

**MINISTRY OF AGRO INDUSTRY AND FISHERIES**  
**AGRICULTURAL RESEARCH AND EXTENSION UNIT**

**UNEP Project**

**Integrated Assessment  
of Trade Related Policies  
on Biological Diversity  
in the Agricultural Sector in Mauritius**

**24 and 25 April 2007  
Domaine les Pailles  
MAURITIUS**

**Capacity Building Workshop Report**

## Table of Contents

1.	INTRODUCTION.....	1
2.	OBJECTIVES OF WORKSHOPS .....	1
3.	WORKSHOP LAUNCHING.....	2
4.	PRESENTATION SESSIONS.....	2
4.1.	Introduction to the Capacity Building Workshop .....	2
4.2.	Session 1: Presentation on “UNEP-Trade and Biodiversity Initiative” .....	3
4.3.	Session 2: Presentation of Policy and Programme in Sugar Sector .....	4
4.4.	Session 3: Presentation of the “National Biodiversity Strategy and Action Plan for Mauritius” .....	5
4.5.	Session 4: Presentation of Country project – “UNEP Project - Integrated Assessment of Trade Related Policies and Biodiversity initiatives in the Agricultural Sector”.....	6
4.6.	Session 5: Presentation on “Overview of possible linkages between Environment and Agriculture” .....	8
4.7.	Session 6: Presentation on “Introduction to Integrated Assessment Process” .....	10
4.8.	Session 7: Summary of the first day/Agenda Recap of IA process by Mrs Roshini. B. Gopaul.....	11
4.9.	Session 8: Presentation on “How to conduct and Integrated Assessment by Dr Y. Ismael, Economist, AREU .....	12
4.10.	Session 9: Group Work 1- Identify the most relevant issues that the assessment should focus on based on conceptual framework.....	12
4.11.	Session 10: Presentation on “How to conduct an Integrated Assessment” by R.K. Ramnauth, Principal Biometrician, AREU .....	13
4.12.	Session 11 – Group work on criteria, indicators and policy options.....	13
4.13.	Session 12 - How to conduct an Integrated Assessment by Mrs I Ramma, Principal Research Scientist, AREU .....	14
5.	FINAL PLENARY SESSION AND WAY FORWARD .....	14
6.	CLOSING SESSION .....	15
7.	CONCLUSION .....	15
8.	ANNEX 1 - List of Participants .....	16
9.	ANNEX 2 - Workshop Agenda .....	19
10.	ANNEX 3 - GROUP WORK.....	22
11.	ANNEX 4 - GROUP EXERCISE 1 .....	23
12.	ANNEX 5 - GROUP EXERCISE 2.....	26
13.	ANNEX 6 - List of documents circulated .....	29
14.	ANNEX 7 - Slides.....	30

## **1. INTRODUCTION**

The Ministry of Agro-Industry and Fisheries in collaboration with the Agricultural Research and Extension Unit conducted a launching workshop on April 23, 2007 and a 2 - day capacity building workshop on April 24 and 25, 2007 at Domaine les Pailles. The workshops were planned as initial activities to inform the public and relevant stakeholders of the UNEP Trade and Biodiversity Initiative and the country project on “Integrated Assessment of Trade Related Policies on Biological Diversity in the Agricultural Sector” to support the implementation of the Convention of Biological Biodiversity. It also intended to identify stakeholders who could contribute to elaborate and support the project.

## **2. OBJECTIVES OF WORKSHOPS**

The objectives of the launching workshop (April 23, 2007) were to:

1. make the country project known to a broader audience and inform them of the benefits to be derived from the project activities;
2. provide an opportunity to refine project objective, output, timeframe, results and ensure active participation of relevant stakeholders;
3. provide a forum for discussion and expression of interest and increase transparency in decision making process.

The capacity building workshop undertaken on the April 24 and 25, 2007 regrouped all stakeholders from relevant Ministries, private sector organizations and NGOs. It consisted of presentations on the UNEP Trade and Biodiversity Initiative, the country project, the integrated assessment process and group work exercise (Annex 2- Workshop agenda) with the objectives to:

1. communicate to participants the country project, objectives, activities, expected outcomes, timeline
2. discuss the rationale of doing an integrated assessment of a trade-related policy in the agricultural sector
3. develop a better understanding of the linkages between trade policies, agriculture, environment and biodiversity
4. introduce to the participants to the Integrated Assessment process – the main stages, the tools and techniques (e.g. conceptual framework, criteria and indicators, scenario building and evaluation)
5. discuss project implementation and identify the relevant project partners and stakeholders and their level of involvement
6. distribute background materials on the country project, UNEP Brochures on Trade, Agriculture and Biodiversity in Africa, the Caribbean and the Pacific, conceptual framework, Biodiversity in Impact Assessment (IAIA, Special publication series No.3), UNEP Reference Manual (Volume 1) on Integrated Assessment Process and list of relevant publications and useful websites.

### **3. WORKSHOP LAUNCHING (April 23, 2007)**

The workshop was launched by the Minister of Agro Industry and Fisheries Higher officials of the Ministry of Agro Industry and Fisheries, two UNEP resource persons and representatives of UNDP were present for the launching ceremony. Some 60 guests from different organization including the Trade, Environment and Agricultural sectors attended the launching ceremony. The event was covered by the press and was reported on the evening news on TV.

In his opening speech, the Minister, spoke on the changing economic environment and issues regarding the sugar price reduction that is bound to affect the the whole sugar sector and the economy. This change is expected to impact on many sectors and the environment. The Minister reiterated that the fact that Mauritius is a strong proponent of the multifunctional dimensions of sugar cane.

He highlighted the importance of such a study and stressed on stakeholder contributions to produce a valuable functional report that will be useful for decision makers. He requested that all necessary efforts should be made to realize this project and he ensured his total support for running this project.

#### **Discussion and Plenary session**

Stakeholders present interacted with project team members and UNEP representatives to clarify issues related to the implementation of the country study

### **4. PRESENTATION SESSIONS**

A summary of the presentation as indicated in the programme is given and the presentation slides are annexed.

**Day I** - (24 April 2007)

#### **4.1. Introduction to the Capacity Building Workshop**

Dr. D. Dumur, Director of Agricultural Research and Extension Unit opened the workshop and welcomed all participants. He apprised the participants on the role of the Agricultural Research and Extension Unit (AREU), as a research institution that would be facilitating the implementation of the country project under the lead of the Ministry of Agro Industry and Fisheries. He highlighted that the main objective of the workshop is to apprise all stakeholders on the

- UNEP – Trade and Biodiversity Initiative
- Country project, its objectives, outcomes and timeline etc.
- and the integrated assessment methodology.

He welcomed the two resource person from UNEP namely Mr Nehemia Rotich, UNEP Senior Programme Officer, Africa Region and Ms Claire Brown, UNEP-WCMC representative. The latter has been actively involved in the drafting of the UNEP-reference manuals of Integrated Assessment. He raised his opinion on the effect of WTO agreements,

the effect of globalisation and other agricultural trade policies that is bound to cause concern to the environment and the local biodiversity. The Director of AREU showed his keen interest in taking the project to completion within the scheduled time and requested the contribution and commitment of stakeholders present. Participants were asked to interact and voice their opinions in the implementation of the project.

#### **4.2. Session 1: Presentation on “UNEP-Trade and Biodiversity Initiative”**

The presentation was conducted by Mr Nehemiah Rotich, UNEP Senior Programme Officer, Africa Region who gave a summary of the United Nations Environment Programme - Trade and Biodiversity Initiative. He highlighted that following a request from the Conference of Parties of the Convention on Biological Diversity (CBD) and decisions of the World Summit on Sustainable Development (2002) and World Trade Organisation to study the impact of trade liberalisation on agricultural biodiversity in July 2005, UNEP Economics and Trade Branch launched a 4-year initiative to build national capacities. This initiative aims to support African, Caribbean and Pacific (ACP) countries to assess, design and implement agricultural trade-related policies to promote national sustainable development, poverty reduction and biodiversity conservation.

It was mentioned that since 1990s, UNEP has conducted country projects and developed reference manuals/handbooks on integrated assessment of trade related policies (e.g. rice and fisheries sector; handbook on IA of trade policies in the agriculture sector). These materials are readily available for reference. This initiative is supporting pilot projects in six ACP countries to assess the economic, social and environmental impacts of agricultural trade policies. The countries and the sectors are listed as follows: **Cameroon** (cocoa), **Jamaica** (sugar), **Mauritius** (sugar), **Madagascar** (shrimps), **Papua New Guinea** (sweet potato and taro), **Uganda** (horticulture).

Mr Nehemiah Rotich added that the UNEP Trade and Biodiversity Initiative has both capacity building and policy-oriented goals and has as objective to:

- Encourage a better understanding of the linkages between trade, development and biodiversity;
- Build national capacities to conduct an integrated assessment of trade-related impacts on biodiversity and human well-being;
- Develop and implement policy options, which balance trade, development and biodiversity goals;
- Strengthen good governance in trade policy development by promoting stakeholder participation and
- Support implementation of the CBD

He added that the funding agencies for the project are the European Union and Swedish International Development Cooperation Agency (SIDA), while the partners at international level are the UNEP World Conservation Monitoring Center (UNEP-WCMC) and the CBD Secretariat. The national level partners are the governments of the 6 ACP countries and the national research institutes with the collaboration of relevant ministries, the private sector and NGOs.

The activities to be implemented are scheduled as follows:

- Year 1: Trade and Biodiversity Reference Manual developed to provide guidance for assessing trade-related policies in the agriculture sector at the national level (conceptual framework + step-by-step process) and establishment of international experts group.
- Year 2-3: Implementation of six pilot projects by national teams in ACP countries in various agricultural sub-sectors and trade contexts (e.g. EU-ACP negotiations on EPAs) and with a view to using and adapting the Reference Manual to local conditions.
- Year 4: Development and implementation of National Policy Action Plans based on the outcomes of the country-based assessments. These action plans will seek to balance trade, development and biodiversity goals.

### **4.3. Session 2: Presentation of Policy and Programme in Sugar Sector**

An expose on the Multi Annual Adaptation Strategy Plan (MAAS) for the Sugar Industry was presented by Dr Deepchand, Deputy Director, Mauritius Sugar Authority and Mr C, Bhugun, Principal Assistant Secretary of Ministry of Agro Industry and Fisheries. The emphasized the importance of this plan for the re-engineering of the of the sugar sector through:

- Enhanced competitiveness via centralization, mechanization and regrouping of small planters;
- Doubled national electricity production from bagasse;
- Increased ethanol production to around 30 M Litres
- Rightsizing of labour force via a Voluntary Retirement Scheme (VRS) and the training and re-skilling programme for retired workers;
- Sustaining difficult areas (steep and/or rocky land of 5,000 ha) in order to prevent adverse environmental and social consequences;
- Encouraged research and development in sugarcane crop improvement, biotechnology, by-products and biomass utilisation in order to increase sugar cane yield;
- Optimising the use of sugarcane lands via production of horticultural crops on rotational land and in sugarcane interlines or land freed from sugar cane.

They added that the plan for reform in the sugar sector was a prerequisite for accompanying measures. He also added that most vulnerable partners which accounts for some 12,000 metayers occupying some 20,000 ha are located in difficult areas. Thus, there is need to consider different options such as cultivation of other crops, reforestation or eco-tourism / Integrated Resort Scheme (IRS) projects or wind farms. It was stated that the amendments brought to the Sugar Industry Efficiency Act will help to facilitate the land conversion for small plot areas.

### **Main issues discussed during plenary session**

Participants stressed on the need to consider all trade policies including ongoing discussion for resumption of duty free quota for LDC sugar producing countries and vulnerability and fragility of biodiversity of small islands while analyzing the impacts in this study. Discussion

was also held around whether the present study should focus on the whole sugar industry or just the small farmers.

#### **4.4. Session 3: Presentation of the “National Biodiversity Strategy and Action Plan for Mauritius”**

Mr M. Puttoo, Acting Director of the National Parks and Conservation Services presented The National Biodiversity Strategy and Action Plan (NBSAP) that reflects and aims to meet the measures of the Convention of Biological Diversity (CBD). The NBSAP document is divided into 3 thematic areas namely (a) Forest & terrestrial, (b) Freshwater, coastal & marine and (c) Agriculture, biotechnology & biosafety for Mauritius and a special section for Rodrigues due to its semi-autonomous governance and the distinct biogeography of the island.

The aims of NBSAP are to conserve biodiversity, sustain use of its components and ensure equitable sharing of the benefits arising out of utilization of genetic resources.

A brief status of the local terrestrial biodiversity was presented and the drastic reduction of forest areas over the years was highlighted. The forest areas comprised of private and state-owned forest. It was pointed out that good quality native forest occupies less than 2 % of the area of Mauritius, hence there is an urgent need to monitor and upgrade these forest areas. He stressed that Mauritius is the third country in the world that has the highest number of threatened species.

The freshwater, coastal and marine biodiversity comprise of an exclusive economic zone of 1.9 million Km<sup>2</sup>. It includes 49 offshore islets, St Brandon shoals with 55 low lying islets and rich coastal zone of wetlands and mangroves, lagoon and fringing coral reefs and 90 rivers and streams, man-made reservoirs and marshy areas.

The Agrobiodiversity, biotechnology & biosafety areas concerns conservation of Plant Genetic Resources (PGR) such as sugar cane, maize, vegetables, “palmiste blanc” and Animal Genetic Resources such as the Creole breed of cattle, goats, sheep, pigs, poultry, ducks. It also includes the use of tissue culture.

The vision of the NBSAP is to ensure that the population of Mauritius enjoy a healthy environment and an enhanced quality of life through the effective conservation and sustainable use of biodiversity in line with national and international commitments while respecting local values.

The objectives of the NBSAP is to:

1. Establish a representative and viable Protected Area Network (PAN) (place 10% of of Mauritian terrestrial area within a PAN by 2015 and identify key areas of inland water ecosystem and marine PAN);
2. Manage key components of biodiversity (Enhance conservation of native flowering plants and ferns, endemic birds, reptiles, insects, manage invasive alien spp., identify research priorities and promote agrobiodiversity);
3. Enable sustainable use of biodiversity (encourage ecotourism development, fishing, aquaculture, seafood hub, offshore, lagoon, fresh water fishery, agrobiodiversity) and establish necessary legal framework;

4. Maintain ecosystem services (such as forest management, water quality and integrated coastal zone management);
5. Manage biotechnology and its products (its application to crop breeding: sugarcane, banana and horticultural crops);
6. Promote research activities (Plant tissue culture, molecular diagnostics, genetic transformation, molecular mapping etc.);
7. Set up legislations (genetically modified organisms act);
8. Establish policies (Non sugar sector strategic plan, the national biosafety framework and all projects related to GM technology);
9. Set up institutional framework (PGR unit and AS of the Ministry of Agro Industry & Fisheries, MSIRI, UOM, AREU, FARC, FSC).

The projects undertaken on terrestrial biodiversity are:

- National invasive strategy and action plan
- Management plan for islets (as national parks)
- Establishment of a seed bank facility (Darwin project)
- Translocation of reptiles (Darwin project)
- Survey of wetlands
- Protected area network project
- Legal framework updating

The major constraints and challenges faced in implementing the NBSAP are the invasion by alien species and the high cost of their control, pollution due to heavy use of fertilisers and pesticides, poor institutional collaboration, inadequate legal framework and enforcement, lack of expertise in certain fields and limited financial resource.

#### **Main issues discussed during plenary session**

Participants inquired on the methods of control of invasive species and whether any study has been undertaken on the impact of invasive alien species on the economy. Control of invasive alien species is one of the major constraints to biodiversity in all countries of the world and Mauritius is doing its best with available financial resources. The clearing of invasive species over one hectare of land was estimated at around Rs 40,000 in 1992 and should be even more expensive at present.

#### **4.5. Session 4: Presentation of Country project – “UNEP Project - Integrated Assessment of Trade Related Policies and Biodiversity initiatives in the Agricultural Sector”**

The session was presented by Mrs. R. Brizmohun-Gopaul, Research and Development Officer, Ministry of Agro Industry and Fisheries who is the Project Coordinator. It was indicated that Mauritius is one of the 6 ACP countries in which UNEP- Integrated Assessment project is being implemented. The aim of the project is to assess the impacts of EU Sugar reform, a policy on the agricultural sector of Mauritius, focusing attention on biodiversity-related impacts. The objectives of the project are to:

- understand relevant national, regional and international trade policies, in particular EU sugar reform that will have an impact on agriculture with a focus on biodiversity;
- develop IA methodologies with biodiversity-related indicators to study the linkages between trade, biodiversity and poverty;
- conduct an (ex-ante) integrated assessment of the likely impacts of the drastic cut in sugar prices;
- enhance the capacity of government policymakers, private sector decision-makers and civil society to develop an integrated national response for a sustainable management of biodiversity.

The activities proposed under the 2 year project are the:

1. identification of relevant institutions and stakeholders to be involved in the integrated assessment process;
2. identification and review of relevant trade policies impacting on the sugar sector
3. establishment of a National Steering Committee
4. launching and conducting of a Capacity Building Workshop
5. Development of an IA methodologies for the local conditions and identification of indicators to assess, economic social and environmental impacts;
6. collection and analyse of relevant data on agricultural trade and bio-diversity;
7. organisation of brain-storming session to identify possible policy options in sugar sector due to reform in EU-ACP sugar protocol;
8. organisation of capacity building workshop at national level to develop an integrated national response for better decision making process in relation to trade and agriculture;
9. drafting of an integrated national policy action plan to better integrate sustainable management of biodiversity and trade policies;
10. Organise multi-stakeholder workshop to get comments and feedbacks on national action plan.

### **Main issues discussed during plenary session**

Participants requested that SPS issues as well as all Bilateral Trade Agreement signed with USA (Trade Investment Framework Agreement, (TIFA), India, Brazil, China and Trade related Aspects of Intellectual Property Rights (TRIPS) are taken on board in this project. Intellectual property rights which is a priority in the NBSAP would have also to be considered as it influences the implementation of all biological conventions processes.

Biodiversity was a major component of SIDS and with respect to climate changes and biodiversity conservation a number of action is being undertaken by the Meteorological Services (MS) and the National Parks and Conservation Service and the Integrated Coastal Zone Management ( ICZM) of the Ministry of Environment.

The increase in production and application of vinasse (a by-product in ethanol production) in sugar cane fields was considered to be a threat to the environment, particularly the groundwater which accounts for some 60 % of our water supply. A request was made on the need to have a monitoring to assess the impact of vinasse as a fertiliser over the long term.

The role of communities in long term sustainability of biodiversity was discussed. Unlike many African countries, local communities are not directly linked to biodiversity resources such as firewood, bush meat etc. Moreover, Mauritius national parks are not inhabited. However, it was noted that local communities should be sensitised to participate in such project for equitable sharing of information on CBD and for the conservation of certain traditional knowledge (identify indigenous species used in traditional medicine) and practices (e.g. production of local onion variety “toupie”).

Mr N. Rotich, UNEP representative, pointed out that there should be the possibility to explore and exploit indigenous species to develop innovative high value products using biotechnology (e.g. in Kenya, they have been able to identify a microorganism which produces a useful enzyme for the textile industry and it has been commercialized internationally). The conservation of biodiversity thus becomes important even beyond protected areas.

#### **4.6. Session 5: Presentation on “Overview of possible linkages between Environment and Agriculture”**

This session aimed to introduce to the participants the importance of understanding the linkages between trade, society, environment and economic development.

Ms Claire Brown, UNEP-WCMC representative made the presentation and highlighted that the world agricultural trade has doubled between 1980 and 1997 and that two third of it is from export. She added that agricultural trade policy affect decision about land use and natural resources by impacting on markets and prices. The impact of trade on the environment can be both negative and/or positive. Hence there is a need to have a better understanding of the linkages between trade and sustainable development. She referred to case studies whereby trade policies had significant social, economic and environmental impacts.

##### **Case 1: Fisheries in Mauritania**

Bilateral trade agreements signed between Mauritania and Algeria, Morocco, Japan, Russia and Tunisia resulted in elimination of tax, dismantling of custom duties, privatisation and lowering of export tariffs. These national liberalization measures increased revenues, developed infrastructures and increased export of fisheries products. However, it eventually lead to overexploitation of certain species resulting in food security problem among the local population who had to turn towards poultry as a substitute for fish.

##### **Case 2: Rice in Senegal**

With the state support in provision of inputs and subsidies on transport, the domestic rice production increased. But in 1990’s, complete liberalization of rice and the increased cost of production of rice, there was an intensified competition with imported rice. To compete with imported rice, more forest land were cleared for rice cultivation which was intensively carried out with high levels of chemical inputs. The traditional production systems were disrupted. Heavy use of fertilisers and continuous irrigation lead to water pollution and increase in soil

salinity and it eventually resulted in a lack of drinking water in the in-land locked villages. The study focuses on analysing impacts of further liberalization under WTO Agreement on Agriculture and the Governments policy to increase domestic rice production.

**Case 3: Sugar in Jamaica**

Sugar plantation in Jamaica had a negative impact on environment through loss of biodiversity due to slashing and burning of thrash. Since sugar being the key sector of the Jamaican economy, it was a heavily subsidized crop, few measures were put in place to encourage good environmental management. However, with the abolition of the preferential tariff with EU reform, there is a drastic reduction in production, particularly in the environmental sensitive areas. This case study illustrates positive impacts on the environment and biodiversity.

With these case studies it was demonstrated that it is imperative to take into consideration the socio-economic and environmental impact of a policy or a set of policies.

The conceptual framework was introduced and briefly presented to participants as illustrated below.

**Conceptual framework**

<p style="text-align: center;"><b>Human Well-being and Poverty Reduction</b></p> <ul style="list-style-type: none"> <li>■ Basic material for a good life</li> <li>■ Health</li> <li>■ Good Social Relations</li> <li>■ Security</li> <li>■ Freedom of choice and action</li> </ul>	<p style="text-align: center;"><b>Indirect Drivers of Change</b></p> <ul style="list-style-type: none"> <li>■ Demographic</li> <li>■ Economic (<i>globalization, trade, market and policy framework</i>)</li> <li>■ Socio-political (<i>governance and institutional framework</i>)</li> <li>■ Science and Technology</li> <li>■ Cultural and Religious</li> </ul>
<p style="text-align: center;"><b>Ecosystem Services</b></p>	<p style="text-align: center;"><b>Direct Drivers of Change</b></p> <ul style="list-style-type: none"> <li>■ Changes in land use</li> <li>■ Species introduction or removal</li> <li>■ Technology adaptation and use</li> <li>■ External inputs (<i>e.g., irrigation</i>)</li> <li>■ Resource consumption</li> <li>■ Climate change</li> <li>■ Natural physical and biological drivers (<i>e.g., volcanoes</i>)</li> </ul>

## **Main issues discussed during plenary session**

Sugar cane production is considered to be relatively safe for the environment (with a recommended N rate of only 1.4 kg/ha/t of cane, with practically no fungicide and insecticide used, with reduced use of herbicides and green harvesting, weed management practices and cool burning). There is a possibility of an estimated 8,000 ha of plantations to go out of sugar production according to MAAS. Concern was raised on its impact on the society, the environment and eventually on the lagoon and the tourist sector.

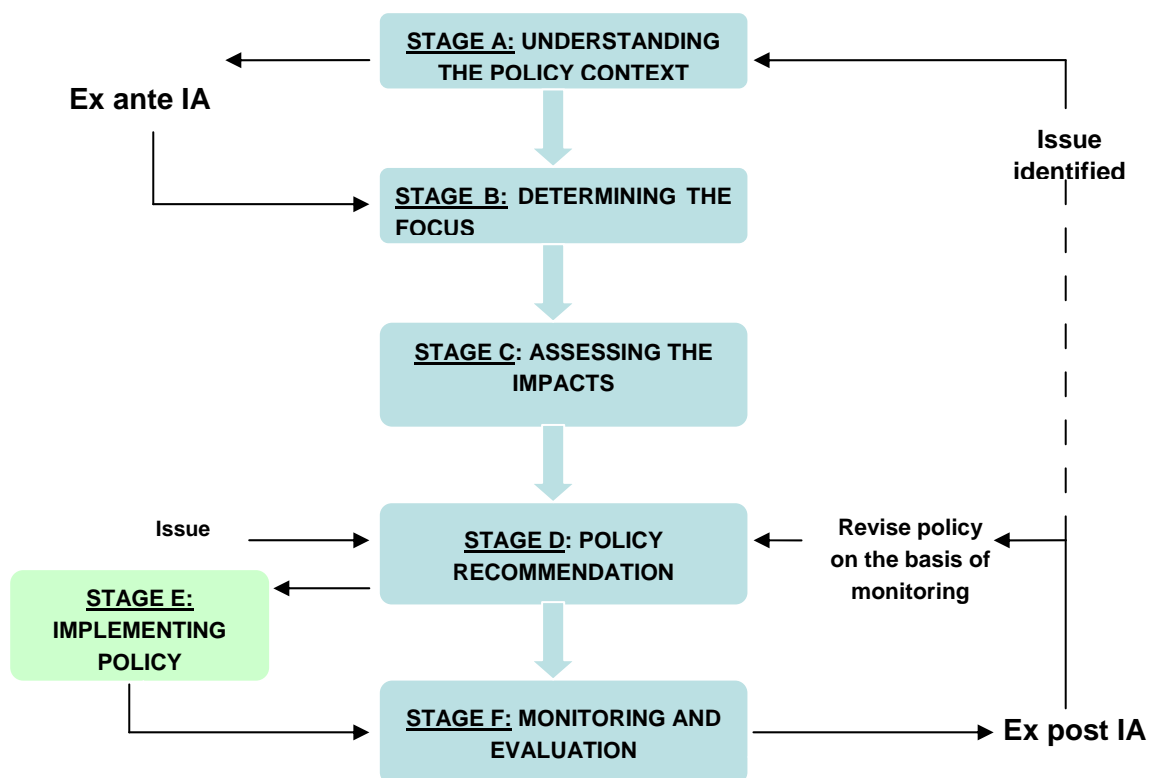
### **4.7. Session 6: Presentation on “Introduction to Integrated Assessment Process”**

Ms Claire Brown, UNEP-WCMC representative, made a summary of the Integrated Assessment (IA) Process.

The IA aims to identify, analyse and assess the economic, social and environmental impact of trade related policies so as to provide policy and decision makers with information for negotiations, informal decision making, development of policy packages and increased transparency in decision making. The approach it uses is similar to Sustainability Assessment (SA), Strategic Environment Assessment (SEA) and Strategic Impact Assessment (SIA). It is meant to explore linkages between trade, environment and development. The IA Process also enhances participation of all stakeholders such as government organisations, non-trade governmental departments, NGOs, private sectors in decision making. It uses a range of tools and methods which can be carried out ex-ante (before you develop the policy ) or ex-post (test after policy is implemented). It analyses the sustainability implications of a trade policy in accordance with a country national priorities and identifies win-win options.

The tools and methods designed for an effective assessment in an IA process should be carried out at the right time, should be open and transparent, participatory, flexible, proactive, clear, simple and focused.

The 6 stages of the IA process is summarized in the chart below.



### Main points discussed in plenary session

Concerns were raised among participants on the approach so as to be able to dissociate the impact of trade policy on the environment from the impact due to other factors such as diversification.

Since there is a lot of variation in the sugar cane production systems due to differences in microclimate, land tenure, and topography, it was agreed that there is need to focus on small sugar cane planters and carry out the right sampling for the 2 year study. Moreover public participations would be encouraged all through the process from developing of country framework, identifying indicators, setting up of baseline data, assessment of impact and formulating of policy recommendations.

A Strategic Environment Study undertaken to assess the impact of the MAAS on the environment is focusing on the environmental side and on the cooperated sector of the sugar industry while the IA being a complementary study would have to focus on small planters (most vulnerable group) and miller workers. It will have to pay more emphasis on economic and social aspects without duplicating the efforts.

**Day I - (25 April 2007)**

#### **4.8. Session 7: Summary of the first day/Agenda Recap of IA process by Mrs Roshini. B. Gopaul**

Mrs Brizmohun-Gopaul welcomed all members for the second day and in her presentation briefly summarised the main points on the presentations and discussions held on the first day of the workshop.

#### **4.9. Session 8: Presentation on “How to conduct and Integrated Assessment by Dr Y. Ismael, Economist, AREU**

The objective of this presentation was to take the participants through the first 2 stages involved in an IA:

- Stage A:** Understanding the Policy Context and
- Stage B:** Determining the focus

This was to enable the participants to have a better understanding of the rationale for conducting the IA study, clarifying the policy context and determine the focus of the IA.

The main issues discussed were mainly:

- What is an Integrated Assessment?
- Why do we use an Integrated Assessment process?
- When can an Integrated Assessment be undertaken?
- Who needs to be involved?
- What are the main stages involved in the process?

Emphasis was laid on understanding the interrelationship and linkages between trade policies (global, regional, bilateral or national), environment and development and strong stakeholders participation (government: Finance and Trade, Industry, Agriculture, Environment, Social Protection, Private Sector, NGOs and Civil Society).

#### **4.10. Session 9. Group Work 1- Identify the most relevant issues that the assessment should focus on based on conceptual framework.**

The participants were divided into 3 manageable groups. Each group was requested to develop a conceptual framework to show the linkages between trade policies, biodiversity, society, environment and the economy. Participants were guided through three questions.

##### **Questions to work on:**

1. Imagine that you are a sugar cane planter; the price of sugar has gone down, how will it affect you? - Think of your income, land, family, social/community and environment
2. What will be the impact on biodiversity and ecosystem services?
3. If we remove sugar, what impact do you think will it have on the environment?

The group exercise intended to develop a draft of the conceptual framework of the project (Annex 4). This exercise was the first step to provide participants with a common understanding of how to represent in a logical and analytical manner the linkages between trade policies and the interacting elements (biodiversity, socio-economy and environment) Participants produced the diagram showing impact of trade on the various response factors. They successfully identified a list of factors, both negative and positive, and could develop the linkages that which brought further discussions in plenary.

#### **4.11. Session 10: Presentation on “How to conduct an Integrated Assessment” by R.K. Ramnauth, Principal Biometrician, AREU**

##### **Stage C – Assessing the Impact**

The objective of this session was to take the participants through Stage C of the Integrated Assessment methodology process. The concept of criteria and indicators was elaborated and exemplified. Stress was laid on the requirement to define economic, social and environmental criteria for which indicators has to be developed. For Mauritius, biodiversity criteria have already been set when developing the National Biodiversity Strategy and Action Plan. It is essential to develop economic, social and environmental indicators. The focus of the assessment, its complexity and the methodology it employs will all help to determine which indicators will be most appropriate. The main principle used to developing indicators was listed. The importance of the action to determine the baseline or point of departure for the analysis of impacts was highlighted and relied on data availability and reliability. The baseline reference time and period is crucial for the assessment. The session also provided some information on the tools and techniques available to conduct analysis of impacts in the IA process.

#### **4.12. Session 11 – Group work on criteria, indicators and policy options**

The participants were divided three groups. Each group were requested to discuss and come up with justified answers to the following guided questions.

##### **Questions**

1. List a set of Indicators within the context of the Sugar Trade Policy that would be useful to measure impact on: Social, Economic, Environmental (Biodiversity and ecosystem services). Indicate the indicators already available and the sources of information
2. Identify the two most important indicators.
3. If indicators are not available, is it possible to collect the data and how?
4. What should the different sectors do to adapt to the different changes in Sugar Reform? (Diversification in sugar sector, non-sugar sector, eco-Tourism Industry and physical/Industrial/Property Development)

The detail responses of the three different groups is given in Annex 5. In short participants understood the characteristics of indicators to be used. It was stated that the indicators should be “SMART”- specific, measurable, achievable, reliable, timely and sensitive. Poverty, unemployment, change in land use pattern and loss of biodiversity together with a series of other social, environmental and economic indicators was generated from the groups. The need to identify the area of focus and the comparison of biodiversity elements was mentioned. Reference was also made to opportunities that should be considered. Indication was also given to sources of already available information and suggestion was given for conducting of surveys in specified sectors where information was not available.

## **Main points discussed**

A general remark made was that the study based on a lot of assumptions should not be too academic. It should rather be policy oriented for Government to use it. The study should also focus on a few key indicators rather than too many indicators. It was also noted that the Sugar Insurance Fund Board (SIFB) should be included in the project as they can provide data on the sugar industry. It was highlighted that land conversion facility would have a severe impact and people may move away from agricultural activity. The amendments which have been brought out should also be considered while selecting indicators.

### **4.13. Session 12 - How to conduct an Integrated Assessment**

**by Mrs I Ramma, Principal Research Scientist, AREU**

**Stage D Issuing policy recommendations**

**Stage E Implementing policy recommendations**

**Stage F Monitoring and evaluation**

The objective of this session was to present the final stages of the IA process namely how to develop and communicate policy recommendations, identify actions to be implemented at different levels (institutional, legal, financial) and establish a mechanism for the monitoring and evaluation to assess or review the recommendation if needed. Emphasis was laid on stakeholders participation in drawing conclusion based on IA outcomes and come up with appropriate measures to mitigate the adverse effect and support the positive impacts on social, environment and economy. She proposed policy recommendations would have to be practical and enforceable. Enabling conditions would have to be encouraged between institutions and stakeholders as well as across sector such as ministries of Agriculture, Trade and Environment to allow the implementation of policy recommendations.

## **Main points discussed in plenary session**

A general remark was that this study should include policy makers as partners in the discussion. The two days capacity building workshop was very helpful for project team as well as the participants whose understanding of the IA process would be very important for future collaboration in study. It was suggested that an Memorandum of Understanding (MOU) be established between the Ministry of Agro-Industry & Fisheries and the relevant institutions to formalise the collaboration in the project.

## **5. FINAL PLENARY SESSION AND WAY FORWARD**

The final plenary session was intended to wrap up the discussion and to take everyone on board for the way forward. Open discussion was made on the modalities to be adopted for the study and interaction between institutions and project team. It was suggested that a core team will be constituted who will be responsible to coordinate the activities and report within the project. A technical committee will be set up to monitor activities of the country project and assign responsibilities to working groups. It will also be responsible to draft TORs for outsourcing of external capacity and resources. It will develop information and disseminate information generated by the project.

## **6. CLOSING SESSION**

The session was closed by Dr D. Dumur, Director, AREU. In his closing remarks he mentioned the highlights of the workshop and re-iterated the objectives. He reviewed the way forward and was glad to see that there was indication of a high level of collaboration from different partners. He was convinced from the interaction of participants that the different sectors will provide the necessary contributions to bring the study to completion. However, he appealed to the participants to be committed and to interact with the core team in the implementation of the various activities of the country project.

## **7. CONCLUSION**

The two day workshop was very useful in getting stakeholders together to discuss and understand the UNEP Trade and Biodiversity initiative and the country project. The two resource persons were very helpful in providing additional information on the project from the perspective of UNEP and in clarifying basic concepts of the Integrated Assessment. The participants were fully interactive which created a synergy to look deeper in the project outline in respect to the country's need.

The objective of the workshop was achieved and participants had a clear view of the IA methodology and conceptual framework. However, further discussion during meetings with stakeholders will be required to refine the focus of the study. A way forward could be planned and it was decided to have a core group to do all the ground work, a technical committee to run the various studies and an steering committee to manage the project from higher administrative levels. The project received the attention and commitment from participants and interacting institutions.

## ANNEX 1

### List of Participants

SN	Surname	Name	Designation	Institution/Organisation	Tel No./Fax No.	Email
1	<b>ALLECK</b>	Malini	Research & Development Officer	Entomology Division, Ministry of Agro Industries & Fisheries	466 4983 (fax: 466 6434)	ento@intnet.mu
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12	<b>CHUNG</b>	Sylvain	Principal Extension Officer (Ext Services)	AREU	433 9353 (fax: 433 935)	cropext@areu.mu

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SN	Surname	Name	Designation	Institution/Organisation	Tel No./Fax No.	
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35	<b>TONTA</b>	Jean Antoine	Agricultural Economist	MSIRI	454 1061 (fax: 454 1971)	<a href="mailto:itonta@msiri.intnet.mu">itonta@msiri.intnet.mu</a>
36	<b>YOSUKE</b>	Fukushima	UNDP	Programme Officer	915 3771	

## ANNEX 2

### Workshop Agenda

#### Launching Workshop for Project 'Integrated Assessment of Trade related policies on Biological Diversity in the Agricultural Sector in Mauritius''

23<sup>rd</sup> April 2007, Domaine Les Pailles

#### Programme

- 9:00 – 9:30 Registration of participants  
9:30 – 9:35 Welcome Address and Introduction  
*Director, AREU*
- 9:35- 9:45 Welcome Address  
*Mr Nehemia Rotich*  
UNEP Senior Programme Officer, Africa Region
- 9:45 – 10:00 Address of Hon. Dr Arvin Boolell,  
*Minister of Ministry of Agro Industry and Fisheries*  
Official opening of Workshop
- 10:00 – 10:15 **TEA BREAK**
- 10:15 – 10:45 UNEP ETB's Trade and Biodiversity Initiative  
*Mr Nehemia Rotich*  
UNEP Senior Programme Officer, Africa Region
- 10:45- 11:15 Local Policy and Programme  
Mr C.Bhugun  
*Ministry of Agro Industry and Fisheries*
- 11:15 – 12:00 Presentation of Country Project  
*Ms Roshini Brizmohum Gopaul*  
Project Coordinator
- 12:00 – 12:30 Discussion and plenary Session
- 12:30 – 14:00 **LUNCH**

**2 days - Capacity Building workshop on  
'Integrated Assessment of Trade Related Policies  
on Biological Diversity in the Agricultural Sector in Mauritius'  
24 & 25 April 2007, Domaine Les Pailles**

**Programme**

**Day 1 - April 24, 2007**

- 9:00 – 9:30 Registration
- 9:30 – 9:40 Welcome Address
- 9:40 – 10:00 UNEP Trade and Biodiversity initiative by Mr Nehemia Rotich, UNEP representative
- 10:00 – 10:30 Policy and Programme in Sugar Sector (by P A S Bhugun)
- 10:30 – 10:45 **Tea Break**
- 10:45 – 11:15 National Biodiversity Strategy (by Mr N Puttoo, National Parks and Conservation services)
- 11:15 – 11:45 Presentation of Country Project (Objective, Activities, Time Frame) –by Roshini Brizmohum Gopaul (Project coordinator)
- 11:45 – 12:00 Discussion (Plenary Session)
- 12:30 – 13:30 **Lunch**
- 13:30 – 14:00 Overview of possible linkages between trade-environment and development in the context of agriculture by Ms Claire Brown, UNEP- WCMC representative
- 14:00 – 14:30 Introduction to Integrated Assessment Process by UNEP Representative
- 14:30 – 15:15 Discussion
- 15:15 – 15:30 **Tea Break**

**2 days - Capacity Building workshop on  
'Integrated Assessment of Trade Related Policies on biological Diversity in the Agricultural  
Sector in Mauritius"  
24 & 25 April 2007, Domaine Les Pailles**

**Programme**

**Day 2 – 25 April 2007**

- 09:00 – 09:15 Summary of the first day / Agenda for second day / Recap of IA process by Roshini B. Gopaul (project Coordinator)
- 09:30 – 10:15 How to Conduct an Integrated Assessment *by Dr Y. Ismael, AREU*  
A. Understanding the Policy Context  
A. Determining the focus
- Group work 1:** Groups identify the most relevant issues that the assessment should focus on based on conceptual framework
- 10:15 – 10:30 **Tea**
- 10:30 – 11:00 Presentation of Group findings
- 11:00 – 11:30 How to Conduct an Integrated Assessment *by Mr R. Ramnauth, AREU*  
C. Assessing the impacts (criteria and indicators), (policy options (scenarios), tools and techniques, valuation
- 11:30 – 12:30 **Group work 2:** Groups work on the criteria: social, economic and environmental indicators and biodiversity indicators for the project / policy options
- 12:30 – 13:30 **Lunch**
- 13:30 – 14:00 Presentation of Group work findings
- 14:00 – 14:30 How to Conduct an Integrated Assessment *by Ms I. Ramma, AREU*  
D. Issuing policy recommendations  
E. Implementing policy recommendations  
F. Monitoring and evaluation
- 14:30 – 15:00 Action plan for conducting the integrated assessment at the national level
- 15:00 – 15:30 Feedback from participants
- 15:30 – 15:35 Closing sessions
- 15:35 – 16:00 **Tea Break**

## ANNEX 3

### GROUP WORK 1

25 April 2007

#### Steps of group Work

- In your group jointly draw a diagram that shows the impact of the trade policy as well as the linkages between trade, agriculture and biodiversity. (*Please use your imagination and brainstorm in the group*)
- In your group discussion, try to address the questions provided below.
- Elect a speaker for the group.
- Present your diagram to the other participants of the workshop.

**Group Exercise** on identification of most relevant issues that the assessment should focus on based on Conceptual Framework

#### Questions to work on:

1. Imagine that you are a sugar cane planter: the price of sugar has fallen, how will it affect you? - Think of your income, land, family, social/community and environment
2. What will be the impact on biodiversity and ecosystem services?
3. If we remove sugar, what impact do you think will it have on the environment?

Participants were divided into 3 groups

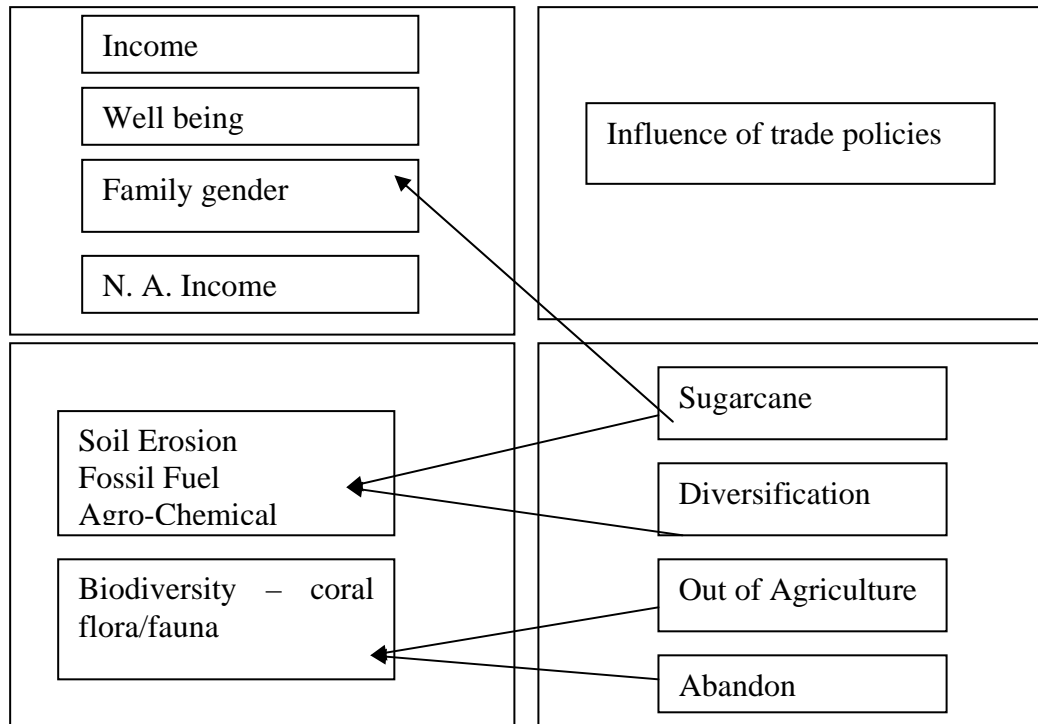
Group A	Group B	Group C
Mr K. Boodhoo, <i>University of Mauritius</i>	Mr S. Chung, <i>AREU</i>	Mr J. A. Tonta, <i>MSIRI</i>
Mr Eric Mangar, <i>Mouvement Autosuffisance Alimentaire</i>	Mr P. Blackburn, <i>Cane Growers Association</i>	Dr J. Ramkissoon, <i>FARC</i>
Dr K. Deepchand, <i>Mauritius Sugar Authority</i>	Mr R. Ruddy, <i>Forestry Service</i>	Mrs D. Lalsing, <i>AREU</i>
Mr R. Soniah, <i>Farmers Service Corporation</i>	Mrs P. Kanhye, <i>Ministry of Environment</i>	Mr N. Gopaul, <i>Hort. Div. Ag. Services</i>
Mr J. Sewdeen, <i>Small Planters Welfare Fund</i>	Mrs M. Alleck, <i>Entomology Div. Ag. Services</i>	Mr R. Bahadoor, <i>APAU, MOA</i>
Mr C. Lollmun, <i>Water Resources Unit</i>	Mr D. Luximon, <i>Ministry of Foreign Affairs, International Trade &amp; Cooperation</i>	Ms S. Jawaheer, <i>University of Mauritius</i>
Mr K. Chikhuri, <i>APAU, MOA</i>	-	Mr A. Atawoo, <i>AREU</i>
Ms R. Singelee, <i>Ministry of Foreign Affairs, International Trade &amp; Cooperation</i>	-	-

**ANNEX 4**

**GROUP EXERCISE 1  
(25 April 07)**

**Result of Group A**

1. A draft of conceptual framework describing the linkages



2. Agricultural Activities and Change in state of land:-

- Land remains under sugarcane
- Convert from sugarcane to non sugar
- Move out of Agriculture
- Abandonment

1. The impact on biodiversity and ecosystems were as follows:

<b>Positive impacts</b>	<b>Negative impacts</b>
<ul style="list-style-type: none"> <li>• Eradicate rats/rodents</li> <li>• Increase in yield</li> <li>• Alternative to coral sand</li> <li>• Provide aggregates to construction industry</li> </ul>	<ul style="list-style-type: none"> <li>• De-rocking affects soil biodiversity</li> <li>• Increased use of fossil energy</li> <li>• Soil erosion- mountain slopes</li> <li>• Less use of human labour</li> </ul>

2. Conversion from sugarcane to non-sugar

<b>Positive impacts</b>	<b>Negative impacts</b>
<ul style="list-style-type: none"> <li>• Food security</li> <li>• Inputs for Agro-Industry</li> <li>• Possibility of Exports</li> <li>• Availability of New crops (e.g.Pitaya)</li> </ul>	<ul style="list-style-type: none"> <li>• More fertiliser and use of agro-chemicals</li> </ul>

3. Impact of moving out of agriculture

<b>Positive impacts</b>	<b>Negative impacts</b>
Diversification for example IRS projects	<ul style="list-style-type: none"> <li>• Abandoned lands – health problems (e.g. Chikungunya) and social problems (increase in alcohol consumption)</li> <li>• Ownership issue</li> <li>• Fodder issue</li> <li>• Less carbon credits</li> </ul>

**Result of Group B:**

1. Trade agreements and other influences on agriculture

<ul style="list-style-type: none"> <li>• Farmers and Workers</li> <li>• Lower/no income (unemployed – lower standard of living)</li> <li>• Lesser opportunity to move up social ladder</li> <li>• Rise in social /health problems (alcoholism, drugs etc)</li> <li>• Impacts on sugar estate village (centralization of sugar mills)</li> <li>• Income options – Accompanying measures, reskilling to new activities , IRS</li> </ul>	<ul style="list-style-type: none"> <li>• EU Sugar Regime (sugar protocol)</li> <li>• 36% cut in price over 4 years (Revenue)</li> </ul>
<ul style="list-style-type: none"> <li>• Conservation of biodiversity by Agro-forestry</li> <li>• Rigid legal framework</li> <li>• Aquatic Ecosystem) Erosion</li> <li>• Higher use of Agricultural inputs (fertilizers/pesticides) with diversification</li> </ul>	<ul style="list-style-type: none"> <li>• Trade Agreement (WTO)</li> <li>• Bilateral &amp; Regional Trade Agreements</li> <li>• Trade Agreement (WTO)</li> <li>• Bilateral &amp; Regional Trade Agreements</li> <li>• Area under sugarcane cultivation (downsize) abandonment</li> <li>• Constraints – topography</li> <li>• Positive impact - Diversification</li> </ul>

### 1. Impact of EU sugar reform .

- The 36% cut in price of sugar will affect revenue and employment.
- recent proposal made by EU, proposed to provide duty free and quota free to all ACP countries. There is a need to lobby the EU at the WTO so that sugar may be selected as a sensitive product on their sensitive list.
- Other regional agreements like SADC, COMESA and bilateral agreement with United States, China, Brazil need to be considered.
- Seek US assistance in future for ethanol production.

### 3. Impact on biodiversity/ ecosystem services and human well being

- Farmers will be affected; there will be downsizing of the area.
- Mountainous regions low productive capacity for other crops.
- There will be diversification
- Should develop agro-forestry system where people living near forest region may be encouraged to grow fruit trees.
- Developing lands in ecotourism sites, nature based activities (e.g golf)
- Biodiversity is a very important component of the land use system
- Soil fertility will be affected if certain areas are not protected.
- Biodiversity protects from drastic soil erosion or floods.
- Hence should bring a rigid framework to conserve the biodiversity.
- No conservation will lead to sedimentation and soil lost.
- A negative impact while growing other crops; use of too many pesticides.
- Farmers and workers will be affected
- Lower standard of living will imply rise in social and health problems

## **Result of Group C**

### 1. Impacts of EU-Sugar reform on social, environment and biodiversity

- In the immediate term there will be a decrease in standard of living
- In the long term, there could be alternative use to the land, like growing of litchi, growing crops with different life cycle.
- The land may be distributed among heirs.
- Commercial projects should be identified.
- The land could be sold for residential purposes
- There will be a change in lifestyle. (no need to wake up at 4.00 a.m)
- Should seek new and innovative ideas from kids.
- Employment will be affected.
- Low income will imply less usage of fertilizers, which will cause a positive environmental impact.
- However, if more fertilizers are used rivers and lakes will be affected.
- Land abandonment will lead to high incidence of pest leading to disease problems, invasive plants will dominate.

## ANNEX 5

### GROUP EXERCISE 2 (25 April 2007)

#### Group exercise on criteria, indicators and policy options

##### Questions

1. List a set of Indicators within the context of the Sugar Trade Policy that would be useful to measure impact on:
  - Social
  - Economic
  - Environmental (Biodiversity and ecosystem services)

Indicate the indicators already available and the sources of information.

2. Identify the two most important indicators from list (1).
3. If indicators are not available, is it possible to collect the data and how?
4. What should the different sectors do to adapt to the different changes in Sugar Reform?(Diversification in sugar sector, non-sugar sector, eco-Tourism Industry and physical/Industrial/Property Development)

Participants were divided into three groups (A,B,C) as per table below.

<b>Group A</b>	<b>Group B</b>	<b>Group C</b>
Mr J. A.Tonta, <i>MSIRI</i>	Mr J. Sewdeen, <i>SPWF</i>	Mr A. Atawoo, <i>AREU</i>
Mr R. Ramnauth, <i>AREU</i>	Mr Eric Mangar, <i>Mouvement Autiosuffisance Alimentaire</i>	Mr R. Ruty, <i>Forestry Services</i>
Dr Y. Ismael, <i>AREU</i>	Mr R. Soniah, <i>Farmers Service Centre</i>	Mr C. Lollmun, <i>Water Resources Unit</i>
Mr N. Gopaul, <i>Hort. Div., Ag. Services</i>	Mr S. Chung, <i>AREU</i>	Mr P. Blackburn, <i>Cane Growers Association</i>
Mrs M. Alleck, <i>Entomology Div. Ag. Services</i>	Ms R. Singelee, <i>Min. Foreign Affairs, Int. trade &amp; Cooperation</i>	Mr K. Boodhoo, <i>University of Mauritius</i>
	Mrs R. Gopaul, <i>Hort. Div. Ag. Services</i>	Mrs D. Lalsing, <i>AREU</i>
		Mrs P. Kanhye, <i>MOE</i>

#### Findings of Group A

1. Criteria and indicators
  - The indicators should be “SMART”- specific, measurable, achievable, reliable, timely and sensitive.
  - There is need for a baseline.
  - On the socioeconomic side should have income equality from different stakeholders.
  - Reform on sugar can have impact on one part of the country.
  - The land use pattern is very important.
  - Focus group should be identified.

- Species; flora/fauna from different agro climatic region could be compared.
- As regards to diversification within the sugar sector- production of ethanol, bagasse, special sugar, change planting system and variety.
- Non sugar sector; opportunities in niche market, supermarket and coming up with ethnic food.
- Eco-Tourism Industry; large sugar estate may take the lead not meant for small/medium planter.
- Setting up of village handicraft.
- On the physical side; land conversion and land for industrial park.

## **Findings of Group B**

### 1. Criteria and indicators

- The social indicator was as follows: unemployment, percentage suicide, quality of life, poverty index, monthly household income, human development index (HDI), Minimum wage, health etc.
- Drug addicts would cause impact on law and order – e.g. those who have been allocated VRS do not know how to manage the money.
- Concerning the gender issue women have additional burden
- Surveys to be carried out to have information about the education level of growers.
- The sources of information already available are: the CSO, MACOSS, NGO Trust Fund (social security), from community centres, village councils, Ministry of Housing and Lands, SIFB, AREU, MSA (e.g list of VRS) and sugar estates.
- The two major indicators would be poverty and unemployment – information to be collected through surveys.
- Diversification in sugar sector; reskilling, guide people towards the Small and Medium Enterprises
- Eco Tourism industry very important activity which can be enhanced in Rodrigues like developing green tourism that is people using their own houses to provide accommodation to tourists.
- There is lack of corporate and social responsibility
- Should create green spaces
- Should avoid social conflicts and create a healthy environment for community to live.

It was highlighted that land conversion facility would have a severe impact and people may run away from agricultural activity. The amendments which have been brought out should also be considered while selecting indicators.

## **Findings of Group C**

### 1. Criteria and indicators

- The list of indicators and the sources of information are as follows: Land use (remote sensing unit, MoA, Ministry of Housing and Lands, MSIRI), water quality (CWA, MoE, Ministry of Fisheries, WRU), Invasive species (MoA, AREU, MSIRI, Forestry, NPCA), Landscape (character of the area), sedimentation rate (WRU, Ministry of Fisheries), Soil quality (MoA, MSIRI), Use of Agro-chemicals (MSRI, AREU, CSO), crop yield (AREU, MSRI),

change in biodiversity (NPCS, Ministry of Fisheries, AREU, Forestry), Air quality (MoE), Soil erosion, solid waste (Ministry of Local government), liquid waste (WWMA, WRU), Noise pollution (Ministry of Health).

- The two most important indicators are: change in land use pattern and loss of biodiversity.
- Diversification in sugar sector: Value-added sugar, ethanol production, spirit production, pharmaceutical products. All development should be environment friendly with proper and adequate mitigation measures.
- Eco-tourism: museum, emphasis on green spaces/recreational spaces. EIA license should be provided where applicable.
- Non-sugar sector sensitising campaigns to farmers for rational use of agro-chemicals, organic farming, and livestock development (integrated farming).
- Physical/Industrial/Property Development: should be in line with the outline planning scheme of the area.

## ANNEX 6

### List of documents circulated

1. UNEP Economics and Trade Branch Brochure on Trade, Agriculture & Biodiversity in Africa, the Carribean and the Pacific: Supporting country projects to assess the biodiveristy impacts and opportunities of agricultural trade policies
2. UNEP background document on Integrated Assessment of Trade-related policies and Biological Diversity in the Agricultural sector
3. Country Project Document- Integrated assessment of Trade-related policies in the Agricultural sector: Supporting the implementation of the Convention on biological Biodiveristy in Mauritius
4. Biodiversity in Impact Assessment – International Association for Impact Assessment, SpecialPublication Series No. 3, July 2005
5. “A Conceptual Framework for Assesement”- extract of Guidance on incoorporating biodiveristy in agriculture trade policy assessment
6. Summary of Integrated Assessment process
7. List of supporting materials: relevant publications and useful websites