

The 4th International Conference on Biofuels Standards: *Current Issues, Future Trends* hosted three Panel Discussions, in addition to the presentations, to provide opportunities for discussion of broad-based topics and to articulate possible future actions. Brief summaries are provided on each of these Panel Discussions to share some of the overarching issues that were identified.

Sustainability Panel

The Sustainability Panel was chaired by Chuck Corr, the Manager of Biofuels Technical Services at Archer Daniels Midland Company. Chuck provides support on technical and regulatory issues concerning biofuels and is active as a participant and leader in the development of many international documentary standards.

In order to focus the panel discussion, three questions were drafted and provided to the panel members prior to the conference. The questions are listed below:

- a) Bioenergy is one of a number of options for providing the energy needs of society. What role can standards play in improving the sustainability of bioenergy and our energy portfolio?
- b) What do you see as the major issues or gaps that need to be addressed to facilitate the development of sustainability standards for bioenergy and other energy sources?
- c) Do you see barriers that could hinder standards from identifying the most sustainable outcomes?

The panel members were selected based on their activity, participation and leadership in the area of sustainability and provided broad representation of global stakeholders. The list below identifies all of the panel participants, their affiliations and the perspective they were asked to represent based on their experience and knowledge of the specific communities.

- Claudio Guerreiro (claudio.guerreiro@abnt.org.br) from ABNT provided the perspective of an international standards development organization;
- Ortwin Costenoble (ortwin.costenoble@nen.nl) from NEN provided the European perspective;
- Keith Kline (klinekl@ornl.gov) from US DOE Oak Ridge National Laboratory provided the perspective of developing countries;
- Richard Nelson (rnelson@ksu.edu) from Kansas State University provided a North American perspective;
- Emerson Kloss (emerson.kloss@itamaraty.gov.br) from Brazil government provided a GBEP and Brazilian government perspective;
- Barbara Esker (barbara.m.esker@nasa.gov) from NASA is a developer of the scientific data needed to compare fossil fuel and biofuel options, and provided that perspective.

Technical experts have long agreed that sustainable energy resources are necessary for the health of the global environment and the well-being of world citizens, and that bioenergy is a critical part of the energy portfolio. Sustainability as defined in the international community includes environmental, social and economic aspects. If one considers these three aspects as a footprint, in at least two dimensions, we can visualize that the shape of the footprint can vary significantly depending on local needs, even if the area of the footprint is the same. Therefore, when discussions began among technical experts and policy makers as to how to ensure sustainable bioenergy portfolios for the future, criteria and related thresholds began to emerge. Difficulties in establishing metrics, as well as what should be measured, complicated the path forward. Experts agree that scientific discussions must occur, and that all criteria or metrics must be arrived at by consensus, and that they must be measurable and all

measures must also be based on solid science. How this is to be accomplished has been debated and discussed in the international arena in such bodies as GBEP, ISO and others. Approaches that set specific criteria along with thresholds can serve to build intellectual capacity, but concern was expressed that developing countries might be prevented from entering the marketplace if these are too prescriptive.

Several panelists expressed the concept that in addition to being multidimensional, sustainability is not static, it is not an endpoint, but rather it is a path. Standards can provide guidance and best practices that can help move a system or process forward, so that it continually becomes more sustainable. For any standard to have a positive effect for developing economies, it must be adaptable to local needs and have an education component. Experts agreed that differing and changing policies make international sustainability standard development extremely challenging. However, the scientific community must persist in the development of consistent, transparent scientific approaches to sustainability. What is clear is that this is a global issue, and the scientific community has to work on it together.

Some of the overarching issues that were identified during the discussions were the following:

- Informed decisions about sustainability must be based on the available sound science and common sense. It is our responsibility as scientists to resist policy when it does not make sense.
- To make a difference for developing nations, the standards that are made need to be adopted by users, must meet the local need, and should be adaptable to changing situations and priorities. It is very complex because there are regional differences.
- Standards and their development can serve to teach both the market and policy makers valuable things about sustainability. However, frequent changes in policy add uncertainty to both industry and the development of industry standards.
- One extreme challenge is the lack of metrics/measures for sustainability, since one of the fundamental requirements of a standard are “measurements”. There is an over-reliance on questionable assumptions and models to estimate “sustainability” values.
- Sustainability is not an equilibrium, it is a value judgment; there is no such thing as a “sustainabilitymeter”. So one should not expect standards to give a single answer on sustainability.