Terça, 19 de março de 2013.
8:30 – 12:30: Pilar ambiental
Moderador: Dr. Manoel Souza, Embrapa Agroenergia

Indicadores da GBEP:

1. Ciclo de vida das emissões de GEE
5. Uso e eficiência da água
6. Qualidade da água
8. Uso da terra e mudança no uso da terra relacionados à produção de matéria-prima para a bioenergia

Palestras:

- **Pegada Hídrica da Bioenergia**
(Rita Monteiro Marzullo, IEE/USP, Laboratório de Avaliação do Ciclo de Vida de Sistemas Energéticos);
- **A importância do zoneamento agroecológico**
(Luis Carlos Job, Departamento de Cana de Açúcar e Agroenergia, MAPA);
- **Uso eficiente dos recursos naturais**
(Martina Otto, PNUMA);
- **Capacidade produtiva da terra e dos ecossistemas**
(Celso Manzatto, Embrapa Meio Ambiente);
- **A abordagem do setor sucroalcooleiro para o protocolo agro-ambiental**
(Davi Alencar de Araújo, Raízen);
- **Critério e certificação internacional**
(Emerson Kloss, MRE);
- **Avaliação da sustentabilidade ambiental da produção de biomassa lenhosa**
(Bob Bilby, Weyerhaeuser); e
- **Análise do ciclo de vida do GEE**
(Marcelo Moreira, ICONE).

ENVIRONMENTAL PILLAR	
THEMES GBEP considers the following themes relevant, and these guided the development of indicators under this pillar: Greenhouse gas emissions, Productive capacity of the land and ecosystems, Air quality, Water availability, use efficiency and quality, Biological diversity, Land-use change, including indirect effects[9]	
INDICATOR NAME	INDICATOR DESCRIPTION
1. Lifecycle GHG emissions	Lifecycle greenhouse gas emissions from bioenergy production and use, as per the methodology chosen nationally or at community level, and reported using the GBEP Common Methodological Framework for GHG Lifecycle Analysis of Bioenergy 'Version One'
2. Soil quality	Percentage of land for which soil quality, in particular in terms of soil organic carbon, is maintained or improved out of total land on which bioenergy feedstock is cultivated or harvested
3. Harvest levels of wood resources	Annual harvest of wood resources by volume and as a percentage of net growth or sustained yield, and the percentage of the annual harvest used for bioenergy
4. Emissions of non-GHG air pollutants, including air toxics	Emissions of non-GHG air pollutants, including air toxics, from bioenergy feedstock production, processing, transport of feedstocks, intermediate products and end products, and use; and in comparison with other energy sources
5. Water use and efficiency	▪ Water withdrawn from nationally determined watershed(s) for the production and processing of bioenergy feedstocks, expressed as the percentage of total actual renewable water resources (TARWR) and as the percentage of total annual water withdrawals (TAWW), disaggregated into renewable and non-renewable water sources ▪ Volume of water withdrawn from nationally determined watershed(s) used for the production and processing of bioenergy feedstocks per unit of bioenergy output, disaggregated into renewable and non-renewable water sources
6. Water quality	▪ Pollutant loadings to waterways and bodies of water attributable to fertilizer and pesticide application for bioenergy feedstock cultivation, and expressed as a percentage of pollutant loadings from total agricultural production in the watershed ▪ Pollutant loadings to waterways and bodies of water attributable to bioenergy processing effluents, and expressed as a percentage of pollutant loadings from total agricultural processing effluents in the watershed
7. Biological diversity in the landscape	▪ Area and percentage of nationally recognized areas of high biodiversity value or critical ecosystems converted to bioenergy production ▪ Area and percentage of the land used for bioenergy production where nationally recognized invasive species, by risk category, are cultivated ▪ Area and percentage of the land used for bioenergy production where nationally recognized conservation methods are used
8. Land use and land-use change related to bioenergy feedstock production	▪ Total area of land for bioenergy feedstock production, and as compared to total national surface and agricultural and managed forest land area ▪ Percentages of bioenergy from yield increases, residues, wastes and degraded or contaminated land ▪ Net annual rates of conversion between land-use types caused directly by bioenergy feedstock production, including the following (amongst others): o arable land and permanent crops, permanent meadows and pastures, and managed forests; o natural forests and grasslands (including savannah, excluding natural permanent meadows and pastures), peatlands, and wetlands

- Emerson Kloss, MRE

Padrões de Certificação de Sustentabilidade

- Davi Alencar de Araújo, Raízen
- Bob Bilby, Weyerhaeuser
- Rita Monteiro Marzullo, IEE/USP
- Luis Carlos Job, MAPA
- Celso Manzatto, Embrapa

Conclusões

1. Necessário ter um **arcabouço regulatório** nacional, sólido e claro, conectado com o que acontece no exterior (se existir a opção pela exportação), visando atrair investimentos privados;

2. Políticas construídas tendo como base o **conhecimento científico** relacionado a redução de emissão de GHG, uso eficiente de água e solo, proteção da biodiversidade, mapeamento e classificação dos recursos naturais, etc.;

3. Manutenção e ampliação em **PD&I**, tanto público quanto privado; e

4. Necessário ligar a implementação dos indicadores de sustentabilidade a **oportunidades de negócio**, para atrair o setor privado.