

**Unclassified**

**SG/SD/RT(2007)5**

Organisation de Coopération et de Développement Economiques  
Organisation for Economic Co-operation and Development

**19-Nov-2007**

**English - Or. English**

**GENERAL SECRETARIAT**

**SG/SD/RT(2007)5  
Unclassified**

## **Round Table on Sustainable Development**

### **CHAIRMAN'S SUMMARY**

**20th Meeting of the Round Table on Sustainable Development:  
Biofuels: Is the Cure Worse than the Disease**

**11-12 September 2007  
OECD Headquarters, Château de la Muette, Paris**

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**JT03236228**

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### **Biofuels: is the cure worse than the disease?**

*The following is a summary of the discussion on 11-12 September 2007, issued under the Chairman's responsibility. Please note that, in keeping with Round Table procedures, detailed conclusions will not be circulated.*

The discussion centred around two questions: the first on the technical and economic potential of biofuels, the second on government policies that influence their production and consumption.

#### **1. Do the technical means exist to produce biofuels in ways that enable the world to meet demand for transportation energy in more secure and less harmful ways, on a sufficient scale and without compromising the ability to feed a growing population?**

*The costs and benefits of producing biofuels are specific to their location, technology and feedstock*

It was pointed out that the sustainable potential of bioenergy and liquid biofuels is location-specific. Biofuels should be distinguished according to the feedstock used, where and how they are produced and for which market. All biofuels are not created equal – land use, soil type, nutrient recycling and water demand all need careful assessment to ensure a positive environmental balance.

Studies and scenarios indicating that biofuels could provide somewhere between 10 and 20% of energy demand in the transport sector in 2050 were not challenged. Reference was made to the importance of a portfolio approach in mitigating climate change and that the world is not in a position to dispose of bio-energy in this regard. In fact, bio-energy currently meets most of the energy needs of 2.4 billion of the world's poor.

*Achieving the potential for biofuels to deliver a sustainable and significant contribution to the energy needs of the transport sector is challenging*

However, it was also noted that there are severe limitations to biofuels production based on conventional technologies. The specific circumstances in Brazil (tropical climate and large areas of suitable land) are unique in the world. Several stressed that the sustainability of biofuels is as important as their economic impact. The environmental impacts of biofuels production are not adequately priced in the market and social impacts may not always be politically acceptable (upward pressure on food prices, for example).

There were opposing views regarding the environmentally sustainable potential of biofuels. One was that their ecological footprint will always be negative and unsustainable, as there are limits to what nature can provide. Biofuels do require a net energy input to be produced and will therefore put pressure on natural resources such as clean water and air, high-quality soil and fossil fuels used in fertilisers.

The alternative view was that sustainability criteria should not be absolute and should allow for mining of natural resources in a transition period to help find the technological means for a sustainable energy future. During this transition biofuels having a lower environmental impact compared to their fossil fuel alternatives should be favoured. A full life cycle assessment of the GHG balance is key to differentiating between biofuels – there are, however, still many uncertainties in establishing that balance. The importance and difficulty of allocating GHG credits between co-products was emphasised.

*More research and tools are needed to establish reliable full life-cycle GHG balances of biofuels pathways*

It was acknowledged that there are large differences between the full life-cycle GHG balances of different biofuels production methods. The high risk of land use changes, washing away decades of future GHG emissions reductions when wetlands, carbon rich pasture lands, savannas and tropical forest are converted to crop land, are very real. On the other hand, sugar cane to ethanol in Brazil and second generation technologies could reduce GHG by 90%.

There were those who saw the glass as half full and others as half empty in this regard. The first group emphasised the opportunity to realise GHG reduction between 20-90% if the negative consequences of land use change could be avoided and the right technologies pushed to the market. The latter emphasised the high risk of aggravating GHG emissions, as the instruments to control the negative consequences are not yet available.

*An augmented biofuels industry will impact food security*

It is clear that an augmented biofuels industry will impact agricultural markets and that food prices are likely to rise with increased demand for agricultural resources. However, this situation will create winners as well as losers. The agricultural sector in some countries will benefit, as they will receive higher prices for their products. Net importers of both food and fuel will be losers, as both are likely to rise. The least developed countries could find themselves in a difficult position, as several countries in Sub-Saharan Africa have already completely exhausted their agricultural capacity and still rely on imports.

Overall it was deemed that more analysis is needed to improve the understanding of the consequences of biofuels production on agricultural markets on both a regional and sectoral basis.

*The energy security benefits are easily overstated*

As for the alleged energy security benefits of biofuels it was stressed that they are a 'price taker' rather than a 'price maker'. This implies that as long as biofuels supply a relatively small share of the market their price will be determined by the price and volatility of petroleum products.

*For the foreseeable future biofuels will only be competitive in a few (niche) markets*

The economic benefits and competitiveness of conventional biofuels are also location-specific. An example of this is the failure to replicate the Brazilian experience in Africa. The long-term economics should be looked at carefully before governments decide to subsidise biofuels and attempt to establish a biofuels industry.

Some of the assumptions underlying more favourable scenarios for both first- and second-generation biofuels were questioned. Declining feedstock prices are based on engineering cost assumptions and do not take into full account all market drivers. Higher demand from several sectors (heat, electricity, materials) on the same feedstocks may not lead to the assumed downward trajectory of prices. At present waste material costs only as much as its transportation; this will change as a market for it becomes available. This in combination with the fact that a cellulosic plant is more capital-intensive and therefore requires lower feedstock prices makes the economics challenging.

*Second generation biofuels hold promise though there is uncertainty regarding their time scale and potential*

The scenario for total biofuels production providing up to 20% of energy demand in the transport sector in 2050 includes the introduction of second-generation biofuels. However, at present these advanced technologies are not commercially viable without government support. Their development depends on future feedstock prices, oil prices, rate of investments and technological development. The sustainability of these technologies will depend on the availability of alternative feedstocks such as crop waste, wood or algae.

Optimism was expressed by some that commercial-scale demonstration plants – i.e. for biomass-to-liquids (BTL) – are currently being built that are expected to produce biofuels for around € 0.70 – € 0.90 per litre (still well above current high market prices for petroleum products). A time frame for the commercialisation of biofuels of 5 to 15 years was deemed feasible. The full life-cycle emission reductions of BTL compared to fossil alternatives is expected to be large, around 90%. Some believed that developments might positively surprise us by highlighting the great amount of talent, money and intellectual capacity flowing to the sector at present.

*Supply and demand side measures to reduce energy use and emissions in the transport sector are needed, but do we have the balance right?*

The question was raised whether support to biofuels is the best way to use scarce taxpayer money— i.e. whether energy efficiency and other demand-side measures are not more cost effective. Though energy efficiency is indeed in many instances the more cost effective option, the political economy and/or practical implication of these options are not always easy (i.e. phasing out incandescent light bulbs).

A study by the International Transport Forum analysing 400 measures to reduce CO<sub>2</sub> in the transport sector was mentioned. Biofuels were not among the most cost-effective, as their abatement costs were in the range of \$400-1000 per tonne of CO<sub>2</sub> avoided compared to \$100 per tonne from other measures. Abatement costs are also location-specific: differing regional energy supply strategies influence their cost. The same holds for the demand side. The efficiency of the US refining system lower than the system in France, for example, which leaves more room for improvement. The same is true for vehicle efficiency.

In this respect it was also noted that liquid biofuels are perhaps not the best use of scarce biomass. An alternative could be to use biomass to produce electricity and use plug-in-hybrid electric vehicles for transportation. In IEA scenarios biofuels are responsible for roughly one-third of CO<sub>2</sub> reductions, with the remainder coming from energy efficiency. However, there is a serious risk that part of the emissions reduction could be offset by a greater use of fossil alternatives such as coal-to-liquids and tar sands in the transport energy mix.

**2. *Do current national and international policies that promote the production of biofuels represent the most cost effective means of using biomass and the best way forward for the transport sector?***

*Liberalising trade is desirable for achieving GHG mitigation objectives and provides opportunities for developing countries*

Trade liberalisation is desirable as it allows more efficient production of biofuels and reduces their cost in highly protected markets. In a similar vein, the possible reduction in GHG could be maximised as biofuels produced in tropical regions require less fossil inputs (leaving land use changes out of the equation for the moment). The efficient producers would be the winners from trade liberalisation.

However, it is not yet a serious prospect that tariff and non-tariff trade barriers will be lowered. It was pointed out that in the Doha Round there is a mandate to reduce barriers for environmental goods but that both biodiesel and ethanol are not on the list.

Furthermore, tariffs are not the only barriers to trade. Just as important are subsidy schemes targeted to protect domestic production. Disciplining subsidies in agricultural sectors as targeted in the Doha Round could help developing countries and trade in biofuels. As long as this is not done effectively subsidies will continue to undermine the comparative advantage of tropical countries, as these countries lack the deep pockets to match the subsidy schemes in OECD countries. Alternatively, countries could start bidding up their support systems, which could be seen as a trading of the subsidy. This could prolong and even worsen the distortions in the market. Therefore it was deemed important to deal with the complete picture and not focus only on tariff barriers. Although, subsidies for fossil fuel production are smaller per litre they should not be forgotten, as they make achieving energy goals more difficult by subsidising energy use and making energy efficiency harder to achieve.

There is a tremendous momentum behind current subsidy schemes that will not be easily stopped. For that reason countries should be cautious with the introduction of new support schemes.

Finally it was pointed out that support schemes and exemptions in import tariffs favouring certain countries may induce a boom/bust cycle when withdrawn. Such was the case with Pakistan. Whereas before Pakistan could export its ethanol to the EU at a zero tariff, after being brought under the EU's General Regime on 1 January 2006 the country immediately experienced a large loss of trade and the closure of operating distilleries. For this reason it was deemed important to give developing countries a long-term perspective and not constantly change the rules of the game.

*Strong support for sustainability standards in combination with international certification scheme*

Producing biofuels and liberalising trade could endanger environmental values, as the overall environmental impact of some biofuels will exceed those of petrol and mineral diesel. Trade and certification were seen as two sides of the same coin. The difficulties in certification were acknowledged, but it was argued that this provided arguments for doing more, not less. It was stated that in many instances setting sustainability standards also makes good business sense, as well-managed plantations have higher productivity.

It was emphasised that sustainability standards and certification schemes should be developed internationally and as soon as possible. The worst-case scenario is that several standards and schemes would be implemented simultaneously, raising compliance cost for producers and confusing consumers. Countries should therefore organise themselves around existing initiatives. Joint initiatives such as those of the UK, the Netherlands, Germany and several other countries, the Round Table on Sustainable Palm Oil and the Round Table on Sustainable Biofuels were mentioned as being possible focal points for international co-ordination.

The first priority should be to agree on international standard to assess sustainability. The second step is to implement it in a certification scheme. Though it has been shown that controlling the complete value chain is possible for some, for smaller producers this will not be a feasible option. The traceability of liquids is extremely difficult. For distribution companies it will not be possible to rely on the few companies that can do this; they will need more suppliers. Therefore, an alternative system was proposed similar to the trading of carbon certificates. Farmers would certify their harvest and then sell their certificates on the market to distributing companies that could use them to offset their supplies. In this case the need to control the complete value chain could be avoided.

Finally it was stressed that performance-based policies will only be as good as information they are based on, and the information available is not as good as one would like or need.

*How to avoid friction between liberalising trade and certification schemes?*

To be effective a certification scheme should be mandatory. However, to avoid that the scheme will be judged as discriminatory by a WTO dispute panel, the UK and The Netherlands have chosen to work with a mandatory reporting requirement on the sustainability standards. This could be complemented by a GHG balance model. It was also pointed out that certification schemes could gradually be made stricter in future in order to try to phase out first-generation biofuels. This together with R&D expenditure could support the transition to second generation fuels.

*Capacity building and technical assistance should go along with the implementation of certification schemes*

Other argued however that imposing certification on developing countries means many will be disqualified, as they often lack the means to follow up. This was considered to be less the case in the current producer countries but more so in Africa. It was emphasised that countries should not disadvantage producers in the South, who often lack systems for food safety, tractability systems, intellectual property protection and huge tariffs on fertilisers. Capacity building and technical assistance were offered as a possible solution.

*Displacement effects cannot be avoided by certification schemes*

Attention was drawn to the fact that certification schemes do not account for displacement and indirect effects. Certification tends to focus on specific hectares of land; it should be possible to manage and enforce the rules on these hectares over time. What happens to other land as a result is less understood.

Southern Brazil was given as an example. In this region when pasture land with low productivity is converted for sugar cane production the one-time release of CO<sub>2</sub> might be acceptable. But what happens to the cattle on that land? Such cattle are often forced into a more intensive feed-look situation and fed with soy beans grown in the North on more ecologically sensitive land. The point was made that one hectare managed sustainably does not cancel out unintended consequences on a country or international scale. Increased ethanol production in the US means the US will export less soy beans – this means other countries will try to fill the gap, potentially at the expense of rainforest in Latin America.

Such displacement effects are unfortunately difficult to trace and even more complicated to act upon. It was pointed out that countries should not on the one hand agree on trade liberalisation while on the other creating new barriers to trade by looking at indirect land use. The only option is to look at the full life-cycle analysis, difficult as it may be. Certification should not be used as instrument against displacement effects.

An interesting question in this regard is how land that has been cleared in the past should be treated in future certification schemes. In South East Asia this has happened on a large scale, though it could be argued that this is water under the bridge. And what about “accidental fires”?

*Using satellite images*

Global satellite observation systems that belong to NASA and ESA deliver data on global ecosystem productivity. It was suggested that, done on an international level, this could be used as a means for setting up proper land use planning systems, as a law enforcement tool and to provide a real-time picture of what is happening to the forest, water supply and land use.

*Standards and mandates should differentiate between biofuels in terms of their GHG balance*

It was felt that the low carbon fuel standard (LCFS), as it is called in California, should receive more attention. For some there were clear advantages of this instrument over volumetric blending targets. The LCFS does not specify renewable fuels, but rather requires that the carbon intensity of transportation fuels sold in California be reduced by at least 10% by 2020. It is essentially a performance-based requirement for all transportation fuels (based on life-cycle GHG reductions) and thus requires certification. An advantage is that it encourages all low carbon fuels and, because it is performance based, favours biofuels with higher GHG reductions. In a similar vein, it discourages use of unconventional oil.

*Objectives and implications of biofuels policies need clarification*

A general feeling was that the objectives for biofuel policies were not clearly stated, which makes evaluating them difficult. Many different objectives figure in at the same time and a broad array of factors must be taken into consideration. There is a strong emphasis on climate change mitigation, energy security and rural development but also local air pollution. Geopolitical considerations, economic and biodiversity objectives should not be forgotten.