



Taking Off.

The Certification of
Biomass and Bioenergy



International Sustainability
and Carbon Certification

When using bioenergy, close attention has to be paid to sustainability and greenhouse gas savings.



Pressing Questions



For a number of years, researchers have alerted the general public with ever more uncomfortable truths about global warming. Some of the headlines

read: »North Pole Ice Has Melted Drastically«, »Massive Greenhouse Gas Emissions in Northern Siberia«, and »Water Crisis in the Middle East Escalates«. In 2008, the »Global Carbon Project« alarmed experts with a new balance, according to which even more carbon dioxide (CO₂) reached the atmosphere than the amount, which the Intergovernmental Panel on Climate Change (IPCC) based its worst case scenario on.

No Energy Scenario without Renewable Resources

At the same time, recent studies carried out by the International Energy Agency (IEA) alarm the general public and emphasize the increased need for governments to take action. The growing world population's energy hunger will have doubled by 2050. According to the IEA, the current largely fossil energy sources are not sustainable and marked by increasing uncertainties on the supply side. In reaching the production peak in crude oil, the fossil age will not yet have come to an end. Next to oil, natural gas and coal will be used more and more for some decades. To reach the climate goals, renewable energies will then play a larger role in the energy mix.

Efficiency strategies for the reduction of usage, which will have to be applied worldwide, are of central significance. But efficiency strategies alone will not be able to balance supply and demand in the future energy market.

Today, renewable biomass resources are the main renewable energy source in many countries. Worldwide 75 percent of renewable energies are being produced from biomass. No energy scenario can do without them. However, the production of renewable resources can lead to fatal ecological and social side effects: deforestation, destruction of nature reserves, loss of species, conflicts over the use of land and displacement of peasants, unacceptable working conditions and pricing pressure on foods are only some of the possible results.

It also has to be ensured that biofuels actually contribute towards a reduction of greenhouse gas emissions. It would be absurd if the production of biofuels would cause more greenhouse gas emissions than the fossil fuels they are to replace. It is only too right that politicians and NGOs demand a comprehensive impact assessment. The side effects cannot outweigh the advantages of renewable resources.

Directive Demands Minimum Greenhouse Gas Savings

The EU Directive on the Promotion of Renewable Energy Sources and also the German Biomass Sustainability Regulation (BioNachV) define important sustainability require-

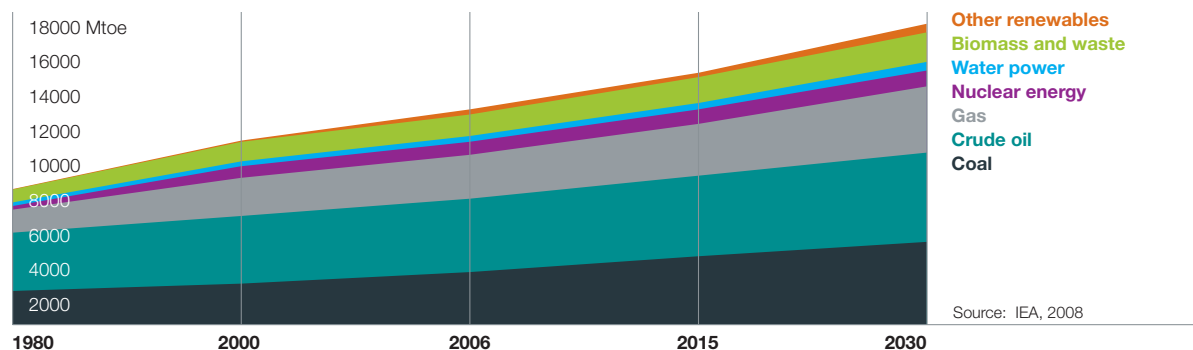
Sustainability Principles Using the EU Directive as an Example

- Immediate savings in greenhouse gases by at least 35% and 60% from 2017 onwards (old plants 50%)
- Minimising negative consequences from the indirect or direct change in land use
- Preservation of biodiversity and habitats with a high nature conservation value
- Preservation of existing carbon sinks, such as wetlands and forests
- Protection of ground, water and air
- Incentives for the production on degraded and recultivated areas, to prevent the expansion of production to other valuable areas
- Incentives for sustainable production practices, which emphasise the ground's role as important carbon storage
- Reduction of greenhouse gas emissions through an overall improved agricultural practice
- Consideration of socio-economic aspects and verifying compliance with social standards

Source: Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources, December 2008.

According to the International Energy Agency's estimates, the worldwide energy demand will increase by nearly 50% until the year 2030. Biomass and waste will continue to be the most important renewable energy sources.

The future energy mix



ments. Compared to mineral oil products, biofuels – above all – should effectively avoid greenhouse gases along the entire supply chain. The Directive states »better by 35 percent or more«. For 2017, Europe is even aiming at the »60 percent better« mark.



These minimum savings can hardly ever be reached, if changes in land use are required for the production of biomass. For this reason alone, changing carbon

sinks (rainforests, established other forest areas, wet- and moorlands) is taboo. Nature reserves and species-rich unfertilised grassland should not be sacrificed for the production of resources.

Differentiation through Certification

So far, any type of labelling, whether foods or biofuels were produced sustainably, is missing on the international agricultural and bioenergy markets. Therefore, consumers do not have the opportunity to choose between sustainable and non-sustainable products. It is only the price and not the quality of a product that determines its success. Thus, markets do not provide any incentives for sustainably operating farmers and bioenergy producers. This failure of the markets can be corrected via the certification of sustainable biomass and bioenergy. Only certification systems separate the wheat from the chaff. With the help of labelling, consumers are able to make a con-

scious choice for sustainability and greenhouse gas savings. Consequently, a certification strengthens responsible arable farms and reduces the risk of damaging meanderings.

But how can sustainability be accomplished for so many wide-ranging products, how can it be monitored across so many international trade and production chains? Recently, different initiatives have dedicated themselves to implementing sustainability requirements and developing certification systems for biomass. So far, there isn't a system stringent enough to guarantee sustainability and greenhouse gas savings. It is especially difficult to trace end products back to their agricultural origins.

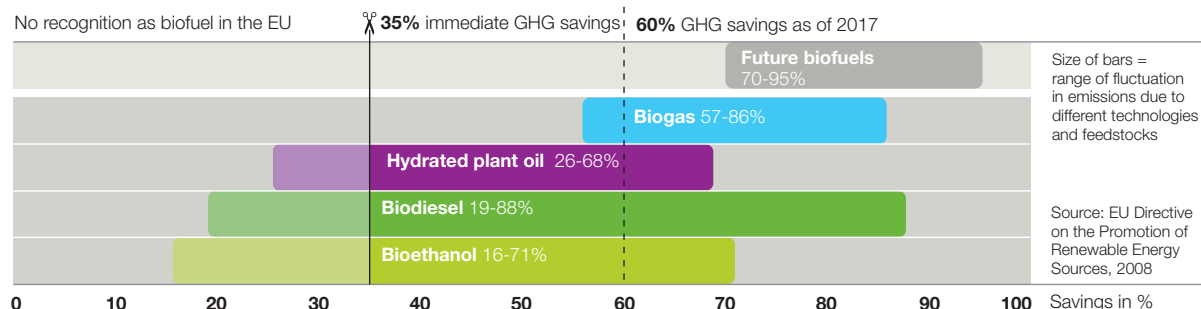
The System Has To Be Practical

The »International Sustainability and Carbon Certification« Project (ISCC), conducted by the Cologne-based consulting company Meó Corporate Development GmbH, tackles exactly that problem. Meó is developing a certification system for biomass and bioenergy that is implementable in practice: ISCC is an internationally oriented, pragmatic certification system, which keeps administration requirements as low as possible, reduces the risk of non-sustainable production and can be used as verification for greenhouse gas emissions from biomass and bioenergy during their life cycle. ISCC puts



Even today, biofuels already make an important contribution towards the reduction in greenhouse gas emissions. To be recognised as a biofuel in the EU, emissions have to be at least 35% less than those from fossil fuels.

Potential greenhouse gas savings through biofuels in comparison to conventional fossil fuels



the requirements of the Renewable Energies Directive and the Biomass Sustainability Regulation into practice. Furthermore, other countries' and initiatives' sustainability requirements are being integrated.

EU organic label Proves To Be Feasible

The ISCC Project can build on experiences made in other markets. In a small regional market a consumer can visit the farmer or fruit grower whose produce he buys. But with just a single fruit yoghurt it would already be impossible to trace all ingredients back to their origin. The tra-

ceability of flour would be even more challenging. One kilo bought in a supermarket contains grain traces of many hundred farmers. However, the success story of the EU organic logo, proves how strongly consumers can nonetheless influence production methods on all five continents. Only an international certification system without too many bureaucratic hurdles helped organic foods achieve a breakthrough in the big retail chains. »Bio« or »Organic« turned into a billion-dollar market. But at the same time, the organic label has not replaced other organisations' older labels. Individual suppliers can still surpass EU requirements and thus set their own course.

ISCC in brief

Components

- ISCC check lists for the verification of sustainability
- Traceability based on mass balances
- Registration of areas and certificates
- Greenhouse gas balances
- Endorsement of existing systems
- System rules

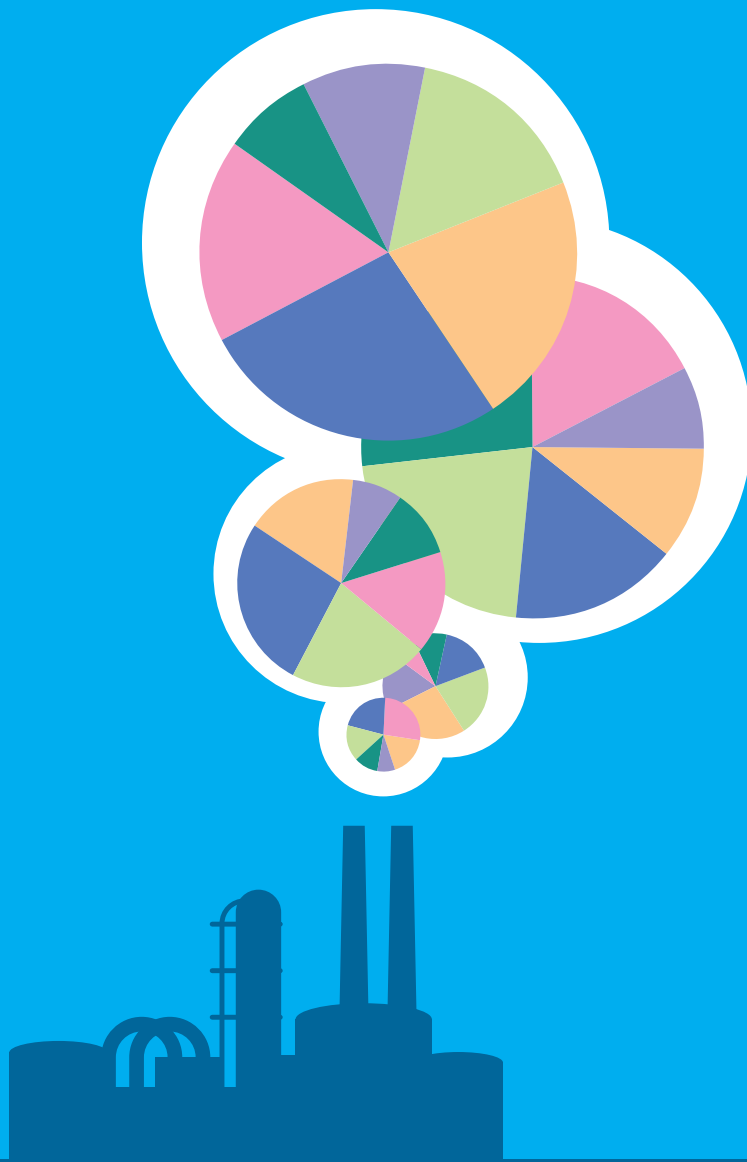
Approach

- Multi-stakeholder approach (farmers, processors, traders, industry, NGOs, associations, research institutes, government bodies)
- Internationally oriented certification system for sustainability and greenhouse gas savings
- Learning system
- Builds on a concept study from the years 2006/07
- Supported by the German Federal Ministry of Agriculture/Agency for Renewable Resources

Outlook

- Upon completion of the pilot phase, transition into an international non profit organisation





A certification is not an end in itself.
If improvements in agriculture and
processing are not achieved,
all efforts would be in vain.

Straight Answers



Since the end of 2006, the team around the Cologne based consultancy Meó has been doing pioneer work. From 2008 onwards, the German Federal Ministry of

Food, Agriculture and Consumer Protection (BMELV) supports a pilot project on the certification of sustainable biofuel production through the Agency for Renewable Resources (Fachagentur Nachwachsende Rohstoffe e.V. – FNR). The Meó project managers have set themselves an ambitious goal: They want to create a certification system jointly with partners in Europe, Brazil, Argentina, Malaysia and Indonesia, which enables the verification of sustainability and the reduction in greenhouse gases for the most important resources and bioenergies throughout their entire life cycle.

For the general public, biofuels are the main focus. Sugarcane and grain are important resources for the production of bioethanol, whilst biodiesel is mainly made from rapeseed, soy and palm oil. However, vegetable oils are also utilised for the production of electricity and heat. Due to its comparatively low price, palm oil plays a major role here.

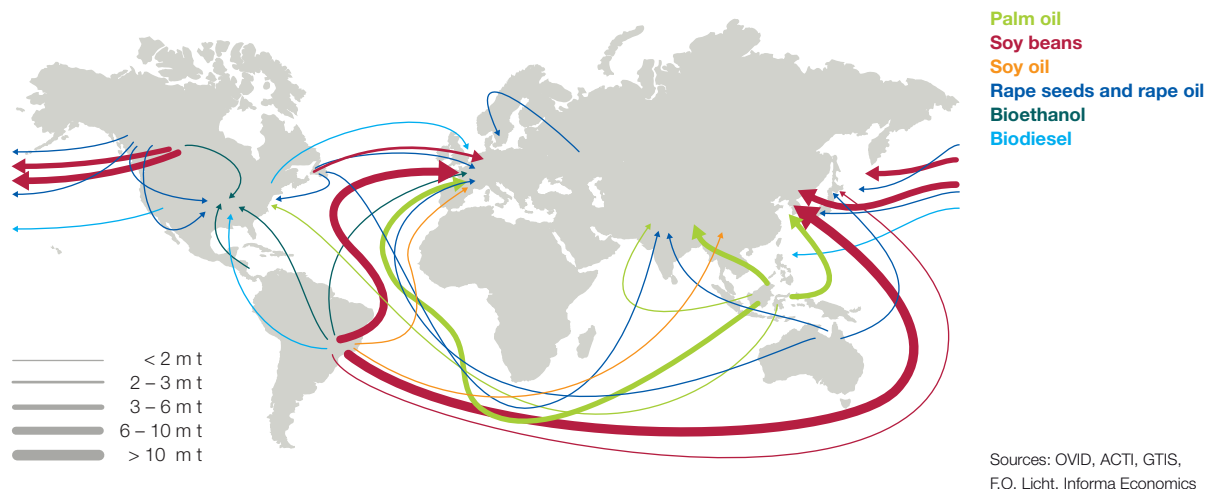
System Components

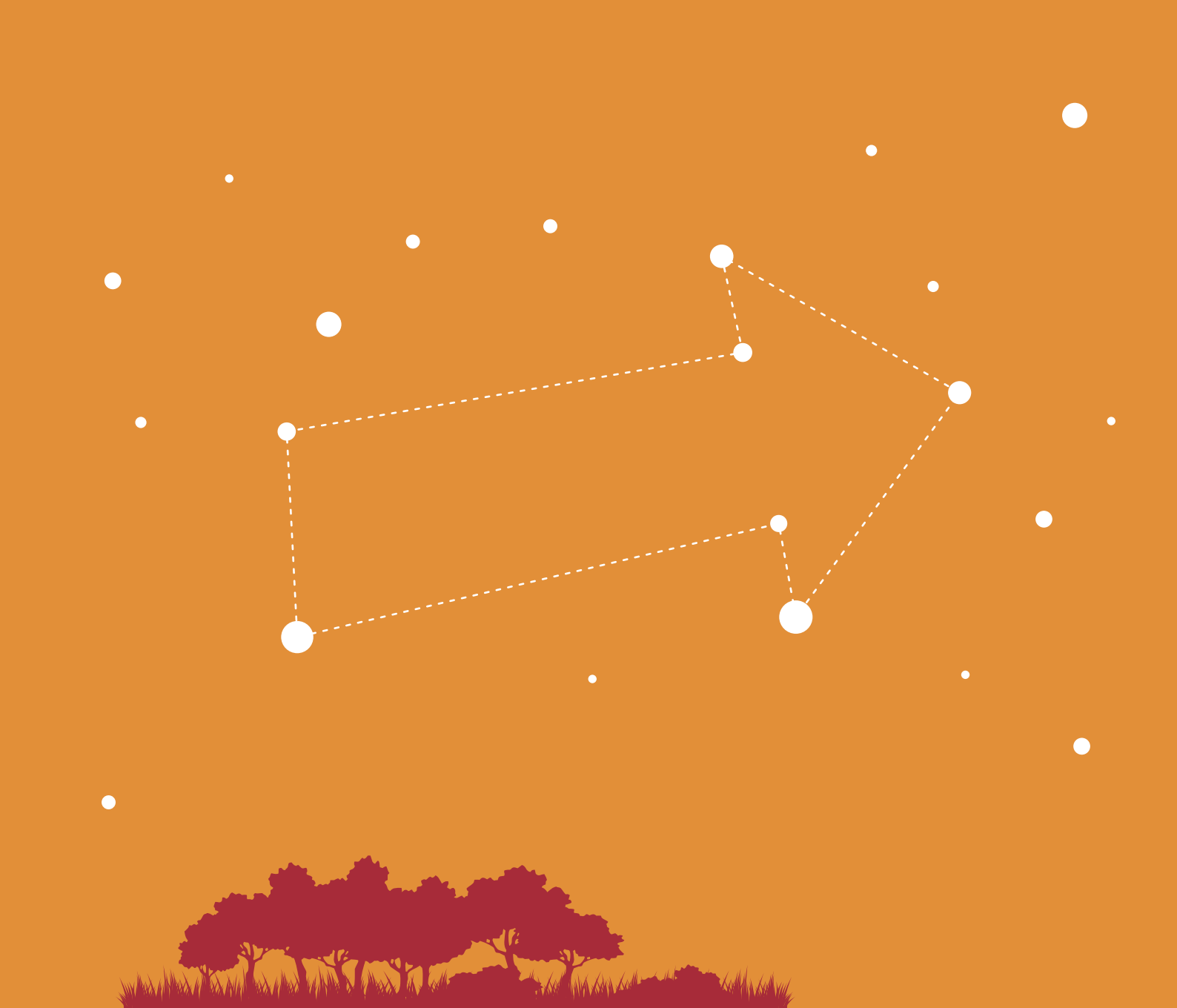
The ISCC System documents the bioenergy's path all the way back to the field or plantation. This is done with a so-called mass balance along the supply chain. Sustainable biomass can be mixed with biomass of unverified origin along the supply chain. The respective percentages will be recorded along the trade chain and verified by an independent third party. The ISCC will provide the necessary systems for a mass balance. However, other approaches to traceability may also be integrated.



Independent certifiers will use an ISCC checklist for the auditing. In a multi-stakeholder approach, this list was further developed on the basis of legal requirements. The general public was able to voice their opinion during a consultation process. Next to ecological also social criteria were considered. The greenhouse gas balance is based on the EU's methodical framework, and it is transparent and traceable – even for third parties. All audited areas and certificates are stored in a central database. The recording and linking of certificates with areas is to prevent misuse.

Certification a global challenge – Trade flow in important crops and biofuels





ISCC demonstrates how a certification for the production of biomass and bioenergy contributes to more sustainability and higher greenhouse gas savings.



No Multiple Certifications

The certification itself is achieved cost efficiently via a lean organisation and builds on standardised value added chains. ISCC endorses already existing systems, if they comply with the requirements and certification regulations. Thus, multiple certifications are avoided.

Naturally such a certification system will not solve all of the world's problems – the over 100 partners on the international project team are more than aware of that. However, it should be possible for ISCC to achieve a change in the behaviour of consumers and producers, and to contribute to more sustainability and greenhouse gas savings. These are important goals.

Not Just Bioenergy

However, the certification of biomass just for bioenergy production does not reach far enough. Only a small part of the global palm oil production (< 5%), for example, is destined for bioenergy. Should the large quantities, which are used for food and chemical-technical applications, remain unconsidered, nothing has been achieved. Consequently, palm oil for bioenergy would be produced on the long-established plantations, whilst rainforest would continue to be cleared to meet the resource requirements of the conventional markets. The certification would then not be able to contribute towards the protection of nature conservation areas worth keeping. Therefore it is imperative that conventional markets are included also. In this way, bioenergy acts as an access-point for the global introduction of sustainability standards.

Good Practical Experience

Further criteria for a sustainable agriculture can be derived from the good practices or Cross Compliance Regulations from the EU: preservation of ground and water quality, of species diversity, careful use of fertilisers and pesticides, and no increase of other harmful emissions. Wherever farmers already document ecologically justifiable production methods and where there already are registered areas, these should be integrated into the ISCC System. The ISCC Certification will build on existing globally or regionally accepted standards wherever possible. Only a meta-system, such as this, promises a quick implementation at a low cost and with a high acceptance.

Right from the start, ISCC experts have been discussing sustainability issues with local partners. They are jointly developing standards and certification regulations for the entire supply chain – from the agricultural production site to the processing industry all the way to the transport and distribution of the biomass and bioenergy. Thus, regional but also biomass-specific particularities have been included in the ISCC System.

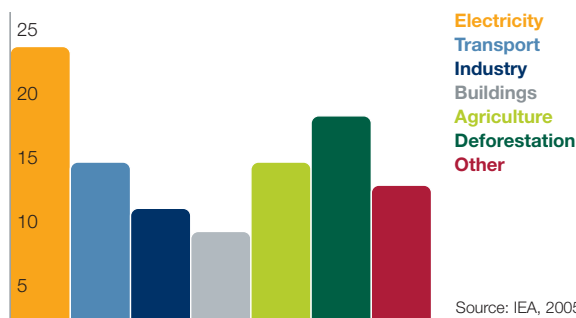
Conformity Assessment

In principle, the ISCC sets out unambiguous, measurable and verifiable criteria. This is the only way that the conformity of the ISCC Standard can be assessed. Strict rules for the implementation of the assessment and the demands on the certifying authorities are part of the ISCC Certification Standard. The Standard clearly describes how results are to be interpreted and which conclusions are to be drawn from specific results. On which results can the issuing of a certificate be based; when is a certificate rejected and when does it have to be withdrawn? The regulations provide straight answers to these questions.



Another key factor for the success of this programme is the qualification of the certifiers. They have to be made familiar with the requirements of the Standard through training courses. Here, a crucial qualification building block is the transfer of knowledge with regards to so-called »no-go-areas«. No certificates are to be issued for biomass originating from these areas. Should this happen, however, sanctions will be imposed. Certificates issued for the operation of a business will be withdrawn, when this company produces biomass in a different operating unit in one of the »no-go-areas«.

Sectoral distribution of GHG-emissions worldwide (in percent)



The ISCC goal is the establishment of an internationally oriented, practical and transparent system for the certification of biomass and bioenergy.



Rape Seed (Europe)



Sugarcane (South America)



Palm Oil (Southeast Asia)

Successful Practical Test

The ISCC System has been tried in a test phase. It showed that the programme is suitable for practice and that the results are reproducible and reliable. Sustainability and greenhouse gas audits with different resources and biofuels were carried out in the EU as well as in Latin America and Southeast Asia. Independent certification bodies audited individual operations and entire supply chains and gave a full account of their experience to the ISCC, where the findings were fed into the meta-system. Additional insights for the certification system and the catalogue of requirements for the auditors could be gained.



The direct change of land use, i.e. the change of forest into farmland for bioenergy, is incorporated into the greenhouse gas balances during certification. However, it would be unjustified, to blame indirect changes in land use on biofuels only. The main driving force behind the expansion of agricultural area is the growth of population and the increased prosperity in many developing and transition countries.

ISCC – A Learning System

The ISCC Pilot Project on the Certification of Biomass and Bioenergy practically covers all relevant product streams. It does not overload the system with all kinds of imaginable sustainability subjects, but it dedicates itself entirely to the pressing issues listed in the regulations and directives: protection of biodiversity, protection of valuable areas, safeguarding a positive greenhouse gas balance, protection against displacement, forced and child labour.

To this end, the ISCC Project Partners are developing a universally applicable system for the entire range of products and are establishing verifiable criteria for the most important

value added chains. Jointly with NGOs and other stakeholders the ISCC is continuously being developed further in terms of a learning system. It is a cooperative process, which is shaped with partners from many different countries. This approach invites everybody, who has something to contribute, to join in. Next to, for example, producers, processors, users and authorities it also comprises farm labourer representatives, environmental groups and numerous local initiatives. It also goes without saying: Who only wants to take advantage of this cooperative process to secure a fig leaf label, will be excluded.

Another impulse given by the ISCC is also important: farmers and producers would like to have training courses and consultations on those directives, which need to be adhered to in the European market, and on how they can make the cultivation of their land more sustainable. If the process of change starts locally, further education and training opportunities will ensure that the concept of sustainability will ultimately be firmly rooted everywhere.

Preventing Misuse

Over the next year, it is likely that several different certificates will coexist. Ultimately, however, individual certificates for South American bioethanol, Southeast Asian palm oil, European sugar beets or North American corn would only cause more confusion than clarity on the global market. This complexity bears the risk, though, that one particular harvest yield is »upgraded« several times with different labels. Only one system across all products with one central registry really helps differentiating between eco-friendly and polluting biomass and bioenergy as well as keeping the certification efforts to a minimum.

At the same time, one cannot use the same criteria for biofuels as one would, for example, for bio-cereals or bio-vegetable oil. In any case, it would not be necessary to do so.

When it comes to food, health-conscious consumers make sure that their specific product originates from controlled ecological cultivation. It is also important that it is never mixed with other resources during transport in trucks, in silos or factories.

Green Electricity – An Example

For bioenergy, the described process would lead to significant additional costs. Consequently, the EU has suggested a mass balance system for the tracing of biomass and bioenergy. With the mass balance method, certificates accompany the physical product. However, sustainably produced biomass can be mixed with biomass from untested origin during transport, in storehouses or tanks. The respective portions have to be continuously recorded along the supply chain. A shipping company, for example, would have to prove to the registry in the European port of destination that the charge originates to 70 percent from certified businesses and to 30 percent from other sources. A European refinery could then purchase 70 percent of the charge and book the entire certificate contingent for itself. Its share would be entirely and verifiably sustainably produced. And the remaining 30 percent? To begin with, this charge would still find customers – but probably at a lower price and with increasing criticism.

This mechanism is similar to green electricity, which also does not reach the socket in pure form. Here it is also imperative to improve the mix from the consumers' side – until it does not pay off anymore for producers to open up more areas for brown coal strip mining or to clear rainforests for palm oil or soya.

Bioenergy Sets Standards for Everybody

If the certification of biofuels establishes itself, other markets will follow and cease using biomass of questionable origin. The process will go beyond energy plants. One day, the food or cosmetics industry, as main purchaser of palm oil and other biomass, will no longer be able to elude certification. In the long run, it is inconceivable that the more valuable part of a shipload is processed into biofuels, while industries with a higher finishing grade take on the uncertified rest.

A Little Less Talking, A Little More Action

The general public's expectations are very high. A certification is to prevent unwanted agricultural practices worldwide. Initially, any system would be overburdened with this. Realistic expectations have to be placed on the certification system. There will always be individuals, for instance, who will act with criminal intent and who will try to undermine systems for the advancement of sustainability. There will also be consumers, who will not be interested in certified products, and governments that will have no interest in climate protection or the protection of species diversity. But the ISCC Project is making a start, and it is quite possible that in a few years only certified products will be purchased. The big challenges in sustainability call for quick solutions. Not some time in the future, but today. Otherwise, those areas worth protecting will have disappeared – before we get from talking to acting.



Incentives for More Sustainable Action

Independence, transparency and an international orientation characterise the ISCC. The ISCC Label is to be a trusted method to differentiate between sustainable and non-sustainable biomass and bioenergy. Beyond this, it is to motivate farmers and processors towards more sustainability in their daily activities. A platform for the necessary dialogue is provided by the ISCC.

The ISCC System Operation builds on the experiences from the pilot phase. An international supervisory committee will steer the organisation. Legally the ISCC will be transformed into an international non profit organisation.



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The Federal Ministry
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www.iscc-project.org



Meó Corporate Development GmbH

Dr. Norbert Schmitz · Dr. Jan M. Henke
Weissenburgstraße 53 · 50670 Cologne
Phone: +49-221-972 72 32
Fax: +49-221-941 58 63
Mail: schmitz@meocd.de

Conceptual design and execution of the brochure **Genius GmbH – Science and Communication**

Dr. Jens Freitag · Dr. Kristina Sinemus · Französische Strasse 24 · 10117 Berlin · Phone: +49 (0)30 – 59 00 96 24 · info@genius.de · www.genius.de