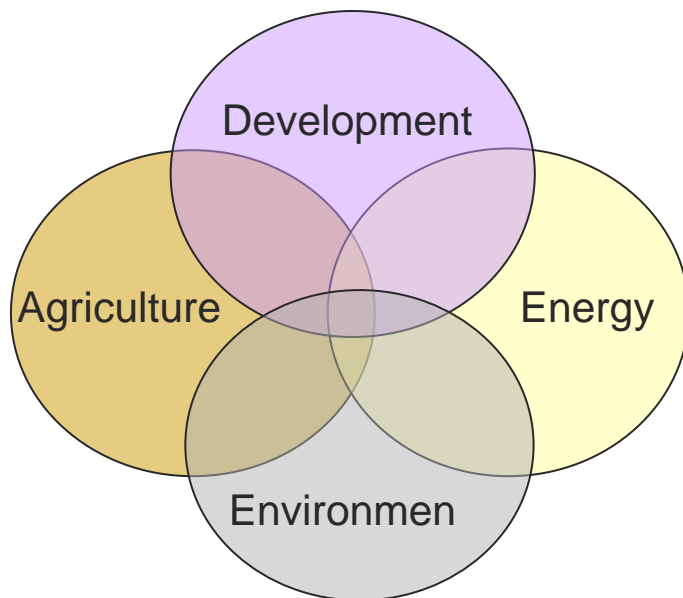
(i) the FAO

A representative of the FAO Regional Office for Asia Pacific gave an overview of biofuels activities/issues in the area.

The demand outlook in Asia for gasoline and diesel is set to rapidly grow as vehicle numbers have increased rapidly to match economic growth. Demand for transport fuel is projected to grow at 3 to 4% per year - but could be much higher. Liquid biofuels production will increase significantly to supplement fossil fuel supplies. Biofuel development in the region will be driven by government policies: China – 15% biofuels target by 2015; Indonesia – 2% biofuels target by 2010; Thailand – 20% biofuels and natural gas target by 2012; India – 10% ethanol target and 20% biofuels by 2017; Philippines – 10% ethanol mandate and 2% biodiesel mandate by 2010; and Malaysia – 5% palm oil mandate in diesel.

Biofuels have potential to deliver energy, climate and development benefits. However, concerns persist about their sustainability. Rapid, unchecked pursuit of biofuels could lead to: deforestation and biodiversity loss; marginalization of small land holders & land tenure conflicts; greenhouse gas emissions in excess of fossil fuels; and competition for scarce natural resources and increased food prices.

Bioenergy is at the intersection of multiple policy areas. Any single policy to address all policy objectives simultaneously is likely to be ineffective. A successful policy framework will require a multifaceted response that accounts for policy trade-offs.



The State of Food & Agriculture (2008) concluded that: the promise of biofuels for rural development will be realized only in the long term; at present opportunities cannot overcome existing social and institutional barriers; additional investments in productivity, research, institutions & policy are necessary; and policies need to focus on needs of poorest and least resource endowed crucial for broad-based rural development.

The FAO/PISCES study is currently investigating small-scale bioenergy (SSB) initiatives. The objective is to improve understanding regarding SSB initiatives and livelihood impacts based on 15 case studies from across the world. It lays out potential for SSB and key success factors. One example is a Zero-Waste Biomass Utilization Project located in Northern Thailand. This started as a jatropha-based initiative but the system is being trialed with small-scale oil palm and rice growers. The project is

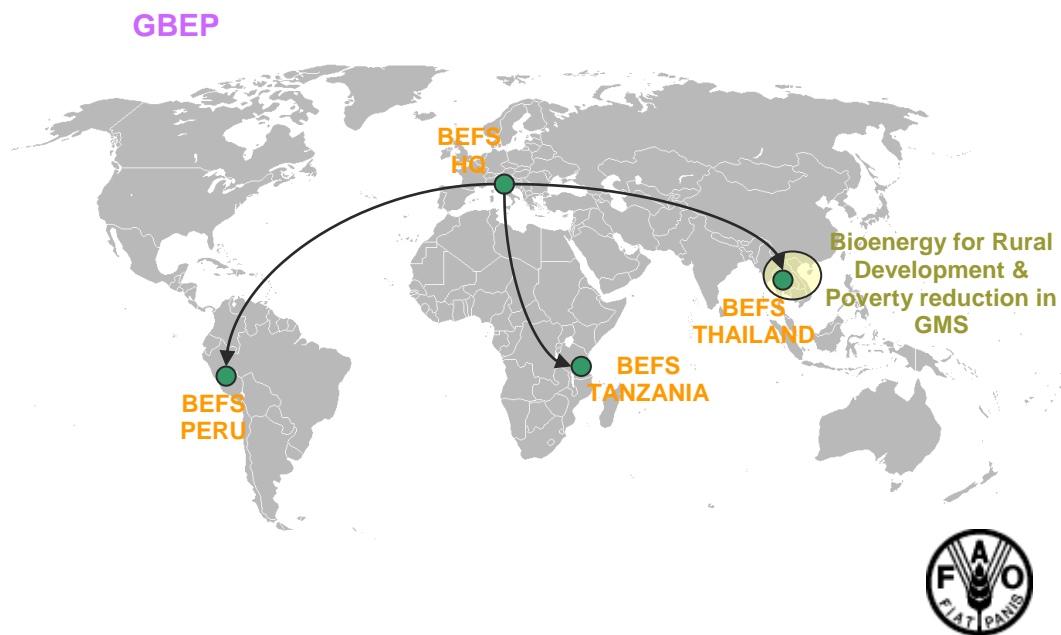
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managed through local cooperatives who guarantee prices for a range of farmer outputs. A knowledge partner in a local University provides technical support and system design


FAO's role in relation to Bioenergy is to support member countries in strengthening institutional and human capacities to implement bioenergy programmes particularly for the benefit of rural communities and to promote SSB while also promoting opportunities for and mitigating potential negative impacts of liquid biofuels.


FAO Regional Bioenergy Initiatives are based in Latin America, Africa and South-East Asia.

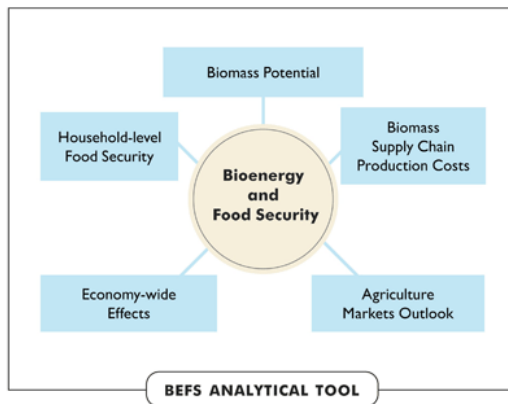
FAO Bioenergy Initiatives



FAO Bioenergy Initiatives

 **BEFS** – Provides guidance to assess potential effects of bioenergy on food security in developing countries
Bioenergy and Food Security Project

 **BEFSCI** – Aims to develop detailed criteria and indicators on bioenergy that safeguards food security
Bioenergy and Food Security Criteria and Indicators



Bioenergy for Rural Development & Poverty Reduction Programme aims to promote mechanisms that will integrate Small Scale Bioenergy, GMS rural energy & poverty reduction strategies. Thematic studies will include: water utilization and biofuels and the potential for biochar.

In conclusion, demand for biofuel in the region will grow to match government policies. But biofuels present a unique policy problem - action to achieve one policy goal is likely to have unintended consequences. Continued monitoring and assessment is required to mitigate the risk that biofuels will unnecessarily harm biodiversity. FAO is developing the tools to assist Member Governments assess the risks and looking for opportunities at the small-scale

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Publications:

SOFA 2008

<http://www.fao.org/docrep/011/i0100e/i0100e00.htm>

FAO Bioenergy Portal (corporate)

<http://www.fao.org/bioenergy/home/en>

(ii) Cambodia - Jatropha biofuel project

The pilot project is based on domestic Jatropha crops and small oil expellers, rather than commercial energy crops and central oil production. A pilot study started and was funded by the Global Village Energy Partnership (GVEP) Programme (2005) in Cambodia. A feasibility study showed it might be financially viable. Originally two potential investors pulled out. Green Acres Private Limited revived the project in 2006. A 83 ha waste land in Kg Chhang Province was acquired for the project. The project started in mid-2006 and an initial 35 ha have been planted.

Different business models could be used as the basis for a new business producing biofuel in Cambodia. Elements of the businesses based on processing of agricultural products included: the proportion of crop area owned and managed by the business, or contracted to private farmers, or purchased at a market; the ownership and location of the processing plant; the security of supply of the feed stock; and ownership and management of distribution chain.

A 83 hectare plantation with a central oil processing facility was established - a symbol of long term commitment by investors, which instilled confidence in villagers to participate in project. Villagers harvest jatropha seeds from existing jatropha trees planted as hedges and also from wild. Villagers with waste land to grow jatropha under the contract farming method. Green Acres provides expertise, cuttings and fertilizers. The project works with provincial/central government to allocate waste land for project and leases small planted plots to individual farmers on behalf of government. New owners sell seeds to Green Acres and part proceeds go to pay government for land. This is a win-win-win for all 3 parties.

Immediate benefits have included: jobs for villagers (current 20, increasing to 80) in the plantation / oil mill/ marketing etc.; increased their income (at least US\$1 a day); and a new cash crop from their own trees (hedges). Future benefits include: conversion of unused land to income generation (phase 2); potential ownership of additional land (phase 3 with government); and community contributions. Green Acres intends to plough its "profits" into the community via improvements in village schools, water and electricity etc.

The proposed biofuel supply chain development maximizes the local benefits and provides a competitive biofuel for electric power generation. It contributes to Cambodia's sustainable development: broad-based economic growth; social and cultural development; and sustainable use of natural resources.

The proposed expansion project aims to supply Jatropha biofuel for additional heavy fuel oil (HFO) generators in PPSEZ with total capacity of 13 MW. This project requires 140,000 tons of Jatropha seeds and 59,000 ha plantation to contract farming schemes. It involves relatively large scale plantation and small scale fencing and intercropping. This project will provide a new 100% renewable energy source for rural Cambodia. Biofuel is also non-toxic and biodegradable so there will be less human and environmental health issues from its transport. Increased planting of Jatropha Curcas as fencing will help reduce soil erosion, provide shading etc. The project also aims to reduce poverty by: introducing a viable, replicable new rural enterprise with two levels of income and job creation (nut-collection, and Biofuel production); and providing a cheaper and more secure source of fuel in the long term, as diesel prices rise.

The sustainability of the business model is enhanced by the possibility for diversifying into other post-harvest seed products. Business sustainability may be further advanced in the future by possible income from 'Carbon Financing' under the Clean Development Mechanism of the Kyoto Protocol.

(iii) India

Bioenergy may satisfy 1/3 of the world's future energy needs and is potentially a key alternative to fossil fuels. This currently represents 1-3 trillion US\$ market value worldwide. To achieve this potential will require some 10% of the world land surface (Copernicus Institute for Sustainable Development and Innovation Management). In India, biofuel is based on : fire / fuel wood plantations; agricultural alcohols; vegetable oils; non-edible oils; liquid wax; hydrocarbon plants; petroleum plants; and algal hydrocarbons.

Some environmental implications of bioenergy production include: restoring ecological balance; improving soil and its water retention capacity; replenishing oxygen and maintaining CO₂ balance in the air; recycling waste; removing potential environmental hazards; increased area under tree cover. Advantages of producing and utilising biomass include: a decentralized energy system; clean fuel / energy; helps to correct eco imbalance; helps to recycle CO₂; and utilization of marginal, arid / semi-arid lands. Disadvantages include: removal of the residues from field and forests- leading to depletion of nutrients and lack of humus formation; removal of residues - soil erosion; collection and transport of residues to the utility sites – reduce energy gains. Research needs include: productivity / unit area / unit time to be increased by improving plants and microbes; biomass production and conversion through induction of genetical and agronomical research and development; improvement of photosynthetic efficiency; location wise and species wise estimation of the amount of biomass to be left in the field and in forests; development of silvicultural, agronomic and management practices for maximising the biomass production; and genetic up gradation of energy plants and microbes. Demonstration and awareness programmes are also required.

Various sources of bioenergy in India include: biofuel – fuel from naturally growing plants ; biodiesel – obtained from non-edible oil seeds, in India there are 150 oil yielding plant species (most popular species – Pongamia, Neem, Jatropha, Hippe and Simarouba) ; and bioethonal – obtained from sugarcane, sugarbeet, sweet corn, sorghum etc.

The benefits of biofuel at the economic level include: savings in foreign exchange; fuel self dependency; rural development; and employment generation at the village level.

Salient features of India’s bioenergy policy include: indicative target of 20% by 2017 for the blending of Biofuels – bio-ethanol and bio-diesel; bio-diesel production from non-edible oil seeds in waste / degraded / marginal lands; bio-diesel plantations on community / Government / forest waste lands would be encouraged while plantation in fertile irrigated lands would not be encouraged; indigenous production of bio-diesel feedstock and no permission for the import of Free Fatty Acid (FFA) based such as oil, palm etc.; 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 the case of bio-diesel, the MPP should be linked to the prevailing retail diesel price); bio-fuels, namely, bio-diesel and bio-ethanol may be brought under the ambit of “Declared Goods” by the Government to ensure unrestricted movement of bio-fuels within and outside the States; and no taxes and duties on bio-diesel.

India has developed the Biofuel Park Hassan a “Mega Model”. The objective is to develop a center of excellence with capability to provide complete information and model for production of biofuels across the state in varied agro climatic situations. Phase I of the project spans 5 years from 2007 onwards. The location was selected due to its very diverse environmental conditions, rainfall pattern (450 -7000 mm), altitudinal range (from 300 -1600 m), varied soil types, diverse crops and diverse vegetation types.

(iv) Iraq

Recently Iraq became the 192 party in the CBD. As one of the arid and semi arid region countries facing major challenges caused by climate change and water scarcity which affects land use for agriculture and environmental pollution. Food security is among Iraq’s most significant priorities. The country was previously considered a good producer of different crops. The Iraqi policy now is concerned with biodiversity and ecosystems conservation, such as the southern Iraqi marshes which is still considered as a natural habitat. There are greater opportunities than previously recognized to address the biodiversity crisis. Identifying those elements of biodiversity most essential to support mechanisms of conservation and focusing on establishing protected areas, forest rehabilitation and minimizing and combating desertification. Biofuel production is a complex subject, there are needs of more research, food and energy supply are on the top of our list of serving people needs all over the country. Because of conflict circumstances our biodiversity has been much used in recent years and the more intelligent and responsible use of our natural heritage is much needed.

(v) Kuwait

The State of Kuwait is one of the non-agricultural countries. It depends by more than 90% of its main food on the import and the agriculture we have in Kuwait is very limited. This is due to the lack of basic elements of agriculture, such as water and soil fertility which are considered the main factors that the main source of water is desalination of sea water and also the small area of land available which is only 17,800 square kilometers. The State of Kuwait depends on fossil fuels as a source of energy, of course, according to its availability on the territory. If there is an intention to use alternative energy, we will do research on recycling of household waste, consisting of food leftovers. Therefore, The State of Kuwait is interested in any matters that deal with the environment. As for the topic of biofuels is concerned and after looking at the research and studies, we should take into account many important things, such as: agriculture and its impact on food shortages; poverty and the increase of food prices; various water resource; and land use.

(vi) Kyrgyzstan

The Kyrgyz Republic, due to its geographical and climatic conditions, does not cultivate biofuel plantations. However, the republic recognizes possibilities of alternative sources of energy such as degradable biomass energy. The Kyrgyz Republic, owing to its great number of livestock (cattle, pigs, and poultry), has significant potential for use of livestock waste for production of combustible gas (methane) and high-performance organic fertilizers. Its potential is estimated as 1.6 billion cubic metre methane per year. However, up to now, due to structural (predominance of transhumance way of husbandry; conservatism and distrust to new technologies), financial (shortage of financial and credit mechanisms of biogas production) and informational restrictions, only the very limited part of this potential is used. An example case of biogas production in the republic: In Petrovka village in Chui valley by the Public Fund "Fluid" and the Association "Farmer", a biogas plant was built which uses 10 tons of livestock waste per day, producing nutrient fertilizer for lands and biogas (methane) for domestic and farm needs. This case is used as a demonstrative example for informational and training activities. The biogas production from the livestock waste would help solve environmental and economical issues by decreasing GHG level, decreasing pressure on natural (forest) resources and alleviating poverty.

(vii) Niue

Niue is characterised as the single largest uplifted coral atoll in the world, yet the smallest self-governing nation. Land availability is about 8.7 hectares per capita. Niue is primarily and agriculture based economy but eco/adventure tourism is growing. The conservation and sustainable management of resources is an integral part of the life style of the people. The key tenet of Niue's Integrated Strategic Plan (NISP) is to "Preserve the natural environment and biological diversity so that it may continue to support both the resident population and the private sector in the long term". Regarding biofuels, the presentation focused on a community based initiative for utilising coconut oil within a multi-purpose community based production system. Production is small scale and largely manual. The benefits of coconut oil include: renewable natural resource; local natural resource; building upon an existing resource/activity by increasing productivity; compatibility of biofuel with the natural environment; employment/livelihoods generation; revenue generation and profitability; flow on benefits and contribution to GDP; and a broad/diversified product range. The project is in its early stages and the main requirements are for capital investment to increase production efficiency, ensure quality and safety, and market expansion. The project demonstrates that local people can utilise local resources for local needs, utilising a renewable natural resource readily and abundantly available, with a diversified consumer product range.

(viii) Pakistan

Pakistan lying between 24° and 37° north latitude and 61° and 75° east longitude possesses an area of 87.98 million ha and a population of about 170 million. The climate as a whole is categorised by scarce and erratic rainfall ranging from 50 to 1500 mm annually. More than 70% of the country is exceedingly dry. Pakistan has only 5.36% of its total land area under forests because of arid climatic conditions and high population pressure. Major environmental issues in Pakistan include: deforestation, desertification,

loss of biodiversity, degradation of unique forest ecosystems (e.g. mangroves, Juniper forests), depletion of range area productivity, climate change and pollution.

The country is facing extreme shortage of energy, high cost of oil import, high rate of desertification and loss of vegetation. The selection of *Jatropha curcas* as a biofuel plant is because of: suitability to many site conditions in arid areas; easy propagation; high survival rate; non-palatable; and early economic returns. Pakistan is undertaking experimental work on *Jatropha* through the Forest Institute. This has: laid out a provenance trial by planting 330 plants at 3 x 3 m spacing of 11 provenances at Dera Ismail Khan on 25 October 2009; established two plantations in sandy desert conditions in the district of Bhakkar by planting 988 plants in March 2009 and 4000 plants in August 2009; established two polythene tube plant nurseries, each one at the Pakistan Forest Institute, by sowing 1000 polythene tubes and 8000 tubes at Dera Ismail Khan in July 2009.

Suggestions for the sustainable production of biofuels include: organising effective community based management systems; participatory approaches to develop joint ventures of government, private sector and farmers; association of plant scientists with the farming community for advising appropriate management of biofuel crops; development of standard cultivation and harvesting practices, blending with indigenous technologies; land evaluation and demarcation of areas for production of biofuel crops; and financial support to farmers through micro-credit schemes.

(ix) Philippines

The total area of the Philippines is 30 M hectares. Of this, 15.8 M hectares or 53% is forestlands. Out of the 15.8 million hectares of forestlands, 40% or 6.3 M hectares are available for development and rehabilitation. Potential investments include forest resources development, agro-forestry, energy development, among others. The country is considered both megadiversity and biodiversity hotspots. Hence, the destruction and degradation of forests which are host to thousand of species of flora and fauna will result to the loss of unique life forms that are considered global assets.

The Republic Act 9367, which was enacted on July 12, 2007, stipulated the country's policy to reduce dependence on imported fuels with due regards to the protection of public health, the environment and natural ecosystems consistent with the country's sustainable economic growth that would expand opportunities for livelihood by mandating the use of biofuels as a measure to: a) develop and utilize indigenous renewable and sustainably-sourced clean energy sources to reduce dependence on imported oil; b) mitigate toxic and greenhouse gas emissions; and (c) increase rural employment; and ensure availability of alternative and renewable clean energy without any detriment to the natural ecosystem, biodiversity and food reserves of the country. This law mandates that all liquid fuels for motors and engines sold in the country shall contain locally-sourced biofuels component as follows: (a) Minimum of 1% of all diesel engine fuel displaced by biodiesel effective within 3 months of the effectivity of this Act; (b) Minimum of 2% blend biodiesel within 2 years; (c) Minimum of 5% of all gasoline volume displaced by bioethanol within 2 years from the effectivity of this Act; and (d) Minimum of 10% blend of bioethanol within 4 years. This law also established the National Biofuels Programme. The programme components are: feedstock development, production and extension; research and development; industry development; policy formulation and dissemination; investments, incentives and promotions; and standards and quality assurance.

The current situation/initiatives include:

- a) So far, the primary feedstock used for biodiesel is coconut while sugarcane is used for bioethanol production. Emerging feedstocks are *jatropha* for biodiesel and cassava and sweet sorghum for bioethanol;
- b) As of 2008, biodiesel (CME) production capacity increased to 302.62M litres from 257 litres in 2007. There are now 11 accredited biodiesel producers in the country;
- c) Efforts are now on-going to determine the viability of using *jatropha* for biodiesel production. Two government corporations are now into the propagation of *jatropha*, the Philippine National Oil Corporation-Alternative Fuels Corporation and the Philippine Forest Corporation under the Department of Environment and Natural Resources (DENR);

- d) The DENR has turned-over some 375,000 hectares of open access and untenured forestlands to the Philippine Forest Corporation (Philforest) as areas where biofuel plantations can be established. These areas are being offered to interested parties to develop jatropha curcas plantations through public bidding;
- e) In order to strike the balance between food security and energy production, and pursuant to the biofuels law, Joint Administrative Order No. 2008-1 series of 2008 was issued requiring all applicants who shall engage in the production of biofuel feedstock shall secure an Environmental Compliance Certificate from the Department of Environment and Natural Resources; a Certification Precondition from the National Commission on Indigenous Peoples; and a Certification from the Department of Agriculture.

The identified issues and challenges to biofuels production and development include:

- a) The need for large tract of lands for biofuels plantations. This can be addressed by allocating suitable lands for feedstock production;
- b) Biofuel crops may displace food crops in productive lands. This can be addressed by accelerating the development of non-food feedstock like agricultural wastes, jatropha and sweet sorghum. Also, degraded and marginalized areas in the uplands can be potential areas for biofuel production;
- c) Biofuel production may result in forest degradation and loss of biodiversity: This can be addressed by planting feedstocks in areas outside protection forests and in areas that are not declared as protected areas;
- d) Need for public and private sectors investments;
- e) Need for research and development to determine high yielding crops, proper cropping combination, among others; and
- f) Need for the establishment of processing plant. This can addressed by ensuring that there is sustainable supply of jatropha as feedstock.

(x) Samoa

Samoa is small pacific island nation in the middle of the Pacific Ocean with its own unique issues in relation to biofuels development and existing biological diversity. The Government set up a small Research and Development Organisation in 2006, mandated with a food development focus on adding value and research and developed alternative energy sources for the country. The Green House Gas Abatement Policy (2008 – 2009) deals with mitigation and adaptation measures. The National Energy Policy (2008 – 2013) has a set target of 30% renewable energy to replace fossil fuels by 2030. Hydro-power generation is supplying 40% of the electricity demand and biofuels development is now to help out with land transport & power generation as well. Biodiesel from coconut oil is at pilot stage now (200 L/day) with limited number of cars running on it. Bio-ethanol development is still at the laboratory stage with 2nd generation feedstock in collaboration with the University of New South Wales, Sydney, Australia. Biomass Gasification is at the feasibility/assessment stage at the moment. The Government is treading carefully on the issue of conservation of biological diversity whilst conscious of the fact we do not hamper our energy development. Proper management is the way forward and learning from the experience of others. Sustainable development of biofuels in harmony with our biological diversity will be a key driver in helping supporting our efforts towards meeting our target of 30% RE contribution by 2030.

(xi) Solomon Islands

The Solomon Islands has a a dual economy, (cash & subsistence). Both are dependent on utilization of the natural resources, creating strong inter-relationship between environment, economic development and society. The country's natural resources directly support the economic well-being/ livelihood of the village communities and the country's formal economy. Natural resources include forests, fish, agricultural land, marine products and gold. GDP (December 2007) was \$270 million. 85%

of the country's population depend on subsistence economy thus making environment particularly important to the well-being of Solomon Islanders. More than 80% of the population live in rural areas and have no access to electricity. The landed price of fossil fuel is climbing up every year. Solomon Islands imports, on average, 4,150 kiloliters of fossil fuel per month. Of this capacity, Solomon Islands Energy Authority consumes 2,126 kilolitres per month, which is 51% of the total oil import; 65% this is used by SIEA outstations in the provinces. Individual communities with stand-alone generators and other end uses such as kerosene for cooking and lighting have an average consumption of 390,000 L per month (this includes petrol, diesel and kerosene). This figure accounts for 18.4% of the total fuel import per month. The balance of more than 32.6% of the import per month is used for private commercial and standby generators; land, sea and air transport. From this, 9% is for private and government standby power generation. The other 21.6% is for transportation.

The Solomon Islands Government (SIG) is one of the participating Pacific Islands Countries in the Pacific Islands Greenhouse Gas Abatement through Renewable Energy Project (PIGGAREP) and one of the activities in its 2009 Work Plan and Budget is a Bio-fuel Development and Expansion project. The SIG through the Energy Division of the Ministry of Mines, Energy and Rural Electrification, in its Policy statement has outlined that it would venture into developing and expanding the bio-fuel sector as an alternative to providing electricity to the population of the Solomon Islands. Coconut Oil (CNO) is the bio-fuel that would be dealt with in this activity. The goal of the project is to establish that CNO is technically and economically viable to be used for power generation in the Solomon Islands (both in rural and urban areas). It is the SIG's plan to look for alternative, cheaper and environmentally friendly forms of fuel to be used as partial substitute for imported fossil fuel. A draft Biofuel policy Framework: Policies and strategies have been developed however it is yet to be finalised. Elements include: Environment and Climate Change (ensure that the production and utilization of biofuel has minimal adverse environmental impacts; ensure that no native forests or other natural ecosystems are cleared for biofuel crops, beyond those that have already been cleared for other purposes; ensure that production and use of biofuel has net neutral or positive impact on the reduction of national greenhouse gas emissions over the short and long term); Agriculture, Land use and Food Security (ensure that 80% of the smallholder coconut farms and all commercial coconut plantations are rehabilitated; ensure that appropriate land-use and food security policies are in place with budgetary support for their implementation/cash crops such as coconuts do not displace other food crops when it comes to land allocation; ensure that research and development of CNO and other vegetable be funded by the state and private sector); Legislation and Regulations (Ensure that appropriate and effective legislations and regulations are in place).

The National Energy Policy Framework sets out the SIG policies for the planning and management of the energy sector over the next 10 years. This has 9 strategic areas of which renewable energy, and environment are part. Renewable energy looks at optimal utilisation of renewable energy resources and promotion of the use of renewable resources. Environment looks at the preservation of a clean and well-maintained environment and ensures minimal negative impacts of energy production, distribution and consumption on the environment. The National Biodiversity Strategic Action Plan for Solomon Islands highlights the extremely high biodiversity of the country and identifies some key threats and barriers to conserving biodiversity and focuses on actions to mitigate potential risks. The Wild life protection and Management Act 1998 provides for the protection conservation and management of wildlife in the Solomon Islands by regulating the export and import of certain animals and plants; to comply with the obligations imposed upon Solomon Islands under the Convention on International Trade in Endangered Species of Wild Fauna and Flora and for other matters connected therewith or incidental thereto. The Environment Act 1998 provides for an integrated system of development control, environmental impact assessment (EIA) and pollution control, including; prevention, control and monitoring of pollution, including regulating discharge of pollutants to air, water or land and reducing risks to human health, and prevention of degradation of the environment; and complying with, and giving effect to, regional and international conventions and obligations relating to the environment.

Challenges include: the effect of extreme events like earthquakes and Tsunami that may hamper infrastructure, operation and transport; political instability, poor governance (corruption) and civil unrest; remoteness/isolation of islands, lack of adequate infrastructure (e.g. wharves); limited road and sea

transport; mismanagement; lack of relevant legislation/regulation for specifically for biofuels; not enough awareness on the use and benefits of bio-fuels; little planting of new coconut, most existed ones are over 20yrs old production seems to decline; little on-going assistance provided to coconut farmers; no assistance is provided to encourage new plantings/other developments. Major problems affecting coconut industry are: low level of income derived from making copra (fluctuating market price); the time and activities involved in making copra are quite demanding and this discourages a lot farmers, especially the young.

The way forward in the Solomon Islands is to: have the biofuel policy framework, policies and strategies endorsed; develop and establish legislation that only a biofuel of a certain standard and certified by SIG recognised institution can be considered as the accepted biofuel; equip the energy division and related stakeholders with appropriate and up-date equipments/tools for enhancement of biofuel development and enhancement programme (secure funding); increase awareness on the production, use and benefits of bio-fuels; secure financial and technical assistance in setting up and managing any biofuel infrastructures for development of biofuel; development of strategic partnership between Government , private sectors, NGO'S and donors must exist in researching, developing, promoting and supporting the provision of bio-fuel generating electricity in rural areas; ensure that all new biofuel development proposal have to undergo EIA and existed ones monitored by relevant authority. Ensure that no native forests or other natural ecosystems are cleared for biofuel crops.

(xii) Thailand

Thailand sets a target to have 20% alternative energy (renewable energy and natural gas) by 2022. Biofuels will play a major role to meet the target for power generation, process heat and liquid biofuels use in transportation. A national committee consisting of representatives from relevant government agencies and the private sector was set up to plan and ensure the development is sustainable to meet the targets of production and use of 9 million litres per day of bioethanol and 4.5 million litres per day of biodiesel in the year 2022.

(xiii) Timor-Leste

Timor-Leste is recently independent (20 May 2002) and the total of population of about 450, 000 inhabits a land area of 14,962 KM². To strengthen develop of bio-energy plants, the National Policy through the Secretary of State Energy Policy has five component of renewable energy: bio-energy trough *Jatropha curcas* plantation; biogas, built and trialed up 100 m³; hydro-power; wind power; and solar PV. The main biofuels element is the need for a feasibility study of transfer of environmentally sound technology, exchange of information, best practices etc. in order to gather information and plan for a sustainable *Jatropha* oil production project in East Timor. Policies in Timor-Leste include: to promote and develop marginal land and wetland through *Jatropha curcas* plantations for socio economic aspects to improve the local community livelihood and protect the biodiversity and create and develop sustainable nature- and culture- based local community participation; an Agro Energy programme has been initiated by the Secretary of State for Energy Policy to help farmers to improve their livelihood using *Jatropha curcas* for alternative energy; and The Secretary of State for Energy Policy has asked for assistance to continue and supplement of the project in order to transform it into a profitable business in East Timor.

(xiv) Wetlands International (Malaysia office)

The presentation focused on issues with oil palm production; one of the most critical biofuels/biodiversity issues in South-East Asia. The current and predicted oil palm expansion occurs also on peatlands, one of the sensitive and high-carbon soil areas. This is of great concern not only to Malaysia, but also to ASEAN, especially with regard to drained peatlands being susceptible to fires and the resultant haze which is a serious regional problem. Peatlands host relatively high biodiversity, particularly endemics and highly endangered species (e.g. orang utans, Sumatran rhinoceros, etc.) and are critical for several crucial ecosystem functions such as climate and hydrological regimes, water storage and supply, fire/haze prevention etc. which support the biodiversity and globally threatened endemics.

The ASEAN Peatland Management Initiative (APMI) and the adoption of the draft Malaysian national Action Plan for Peatlands are some of the approaches that would help resolve the peatlands issues. Malaysia is also a member of the Roundtable for Sustainable Palm Oil (RSPO). Unfortunately, Wetlands International regards the RSPO certification process for sustainable palm oil as inadequate as the Lifecycle Assessment (LCA) is not sufficiently comprehensive as its LCA does not take into account land conversions issues such as greenhouse gases (GHGs), other impacts such as eutrophication, etc.

Ways to minimize the negative impacts of production and use include: High Conservation Value Areas (HCVAs) and other sensitive areas (including peatlands) not to be opened for oil palm plantations and other destructive activities in order to maintain crucial ecosystem services (ecosystem management); to establish set-asides of HCVAs and sensitive areas (e.g. protected areas); improve the RSPO certification where the LCA is expanded to include the crucial impacts such as land use changes, GHGs, degradation of soil (e.g. acid sulphate), deforestation, burning/fire, acidification, biodiversity, etc.). Since the sequencing of oil palm has been performed, the next step of creating genetically modified (GM) oil palm trees for specific characteristics, such as high yields or herbicide-resistance, should be monitored closely, as the possibility of genetic transfers in the wild may affect biodiversity. Application of Integrated Water Resources Management (IWRM) and other Best Management Practices would also be complementary. Approaches should also work closely with the Ramsar Convention regarding wetlands/peatlands and biodiversity issues. Good policy integration (e.g. of the Biofuel Policy, Energy Policy, Biodiversity/Environmental Policy, Development Policy, Agriculture Policy, Wetlands Policy, EU Renewable Energy Directive) is required together with a good business model to promote really sustainable certified palm oil (with high standard, i.e. with comprehensive LCAs). A business model for optimizing sustainability and biodiversity conservation is needed in order to increase the acceptance of and demands for RSPO-certified palm oil in the future. Really sustainable palm oil as certified by credible certification process would open a wider market, as well as maintain the important ecosystem services of peatlands.

Annex II

DRAFT CONCEPTUAL FRAMEWORKS FOR WAYS AND MEANS TO MINIMIZE THE NEGATIVE AND MAXIMIZE THE POSITIVE IMPACT OF BIOFUEL PRODUCTION AND USE ON BIODIVERSITY

The meeting divided into three working groups to consider the draft framework, including its preamble, produced from the regional workshop for Latin America-Caribbean (Annex II of document rw-spu-bio-01-03). The outcomes from each working group were approved in plenary but are presented here separately in order to reflect different perspectives from each group.

A. *Small Island Developing States*

(Kiribati, Nauru, Niue, Samoa, Solomon Island and Timor-Leste)

Sustainability Pillar	Approach	Tools
<i>Environmental Pillar</i>	Capacity-building	-More workshops for officials and politicians. - Develop local awareness -Regional Technical Assistance- neighboring countries to share technological advances -Technical Assistance GIS (Mapping) to help with mapping of the countries in order to identify protected or areas of high biological diversity (Solomon Is).
<i>Economic Pillar</i>	Technology Transfer	-More on renewable energy- (Solar, Wind, Ocean etc)
	Small Scale BioEnergy	-FAO
	Food Security	-CBD/FAO/National Government to integrate biodiversity into biofuel/agriculture/food security communities. -interface between biofuel and agriculture
<i>Social Pillar</i>	Need to fix our Land Tenure system	-find ways to have access to land for biofuel development (policies, legislation etc)- traditional land ownership is an important determinant. -certification schemes to include land owners issues resolved before it can be labeled sustainable
	Political Support Funding	-CBD to help politicians became more prominent with biodiversity and sustainability.
<i>Some island specific issues</i>	Access to information and information dissemination	Promote the creation and strengthening of regional networks for the exchange of information, taking into account existing initiatives Documentation and dissemination of national experiences, including through the CHM and other means
	Best practices regarding production and sustainable use of biofuels	Need to access and decimate information- CBD will provide information of regional Asia- Pacific on biofuel practices. Regional and local knowledge
	Sustainability assessments	Life cycle analysis, taking into account regional/local circumstances, to look at our biofuel sustainability.

B. Countries with relatively high rainfall and water availability

(Bhutan, Cambodia, India, Thailand, Philippines, Viet Nam and Wetlands International - Malaysia Office)

Recognizing the role of the CBD with regard to the biodiversity-related aspects of the production and use of biofuels; also recognizing that some of the tools outlined below are the responsibility of national Governments while other tools are already being developed by other relevant international organizations and initiatives; the participants:

- (a) emphasized the importance of framing the discussion on biofuels within the context of sustainable development and its three pillars;
- (b) recognized the potential contribution of biofuels for the achievement of sustainable development, to mitigate the negative impacts of climate change, for energy security, rural development, the reduction of GHG emissions by providing income to the farming community through carbon trading in accordance with the Kyoto Protocol and the achievement of the Millennium Development Goals;
- (c) highlighted the need to convey a developing country perspectives to the discussion;
- (d) noted the need to avoid generalizations when assessing the potential impacts of biofuel production and use by case-by-case assessments that take into account national or sub-national circumstances;
- (e) recognized the potential for regional cooperation among Asia and Pacific countries towards the sustainable production and use of biofuels; and
- (f) noted the different stages of development within the region with regards to biofuels production and use.

Sustainability Pillar	Approach	Tools
<i>Environmental Pillar</i>	Environmentally sensitive planning and assessment	Use of Strategic Environmental Assessment (SEA) Area definitions/zoning (mapping) Biodiversity-inclusive SEA guidelines (VIII/28)
	Ecosystem Approach <ul style="list-style-type: none"> • Areas to be avoided primary forests with native species protected areas RET & E species (rare, endangered, threatened and endemic) High biodiversity Grasslands Peatlands/wetlands HCVAs (High conservation areas) • Sustainable water management e.g. IWM (integrated water management – sustainable) • Sustainable land management • Promote biopesticides and biofertilizers • POLICY: 	Biodiversity assessment Use of criteria and indicators for sustainable forest management Development of criteria and indicators for sustainable biofuel production. Promote ways and means to minimize/reduce fossil fuel consumption (thus we are minimizing impacts on biodiversity) Promote sustainable biofuel production and use for local communities e.g. , Incorporation of biodiversity issues into national biofuel policies, and other relevant policies Energy security policy Project development of biofuel and implementation road map Preferential policies for investors to develop the raw materials, production and distribution of biofuels Sustainable planning and management of first

Sustainability Pillar	Approach	Tools
	<ul style="list-style-type: none"> Fuel vs. food security 	<p>generation biofuels feedstocks and food production</p> <p>Encourage non-food feedstocks to be raised on degraded/ wastelands/ marginal lands</p> <p>Avoid landuse conflicts</p>
	<p>Technical environmental standards (national) for biofuels:</p> <p>(a) technical specification for biofuel</p> <p>(b) certification of biofuel production</p>	<p>Voluntary certification schemes which has comprehensive Life Cycle Assessment (LCA) system, to include crucial impacts such as land conversion, land degradation, GHGs, eutrophication, acidification, etc.</p> <p>Public policies and legislation</p> <p>Apply national legislation regarding permitted uses in ecosystems</p> <p>South-South and North cooperation</p>
<i>Economic Pillar</i>	<p>Development of viable market systems at the village level for oil seeds and oil</p> <p>Development of international market for sustainable biofuels</p>	<p>Policies to promote market access for developing countries</p> <p>Avoid generalization concerning natural ecosystems in producer countries</p>
	Energy security	Insert in NBSAPs
	Positive incentives	CBD decision and guidance (minimize effects on livelihoods in third countries)
	Financial resources	Microfinance to promote sustainable production and use of biofuels
<i>Social Pillar</i>	<p>Equity</p> <p>Affordability</p> <p>Benefits to small-scale farmers and poor/vulnerable populations</p> <p>Job creation / rural enterprises</p> <p>Dignified work (‘decent jobs’)</p> <p>Food security</p>	<p>Public policies creating decent jobs and income (both private sector and legislation)</p> <p>Appropriate pricing system</p> <p>Voluntary mechanisms in production sector to promote strategic partnerships (e.g. between small and large producers)</p> <p>Programmes to respond to displacement of labour through mechanization according to national and regional circumstances</p> <p>Agricultural policies to harmonize production of biofuels and foodstuff, including the utilization of other foodstuff</p> <p>Sponsorship of programmes for social responsibility</p>
<i>Cross-cutting issues</i>	Expansion of international cooperation	Bilateral and trilateral cooperation, relevant international organizations and initiatives, including FAO, GBEP and CBD.
	Access to information and information dissemination	<p>Promote the creation and strengthening of regional networks for the exchange of information, taking into account existing initiatives</p> <p>Documentation and dissemination of national experiences, including through the CHM and other means</p>

Sustainability Pillar	Approach	Tools
	Legal framework and public policies	Exchange of experiences on national legal frameworks and public policies Communication strategies to promote public participation and awareness-raising
	Best practices, including best practices for other agricultural commodities	Promote the application of best practices through increase of productivity and sustainability for biofuel production systems for biodiversity conservation
	Institutional capacity-building	Promote identification of capacity needs Apply an integrated and interdisciplinary approach
	Sustainability assessments	Contribute to and use recommendations generated through initiatives seeking to create indicators for sustainable biofuels Life cycle analysis, taking into account regional/local circumstances, and use of feedstock
	Technology transfer from developed and developing countries and identification of common R&D needs, including biotechnologies	Developing capacity of, and technology transfer to, developing countries including SIDS, to participate in the international market for biofuels Strengthen technology transfer to promote sustainability (species choice etc.) increase productivity (ensure food production), including access to small machinery for small producers Promote traditional plant breeding and genetic improvement to achieve higher productivity and sustainability of production systems Promote the adoption of cleaner technologies Promote the exchange of information and research cooperation to strengthen the national development of research for the production of second-generation biofuels Regional Centre for Research and Development of Sustainable Biofuels Promotion of freshwater and marine algal biomass for biofuels Standards of biofuel from algal biofuels
	Capacity-building	Exchange of experiences among the Asia Pacific countries Documentation of Best Practices and information sharing, including website/s Regular Regional workshops to address issues relating to biodiversity and biofuels

C. Arid countries

(Iran, Islamic Republic of, Iraq, Kuwait, Kyrgyzstan, Mongolia and Pakistan)

Recognizing the role of the CBD with regard to the biodiversity-related aspects of the production and use of biofuels; also recognizing that some of the tools outlined below are the responsibility of national

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Governments while other tools are already being developed by other relevant international organizations and initiatives; the participants:

- (g) Recognized the issue of production and use of biofuel is complex;
- (h) Noted the early stage of development within the region with regards to biofuels production and use;
- (i) emphasized the importance of framing the discussion on biofuels within the context of sustainable development;
- (j) highlighted the need of arid region countries to insure foods/ energy needs as their priority;
- (k) noted the impact of climate change on water supply and resources in the region;

Prime concerns	Limitations
Food security	Water scarcity / arable land / environment
Energy security	Scarcity / alternative resources
Poverty issue	Socio- economic

<i>Environmental, economical and social Pillars</i>	Approach	Tools
	Food security	Increase productivity to ensure food production. Access to small agricultural machinery in rural areas (small producers).
	Energy security	Application of best practices (for biofuels and other agricultural commodities)
	Poverty and job creation	In order to foster a sustainable production and use of biofuels , it is necessary to promote capacity-building , researches , transfer of technology (environmentally friendly and affective) and financial resources
	Technology transfer and identification of common research needs	Promote the creation and strengthening of regional networks for the exchange of information, taking into account existing initiatives.

Annex III

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