

CAE/G8531/JHU

Geneva, 29 April 2008

## **SECOND GENERATION BIOFUELS - STILL NOT AN ECONOMICALLY VIABLE SOLUTION.**

*Economic analysis of Second Generation Biofuels (SGB) - information note.*

**Biofuel – not part of the solution but part of the problem.**

### **I. BACKGROUND**

On 5 April 2008, the UN secretary-general, Ban Ki-moon, has joined the group of biofuel critics and called for "...a comprehensive review of the policy on biofuels as they are causing a crisis in global food prices and threaten to trigger global instability. Not only but also due to the increasing production of biofuel the cost of rice has risen by 20% over the past year, maize by 50%, wheat by 100%."

He continued saying that "Caused by the increasing use of crops for energy generation the United Nations will need an extra \$500 million from Western governments to meet the current yearly food aid gap." ([www.guardian.co.uk](http://www.guardian.co.uk))

In a similar context the European Environmental Agency announced on 10 April 2008 that "the overambitious biofuel target is an experiment, whose unintended effects are difficult to predict and difficult to control. Therefore the EEA Scientific Committee recommends suspending mandatory Biofuel mix, carrying out a new, comprehensive scientific study on the environmental risks and benefits of biofuels, and setting a new and more moderate long-term target, after sustainability can be guaranteed." ([www.eea-europa.eu](http://www.eea-europa.eu))

Finally, Mr. Stern, author of the UK government's influential review of the economics of climate change and former World Bank chief economist, told the Financial Times on 26 April that "the use of biofuels was very worrying, particular the grain based fuels which compete with food".

### **The dogmatic focus on biofuels**

Without any in depth economic or environmental analysis, biofuels were a few years ago promoted as an economically viable solution to the climate change problem. Some countries such as the United States of America, European Union Member States, Australia and Japan have even made the blending of normal fuel with biofuel mandatory.

Nowadays, first generation biofuels made from maize, soya rape seeds or sugar cane, have been identified as not being part of the solution but rather part of the problem as they are responsible for more CO<sub>2</sub> than fossil fuel, destruction of biodiversity, over-fertilisation, huge water usage and the felling of forests just to name a few.

Lately the focus has shifted to so called Second Generation Biofuel (SGB) which is produced from organic waste and cellulose-containing material such as wood, straw, grass. Without any in depth scientific background SGB are again promoted as the solution.

In the following paragraphs the document will dismantle the myths that are used in the promotion of those SGB.

## **Second Generation Biofuels are not an economically viable alternative!!**

### **Myth 1:** SGB can be sold at a reasonable price

On paper, SGB are considered to have considerable economic potential. However, only very few SGB plants exist and practical production knowledge is limited. According to economic feasibility studies, building a mid-size SGB plant costs roughly 650 Mio €. This plant would use 1 Mio tonnes biomass to produce around 80.000 tonnes SGB. Considering this output and to cover investment costs and production costs a net price of 1,09€ per litre would be necessary. (Source: Study by ESU-Service for the Swiss Confederation, UFEK). Adding to this the industry profit margins, transport costs and taxes, the final price of SGB at the pump will be close to 2€ per litre (diesel price on 11.04.2008: Germany 1.29€, France 1,27€, USA, 0,66€). Even if SGB would finally only be blended with fossil fuel with a 10% rate, the price of that normal fuel would still increase by around 0,05€ per litre.

### **Myth 2:** The use of SGB is economically feasible for road transport

A comparison of energy characteristics of various fuels shows that to obtain the same operating efficiency of a truck using diesel fuel (see table 1) SGB require larger tanks than diesel tanks because it has a lower energy density. In other words, by running on alternative fuels, a truck will have both lower engine performance and would have to carry additional fuel weight instead of transporting goods.

*Table 1: Energy characteristics of fuels - weight & volume of fuel for same amount of energy*

		<i>Weight coefficient</i>	<i>Volume coefficient</i>
<i>Fossil fuel</i>	Diesel Fuel	1	1
<i>Biofuel</i>	Methanol (CH <sub>3</sub> OH)	2.2	2.1
<i>Biofuel</i>	Ethanol (C <sub>2</sub> H <sub>5</sub> OH)	1.62	1.53

### **Myth 3:** The use of SGB will have no follow-up costs for road transport operators

There are serious problems with operating conventional gasoline vehicles with an alcohol-gasoline blend. Alcohols tend to degrade some types of plastic, rubber and other components and accelerate corrosion of metals. These problems can only be eliminated by stainless steel components such as fuel filters. According to test by transport operators and vehicles producers the cost of making a vehicle capable of running on SGB may cost up to a few hundred EURO per vehicle.

In addition many vehicle manufacturers have limited their warranty agreement to the use of certain fuel types, meaning the use of SGB will end the vehicles guarantee and maintenance costs would have to be covered by the vehicle owner.

### **Myth 4:** SGB will reduce CO<sub>2</sub> emissions economically

Currently there are **no** Live Cycle Analysis regarding CO<sub>2</sub> emissions from SGB and therefore there are also no scientific figures comparing the wheel to wheel CO<sub>2</sub> emissions of SGB and diesel fuel.

However, research initiatives such as the RENEW (Renewable Fuels for Advanced Powertrains) by the EU or investigations by ISO assume that the CO<sub>2</sub> abatement costs for SGB would be around 280€/t CO<sub>2</sub> equivalent. In comparison to that the CO<sub>2</sub> abatement costs through truck driver training can be estimated at 100€/t CO<sub>2</sub>. For this calculation the time period was set at one year and a truck performance of 100.000km. This CO<sub>2</sub> abatement price will further reduce over the years. This shows that rather focusing on the production of SGB the focus should be put on more cost effective reduction schemes such as driver training or the diversification of energy sources where economically viable alternatives to fossil fuel exist.

## II. CONCLUSION

It can be confirmed that SGB are not an economically viable solution for road transport and should only be used for stationary applications where it might be an economically viable alternative to fossil fuel, or for local niche markets in mobile applications where it is proven to be a sustainable alternative to fossil fuel.

## III. ACTION

The IRU and its member have stressed at several occasions that commercial road transport is and will remain dependent on oil with no economically viable alternative in sight. This position will continuously be the basis for the lobby work vis-à-vis competent national and international authorities.

IRU members are kindly invited to use the information of the IRU "Did you know...? Facts on Road Transport and Oil" brochure and the figures of the IRU website "The IRU and CO<sub>2</sub>" to argue against the use of biofuels for environmental and economic reasons.

IRU members are kindly asked to familiarise themselves with the analysis and the arguments on Second Generation biofuels, as set out in this document, and should, if necessary translate them into their national language in order to facilitate the communication vis-à-vis their competent national authorities.

Specifically, IRU members should convince their government to

- stop the promotion of first and second generation biofuels due to economic and environmental concerns and
- stop the mandatory mix of biofuels to fossil fuel.

The use of biofuels will be on the agenda of the meeting of the International Transport Forum (ex-ECMT) on "Transport and Energy – the Challenges of Climate Change" which will take place in Leipzig from 28 to 30 May 2008. In addition, biofuels will play a dominant role at the G8 Summit to be held in Japan from 7 to 9 July 2008. Therefore, IRU members are kindly asked to see their national ITF and G8 delegation to brief them on biofuels in due time.

Finally, in order to coordinate our lobby action IRU members are kindly requested to inform the General Secretariat ([jens.huegel@iru.org](mailto:jens.huegel@iru.org)) about their lobby achievements or obstacles by 30 June.

\* \* \* \* \*