

## **EC's Consultation on Indirect Land Use Change**

### **Brazil's Comments**

In response to the invitation forwarded by the European Commission, the Brazilian Government is pleased to present the following comments to the EC's public consultation on "Indirect Land Use Change of Biofuels".

#### **I- General Remarks**

Brazil, like the European Union and several other partners, is convinced that a new energy paradigm is needed, and that biofuels have to be a part of it. The world's current challenges - sustainable development, climate change, the financial and economic crisis, energy price instabilities - should be seen not as obstacles, but as opportunities for this change. Biofuels positive externalities have a multidimensional nature: they can be associated with income generation, job creation, rural development, greenhouse gases emissions reductions, and increased access to energy, all of which are of particular interest to developing countries. Hence, biofuels are at the intersection of several public policies: social, agricultural, economic, environmental, energy and technological. In this regard, it is crucial to stress that Brazil, as one of the countries with the longest and most consolidated experience in producing and using biofuels, considers the issue of sustainability - in its economic, environmental and social pillars - a matter of paramount importance.

The decision to produce and use biofuels must be an informed and responsible one, and must be taken in view of the world's food and energy security, as well as sustainable development needs. Countries that are assessing biofuels production and use should decide by themselves, based on solid and reliable data and learning from both the positive and negative aspects of existing experiences, since a successful model cannot be identically replicated elsewhere without taking into account local realities and peculiarities. *Brazil is willing to discuss both the challenges and opportunities posed by biofuels in an open, scientifically based and well informed manner, in any fora.* Therefore, we welcome the opportunity of taking part on the European debate on its legislation in the field of energy and climate change.

For decades the agricultural sector in developing countries has been negatively affected by the agricultural policies of developed countries, by trade restrictions, by the lack of access to new technologies and by deteriorating terms of trade. The establishment of an international market for biofuels is an opportunity for agriculture in developing countries and can contribute positively to address global challenges such as sustainable development, energy security, climate change and the achievement of the Millennium Development Goals.

As highlighted in Brazil's comments to the ILUC pre-consultation document (in July 2009), the possibility of producing sustainable biofuels and becoming renewable energy suppliers represents a significant opportunity for many developing countries to revitalize their agricultural sector. Keeping this in mind, *it is important to realize that any arbitrary and subjective measures unilaterally applied that prevent the development of an international market for sustainable biofuels will translate into a "de facto" direct subsidy to fossil fuel consumption that the EC policies intend to reduce.* This seems to be in contradiction with the overall policy goal of reducing greenhouse gases (GHG) emissions and combating climate change.

This is the context in which the debate about the interlinkages among GHG emissions, land use change and biofuels takes place. At present, there is no agreed scientifically based methodology to calculate GHG emissions from indirect land-use changes (ILUC). Furthermore, *the issue of ILUC cannot be treated isolated from global agricultural dynamics and broader deforestation drivers*. The fact is that today biofuels only occupy 1% of the world arable land in production, a figure expected to reach 2% by 2030 according to the International Energy Agency. It would therefore make little sense to address ILUC by only biofuels-related policies. This means ILUC must be analyzed as a global issue that requires global solutions based on real scientific consensus, and not as a hastily analysed phenomenon limited to biofuels and specific countries.

*On this basis, Brazil favours the route of dealing with the issue of greenhouse gas emissions due to indirect land-use change through the creation of an international framework, in particular within the UNFCCC, to promote sustainable management practices in carbon-rich habitats and the improvement in the quality of living of the populations that may inhabit these areas.* Indirect land use change impact on greenhouse gases emissions is not associated exclusively to biofuels production or for that matter to the agricultural sector. Denying this fact will make it nearly impossible to address the impact of land use change (direct or indirect) in climate change.

This sensible option that chooses to address the issue of land use change in the international arena, which received the backing of many consulted parties, must be taken under consideration by the European Commission.

## **II- Questions**

**1) Do you consider that the analytical work referred to above, and/or other analytical work in this field, provides a good basis for determining how significant indirect land use change resulting from the production of biofuels is? In answering this question you may for example wish to comment on:**

- **projected volumes of conventional and advanced biofuels in 2020**
- **assumptions around EU vehicle fleet and infrastructure in 2020, including diesel/petrol split and pace of introduction of new technologies**
- **models' treatment of crop yield growth "in the baseline" and in response to growth in demand;**
- **the underlying land use data**
- **the carbon stock values used in modelling and type of converted land**
- **models' treatment of co-products**
- **significance of the results in terms of hectares of land use change and emissions**

Effective policies must be based on sound data. At this stage, we believe the scientific knowledge, available methodologies, databases and analysis tools do not provide proper basis for a precise evaluation of indirect land use change impacts resulting from the production of biofuels. A simple comparison between the conclusions proposed by the “analytical exercises” commissioned or released by the European Commission under this public consultation clearly indicates that the uncertainties remain very high.

These studies present some very significant limitations, which are generally recognized even by their own authors. First, *they do not take account of the fundamental role of public policies on land use management and deforestation*. They assume that the dynamics of indirect land use change can be measured by a single econometric

modelling applied to any region or country. They neglect the fact that the impacts of legal constraints imposed by public policies can not be measured, translated into a single formula and applied as an universal factor. Second, these studies generally have not include in their modelling factors such as (i) pasture displacement and intensification; (ii) second crop production; (iii) co-generation of energy or bio-chemicals; and, still more concerning, (iv) the actual relevant drivers of conversion of forests, which are not related to biofuels feedstock production and are fundamental to the understanding of the dynamics of land use change in a country like Brazil.

To further illustrate the complexity of the subject, there are disturbing disparities in ILUC calculations for sugarcane ethanol according to modelling scenarios performed or commissioned by regulatory authorities in the US and Europe:

- According to the California Air Resources Board, ILUC for sugarcane ethanol, would be 46gr CO<sub>2</sub>eq/MJ, though this value is currently under revision;
- According to IFPRI for the European Commission DG Trade, ILUC for sugarcane ethanol would be 17gr CO<sub>2</sub>eq/MJ;
- According to the US Environmental Protection Agency, ILUC for sugarcane ethanol would be 3.8 gr CO<sub>2</sub>eq/MJ.

Another common problematic aspect concerning modelling studies is the underestimation of productivity gains. The IFPRI Report (*Global Trade and Environment Impact Study of the EU Biofuels Mandate*), for instance, largely underestimates the productivity of new areas put into production, one of the most important variables to be taken into account. It is noteworthy that the mixture of 10% ethanol in all gasoline currently consumed in the world (approximately 1.3 trillion gallons annually), could require the occupation up to 30 million hectares for the production of feedstocks (average productivity of 4,500 liters per hectare from corn, sugar beet or cane sugar). This represents less than 2% of the area currently occupied with agriculture worldwide. It means that with a very low productivity gain, these goals could be achieved without the need to increase the planted area.

It is equally important to point out the fact that one of the tools being used to estimate ILUC are econometric models that attempt to establish quantitative causal links between the production of biofuels feedstocks in one place and land-use changes somewhere else. It is unlikely that these models can account for all the variables, and even if they did, the availability of data to feed such models is limited, particularly in developing countries. One of the greatest difficulty in the simulation and long-term estimate models is incorporating evolutions of public policies and regulations whose effects cannot be perceived in statistical analyses since they have occurred recently and have not yet significantly altered the mathematical tendencies of historic series. The models also lack explanatory mechanisms, thus being limited in their ability to predict ILUC reliably. The recognition that there are significant differences among countries' realities also needs to be taken into account.

For instance, while in some countries the production of biofuels feedstocks may trigger deforestation, in others, such as Brazil, the available data from remote sensing sources about areas of sugarcane production indicate that the direct effect is in areas of agriculture and degraded pasture, and that no indirect effect that contributes to the deforestation of the Amazon is taking place. Available data shows that both sugarcane production and cattle herds are increasing at the same time while deforestation has been steadily decreasing in the Amazon since 2004. Hence, according to satellite data available, deforestation in the Amazon does not occur as a result of ILUC in Brazil.

The Brazilian experience indicates no relevant conversion of forests caused, directly or indirectly, by the production of biofuels. Official data from the Brazilian program for the monitoring of the Amazon<sup>1</sup> shows that the rate of annual deforestation in Brazil decreased from 27 thousand Km<sup>2</sup> in 2004 to 7 thousand Km<sup>2</sup> in 2009 (-74,4%). At the same period, sugarcane plantation area increased from around 22 thousand Km<sup>2</sup> to 34 thousand Km<sup>2</sup>. The production of sugarcane ethanol, by far the main biofuel in Brazil, keeps increasing, as the deforestation rate estimated for 2010 in the Legal Amazonia will remain around 4 thousand Km<sup>2</sup>, the lowest rate ever measured in the country. Since these two trends do not fit into an ILUC model explanation, the reasons for the dynamics of land use change in Brazil must be found elsewhere, in particular, in the efficiency of public policies.

The current rates of deforestation in Brazil have been much lower than those established by its National Climate Change Plan<sup>2</sup>. It includes a number of actions to reduce GHGs emissions, mainly in the sectors of land use, agriculture and cattle-raising. It clearly indicates, for instance, the Brazilian intention to reduce more than 80% the gross deforestation rate until 2017. These actions were translated into commitments under the UNFCCC<sup>3</sup>. In deforestation prevention, the goals of the National Climate Change Plan have been successfully accomplished, mainly due to the efficiency of a set of public policies established in the last years in Brazil in order to contain conversion of natural vegetation in the Amazon and in the Cerrado region. These policies have to be taken into account in any kind of estimation or econometric modelling of direct or indirect land use change.

Furthermore, there are very significant knowledge gaps (such as uncertainty of models, overestimation of ILUC, difficulty in incorporating recent institutional changes in models) with regard to how carbon stocks evolve as a consequence of land-use change. Thorough studies and data production are still required in order to overcome these knowledge gaps. Until this information is available, it is impossible to accurately correlate indirect land-use changes and greenhouse gas emissions in many parts of the world.

The inclusion of indirect land use changes as an element in the calculation of GHG emissions would introduce a level of uncertainty that affects the legitimacy of any policy and its implementation by public and private agents. In order to be useful as a policy instrument, the analysis of indirect land use change and its impact on GHG emissions needs to encompass solid scientific basis that account for any indirect land use change due to any reason or driver.

## **2) On the basis of the available evidence, do you think that EU action is needed to address indirect land use change?**

Considering the abovementioned arguments concerning the lack of scientific basis, it does not seem appropriate or legitimate to impose restrictions on biofuels that supposedly does not comply with controversial and stringent sustainability standards. It is only in international fora that land use change dynamics and the protection of carbon-rich and biodiverse habitats can be tackled. Furthermore, addressing ILUC by policies focusing on the sole 1% of arable land in production used for biofuels crops would be

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<sup>1</sup> <http://www.obt.inpe.br/prodes/index.html>

<sup>2</sup> [http://www.mma.gov.br/estruturas/smcq\\_climaticas/\\_arquivos/plano\\_nacional\\_mudanca\\_clima.pdf](http://www.mma.gov.br/estruturas/smcq_climaticas/_arquivos/plano_nacional_mudanca_clima.pdf)

<sup>3</sup> [http://unfccc.int/files/meetings/application/pdf/brazillphaccord\\_app2.pdf](http://unfccc.int/files/meetings/application/pdf/brazillphaccord_app2.pdf)

highly inefficient in addressing the issue. Efforts should be made to encourage better land use management.

The EU's intention to reduce or mitigate a possible ILUC impact related to energy crops could be highly more efficient if addressed by the means of a more comprehensive approach, in the forms of economic assistance, transfer of technology, scientific cooperation and capacity building. The best way to tackle issues related to Reducing Emissions from Deforestation and Degradation (REDD) would be by encouraging countries to create and refine institutional tools capable of monitoring and controlling the forest degradation processes, promoting orderly agricultural expansion in a sustainable manner, according to policies such as the establishment of Economic-Ecological Zonings.

On the basis of the actual lack of sound available evidence, the only action possible would be the continuation of the investigation on land use change issues, including LULUCF commitments taken under the UNFCCC, focusing on the improvement of the methodologies, inventories, databases and models to properly evaluate the indirect land use change. Meanwhile, it would be desirable to support training programs and technology transfer. This would allow gains in production, especially in agriculture in the poorest countries, including those who have the potential to export biofuels or to use them internally for energy security reasons. This kind of approach could be more effective in maximizing efficiency in the production of biofuels while promoting environmental preservation, as we can learn from the Brazilian experience.

**3) If action is to be taken, and if it is to have the effect of encouraging greater use of some categories of biofuel and/or less use of other categories of biofuel than would otherwise be the case, it would be necessary to identify these categories of biofuel on the basis of the analytical work. As such, do you think it is possible to draw sufficiently reliable conclusions on whether indirect land use change impacts of biofuels vary according to:**

**-feedstock type?**

**-geographical location?**

**- land management?**

**If so, please say which, and indicate the evidence used to reach your conclusion.**

It is clear that yields have a strong effect on land requirement as long as the production of raw material for biofuels is concerned. And it is obvious that feedstock type, weather conditions, soil quality, agricultural practices, etc., have a strong impact on the combined yield (e.g., litres of biofuel per hectare). But these conclusions do not emerge from the analytical work developed taking into account indirect impacts of land use change.

Scientific knowledge can be employed so as to better evaluate the benefits and risks associated with different feedstocks currently used for biofuel production. The geographical location of its cultivation has a direct influence on the level of productive efficiency that can be expected. Finally, technology management, added to soil and climate conditions, are crucial to determining the level of efficiency of any agricultural activity, including the crops for biofuels. Tools such as agro-ecological zoning are extremely useful in identifying the best areas of cultivation and to allow an efficient use according to the potentialities of different crops. However, as mentioned before, there is not enough knowledge concerning ILUC so as to justify restrictions on specific biofuels

production. Any policy conceived in this sense would only create additional burden for developing countries, in particular for medium and small farmers of those countries, instead of focusing on their need for agro-ecological assessment and technology access.

Further development of studies, field data gathering and parameters setting that are linked to those aspects should be promoted. Should the EU wish to encourage some categories of biofuels, it should recognize and accept the existence, in many countries, of effective policies that establish sound land use management and encourage the best performance of biofuels. The Brazilian experience is particularly relevant as it allowed to gain significant yields over the last 35 years of production and use of sugarcane ethanol. The implementation of sound land use management policies such as the Agro-Ecological Zoning for Sugarcane<sup>4</sup> is an initiative that needs to be taken into account by the European Union.

**4) Based on your responses to the above questions, what course of action do you think appropriate?**

**A. Take no action for the time being, while monitoring impacts including trends in certain key parameters and, if appropriate, proposing corrective action at a later date. Please say how the monitoring should be done and what these parameters should be.**

The option should not be ruled out since, for the time being, there is no reliable modelling tools capable of demonstrating that a certain level of emissions savings is insufficient to offset indirect land-use change effects.

*Brazil advocates that positive incentives to emissions savings should be channeled through paragraph 1(b)(ii) in the framework of the Bali Action Plan of the UNFCCC, concerning “nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner”, to ensure that mitigation actions will not only be directed to forest activities but to a wide range of actions in developing countries that can help mitigate climate change in the short and long term.*

These positive incentives for Reducing Emissions from Deforestation and Degradation will ultimately require national policies, measures and actions to be implemented, that would have an impact of land-use strategies of many countries. The implementation of REDD at national level would prevent the risk of emission displacement from forest domains to other carbon-rich non-forest biomes, securing a coherent treatment of ILUC.

While formulating its policy, the European Commission must also acknowledge that many developing countries need financial support, technology and capacity building to enhance their ability to reliably estimate changes in forest cover and the associated changes in carbon stock. In this context, the Intergovernmental Panel on Climate Change (IPCC) provides relevant methodological guidance in its Guidelines and Good Practice Guidance that can be used as a basis to generate estimates of carbon stock changes in several carbon pools.

This assessment process takes time and require financial resources, but it is the only means by which reliable estimates of existing carbon stocks and their changes can be systematically evaluated. It is very likely that, if countries in general aim to establish a sound national inventory, this will facilitate enormously, in the future, reliable estimates

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<sup>4</sup> [http://www.cnps.embrapa.br/zoneamento\\_cana\\_de\\_acucar/](http://www.cnps.embrapa.br/zoneamento_cana_de_acucar/)

to be generated worldwide. A more comprehensive national system for greenhouse gas emission estimates is the ideal approach to tackle ILUC, provided that the realization of in-depth studies and financial resources are made available.

**B. Take action by encouraging greater use of some categories of biofuel. Please say which biofuels, why and what sort of encouragement should be given.**

**C. Take action by discouraging the use of some categories of biofuel. Please say which biofuels and why, as well as what sort of measure should be taken, for example:**

**- increasing the minimum greenhouse gas saving threshold for biofuels**

The design of the Fuel Quality Directive already encourages the fuel distributors to comply with the emissions reduction target by using those biofuels that achieve the most GHG savings. Indeed, the threshold established by EU's RED legislation could possibly already ensure that most biofuels save GHG emissions compared to fossil fuels. However, there are limits in a policy that simply wishes to address ILUC by raising the threshold numbers, mainly because the definition of this threshold would rely on flawed analytical exercises (with their corresponding uncertainties) and would, therefore, be subject to arbitrary political interpretation. Furthermore, this option would only establish guilty on certain feedstocks or regions, without enough evidence. Brazil advocates a more comprehensive approach, through the promotion of better management practices to seek reducing possible ILUC impacts.

**- imposing additional sustainability requirements on certain categories of biofuel (these could, for example, require the use of practices that can help mitigate indirect land use change impacts)**

It is not clear if the mention to "categories of biofuels" refers to different kinds of feedstocks, regions or production pathways. In any case, the discrimination of different kinds of biofuels, due to the uncertainties contained in the analytical exercises, could also be subject to arbitrary political interpretation. These kind of measures should have its compatibility to multilateral trade rules examined, in particular if it would result in the establishment of different requirements for biofuels entering the EU market, depending on the regions or countries they come from.

Second, the imposing of additional sustainability criteria would imply additional administrative burden for the industry and would most probably imply serious barriers to producers from developing countries, in particular medium and small farmers and enterprises. Moreover, the establishing of a "blame game" on some biofuels does not seem to be compatible with the European Union's commitment in promoting low carbon fuels. The sustainability of a biofuel is not only ensured by the feedstock in itself or its area of origin, but also, or mainly, by the public policies that encourage (or not) investments on sustainable biofuels.

**- attributing a quantity of greenhouse gas emissions from indirect land use change to all biofuels that use land.**

**If the latter, please say how this should be calculated, and demonstrated - for example:**

**- a factor based on the estimated (modelled) land use change from a marginal extra quantity of crop production;**

- a factor based on the average land use change from crops over some recent period;
- a factor based on any other consideration.

Please also say

- whether it should be reviewed and if so how often
- whether it should be implemented with any accompanying measures

Because modelling tools are incomplete and drivers of land use change and agricultural expansion for the world as a whole are largely unknown, science is still not able to quantify the level of indirect land use change and their impacts on GHG emissions from biofuels. Not to mention that the introduction of any penalty, based on currently available and flawed analytical exercises, would not at all guarantee any actual reduction of supposed ILUC impacts, but simply disqualify most or even all existing biofuels to be used in the EU's transport sector.

This kind of precautionary penalty measure would not address the main causes for the conversion of vegetation with high stock of carbon and would most probably prevent the development of the biofuels industry. Since this industry is in its early stages in many regions of the world, the best way to help producers to address supposed ILUC impacts would be by the implementation of best land management practices and policies.

Brazil would also like to remind that any evaluation of environmental impacts along the life-cycle production should be based on solid scientific consensus, consistent with the multilateral trade rules, under the WTO.

#### **D. Take some other form of action. Please say what action and why.**

As mentioned above, the biofuel industry is still in its infant stages. Even in the case of ethanol from sugarcane, in which sustainability is assured, it is noticed that not all plants use the most efficient technologies. There are several improvements to be undertaken. Thus, the most important recommendation concerns the need to promote access to technology and best practices in agriculture and land management, in particular to producers in developing countries. This should be part of an integrated and comprehensive approach, where technical studies are conducted to identify the potentialities of each region, taking into consideration relevant environmental, social and economic aspects.

Agriculture, through biofuels production and use, can give an important contribution to strengthening energy security and reducing emissions of greenhouse gases. However, the vast majority of farmers in less developed countries are not prepared to meet the production challenges. The adoption of a restrictive policy, therefore, would have the negative effect of excluding a significant portion of potential producers, without constituting an actual condition to stimulate the organization of this market in a sustainable basis.

#### **III- Final Remarks**

Developing science to understand LUC and ILUC for all land based activities is of great importance. But the current state of knowledge is too immature to evaluate the real dimension of ILUC for biofuels feedstocks or for other types of agriculture activities.



The wide discrepancies in the results of the analytical exercises commissioned by the EC or other institutions, including in other regions of the world, prove that more discussion and scientific progresses are needed in this field. Instead of establishing penalties for biofuels, based on questionable methods, Brazil believes that the best way to address the emissions of all kind of agriculture products, including biofuels' feedstocks, is by the promotion of sound REDD policies that lead to the reduction of deforestation rates and the protection of carbon rich habitats. This approach should be encouraged at national and international levels, including under the framework already established by the UNFCCC.

The European standards for sustainability of biofuels should take into account and recognize the efforts made in some countries, such as Brazil, to establish sound public policies and management practices in land which is both available and suitable for crops for biofuels. The Brazilian experience with Agro-ecological zoning for sugarcane, which is already in force in the country, proves that it is possible to manage land expansion for energy crops and, at the same time, improve the conditions for protection of sensitive areas. Presently, the Brazilian Government is preparing a proposal of legislation that will create an Economic and Ecological zoning for the Amazon region, which is due to establish the different kinds of economic activities that will be allowed in different areas of the Amazon basin, according to environmental criteria and comparative advantages of each or their biomes. These kind of policies represents the best way to further ensure the effectiveness of REDD actions in Brazil, addressing, through a comprehensive approach, issues related to land use change, deforestation and GHG emissions. At the same time, these kind of zoning policies promote the identification of opportunities for sustainable agriculture activities, including for the biofuels industry, compatible with environmental and social concerns.

In recent years, there has been growing international recognition in relation to the sustainability of Brazilian ethanol. In the United States, the Environmental Protection Agency ranked the Brazilian sugar cane ethanol as an advanced biofuel, i.e., capable of reducing emissions of greenhouse gases by more than 50% when replacing gasoline. This sustainability has also been recognized by the International Food Policy Institute (IFPRI), in the analytical exercise, commissioned by the EC, on "Global trade and Environmental Impact Study of EU biofuels mandate", despite of presenting many flaws on data used and assumptions made by the authors on the production of sugarcane biofuel in Brazil.

However, more important than recognizing the effectiveness of the Brazilian experience would be to recognize that sustainable production of biofuels can be practiced in other developing countries. The development of the world market depends on the ability to support initiatives in other countries, seeking to combine the agricultural suitability with available technology. The first challenge is to design programs for encourage production and use of biofuels, including through international cooperation, that prioritize local needs. In several developing countries, biofuel production may be a means to induce efficiency gains in agriculture and, at the same time, generate income, purchasing power and energy security. In this regard, it is worth noting that many of these countries were unable to exploit their full potential in agriculture due to lack of favorable conditions in the world market. Hence, future methodologies of ILUC must consider the difference between late occupation and uncontrolled expansion, based on irresponsible deforestation.

The European Commission can count on Brazil's commitment and support towards the sustainable production and use of biofuels. The three objectives of renewable energy

promotion in transport policies (climate change mitigation, economic development, energy security) are valid ones and biofuels have a role to play, being one of the very few economically feasible options available currently to decarbonise the transport sector. Ultimately, a sound policy promoting biofuels, not limited to ILUC related issues, must take under consideration all the positive externalities related to their production and use, so that their regulation does not create restrictions to such a striving and promising sector.

The Mission of Brazil to the European Union

Brussels, 29 of November 2010