Report on Thematic Side Event at the Seventh Session of the IRENA Assembly on THE ROLE OF BIOENERGY IN DOUBLING THE SHARE OF RENEWABLE ENERGY

Introduction

Bioenergy accounts for half of the cost-effective potential for doubling the renewable share of energy supply by 2030. Therefore, IRENA has devoted considerable effort to assess sustainable biomass resource options, cost-effective bioenergy technology pathways, and strategies for bioenergy scale-up. IRENA's ongoing and proposed work on bioenergy was presented and discussed in the course of the event which was moderated by IRENA Deputy Director General Sakari Oksanen and included some forty participants.

The DDG noted in his introductory remarks that bioenergy is key to achieving the sustainable development goals agreed by the United Nations, including food security, climate security, and "access to affordable, reliable, sustainable and modern energy for all." He stressed that bioenergy must be produced in ways that are environmentally, socially and economically sustainable. It should reduce use of fossil fuel, maintain stocks of carbon in the land, allow for adequate food production, and be produced affordably.

Part I: Sustainable Bioenergy Potential

The first part of the event was devoted to discussion of a brief on *Sustainable Approaches to Expansion of Bioenergy* which IRENA has developed jointly with the Bioenergy Technology Collaboration Programme of the International Energy Agency (IEA Bioenergy) and UN Food and Agricultural Organization (FAO). The brief explains that there is great potential for the sustainable intensification of land use – with higher crop yields, reduced food waste, collection of farm and forest residues, and restoration of degraded land – to boost bioenergy production alongside greater food production and increased storage of carbon.

Following presentation by IRENA (Jeffrey Skeer, Senior Programme Officer), **comments on the brief** were offered by a distinguished invited panel including FAO (Olivier Dubois, Energy Programme Leader), IEA Bioenergy (Jim Spaeth, Deputy Executive Committee Chair) and SE4All (Gerry Ostheimer, Global Lead, Sustainable Bioenergy Group, Sustainable Development for All). **SE4All** noted that the brief could help clear up public misperceptions about bioenergy which have made policy makers reluctant to develop it. In pointing out the bioenergy potential from sustainable intensification and reduced waste, it represents a great step forward. But points could be added regarding the need for a trained work force and suitable financing vehicles to take advantage of this potential. **IEA Bioenergy** stressed that communication with the public about the complex topic of bioenergy is one of our greatest challenges: we need to educate people that the potential needs to be more fully developed in order to meet our agreed climate goals. **FAO** pointed out the need to embrace complexity, in view of the great variety of bioenergy feedstocks. Both food and nonfood species may provide sustainable feedstocks if land is used efficiently and biodiversity is preserved; FAO has a tool kit to help farmers and energy producers make suitable choices.

Panelists then offered **comments on policy priorities** for bringing bioenergy potential to fruition. **SE4All** pointed to the need to raise public awareness of the role that biofuels can play in a renewable energy portfolio to support the internationally agreed Sustainable Development Goals (SDGs) and to translate these to national and local action on feedstocks, permits and jobs. **FAO** also stressed the need for public communication to show we have the tools and good practices to produce bioenergy sustainably, with outreach not only to governments but also to the private sector and civil society**. IEA Bioenergy** added that such policy dialogue should raise global awareness of how bioenergy can support a healthy ecosystem.

Further comments were then offered by other participants in the event. Irene Cañas, Vice Minister of Energy in Costa Rica, noted that her country, as the world's largest pineapple producer, has substantial resource potential for bioenergy from pineapple residues but that businesses have been slow to invest in this potential because they perceive the technology as too complex. Hence we need more capacity building to impart knowledge of the technologies which are best suited to each type of biomass. But developing countries cannot afford to subsidise the feed-in tariff for electricity generated from the residues, so it is vital that residue conversion be cost-competitive. Panelists responded that costs might be reduced by demonstration projects, soft loans for projects that use residues properly, and climate financing that recognizes the value of greenhouse gas emission reductions.

Margaret Mutschler, on the power system development team at Nampower in Namibia, noted that her country has significant potential to supply electricity from woody bush that is encroaching on ranch land, but faces challenges in evaluating the area over which the bush must be collected to consistently supply powerplants of given size. As collection equipment is capital intensive and suppliers are small, affordable financing is key. She also suggested that a dedicated institution is needed to look at bioenergy in each country in view of the many ministries that are typically involved (with separate responsibilities for energy, environment, agriculture, forestry and development). Panelists responded that FAO has a facility to help countries provide such coordination, in terms of both policy guidance and project implementation. They also noted the value of sharing good practices and of capacity building to develop skills and knowledge.

Part II: Bioenergy Technology Pathways and Scale-up Tools

The second part of the event was devoted to discussion of IRENA's Proposed Scope of Work on Sustainable Development of Bioenergy. Work proposed and underway is organized into pillars on sustainable supply of bioenergy feedstock, cost-effective technology for bioenergy conversion, and successful strategies for bioenergy scale-up. The three pillars of effort were presented by Dolf Gielen, Director, IRENA Innovation and Technology Centre (IITC). Nicolas Fichaux demonstrated IRENA's bioenergy simulator tool to help farmers choose the most productive mix of food and fuel crops. Simon Benmarraze then outlined how IRENA's Project Navigator tool can help investors design and build bankable projects for heat and power from solid biofuels. The invited panel and other participants then offered comments on the work.

D.K. Khare, of India's Ministry of New and Renewable Energy, noted that it is important for the Simulator ultimately to include wood crops in addition to agricultural residues and to include the full range of species (the initial edition has fifteen crops while India has over a hundred). He also noted that India has a biomass atlas, developed over the last fifteen years, which could be inform the Simulator and contribute to IRENA's Global Atlas. Biomass could be of much more interest for cooling than for heating in tropical developing countries. It could also be interesting in the technology pillar to examine waste heat from biomass for desalination. Another useful matter to analyse is logistical arrangements to ensure a reliable supply chain.

DDG Sakari Oksanen vowed that bioenergy has a key role to play in renewable energy supply, so we should not be silent about it. He then closed the meeting by inviting interested countries to comment after the event on how the brief on sustainable potential should be conveyed and to whom, on how IRENA's work on bioenergy should focused and disseminated, and on how the Simulator and Navigator could be improved. The draft brief and work scope, along with presentations from the event, will be made available to members and the public along with other documentation for the Seventh Assembly in due course.