Sustainability Certification of Bio and Circular Polymers with ISCC PLUS
ISCC is a global sustainability certification system

- Supporting companies to achieve their sustainability targets and to implement the SDGs
- Setting up high social and ecological sustainability criteria
- Monitoring deforestation-free supply chains
- Protecting high biodiverse and high carbon stock land
- Establishing traceability in global supply chains
- Allowing for credible and justified claims and logo use
Solutions to reduce the exploitation of fossil resources are urgently needed.

Almost 350 million tons of plastic were produced in 2017.

More than a third of plastic is used for packaging.

More than 90% of plastic is not recycled.

Packaging waste accounts for half of the plastic waste.

Each year 9 million tons of plastic waste end up in the ocean.

Roughly 5 grams of plastic every week find their way into the human organism.

Regulators, governments and consumers demand measures for a drastic reduction of plastic waste in traceable global supply chains.

companies and brand owners have to react by implementing sustainability solutions and communicate their efforts to the public.

“Stora Enso has launched DuraSense™—**wood-based biocomposites** for premium cosmetics, food and luxury brands seeking alternatives to plastic packaging (..) more eco-friendly.”

“Evian pledged to **make all of its plastic bottles from only recycled plastic by 2025.**“

“Unilever has committed to ensure all of its plastic packaging is **designed to be reusable, recyclable or compostable by 2025**“

“2030 goal: **Ensure 90% of product packaging is recyclable.**“

“We recently unveiled a new target to **reduce 35% of virgin plastics content** across our beverage brands by 2025, driven by increased use of recycled content and alternative packaging materials.”

ISCC provides certification solutions for a sustainable bio- and circular economy
Over 4,000 companies in more than 100 countries are currently certified – 50% in the waste and residues sector
ISCC is a multi-stakeholder initiative with 133 members – In the last year many PLUS system users joined the ISCC association

*As of 30 January 2020*
Several NGOs and research organizations are ISCC members contributing to the further development of the scheme

<table>
<thead>
<tr>
<th>ISCC Members</th>
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<tbody>
<tr>
<td><strong>WWF Germany</strong></td>
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<tr>
<td>- &quot;A Standard for the standard&quot;</td>
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<td>- Pilot ISCC PLUS</td>
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<td>- Certified WWF-panda key chain</td>
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<tr>
<td>- Project on Food markets</td>
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<tr>
<td>- IKI land use change project</td>
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<tr>
<td>- Food security project</td>
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<tr>
<td><strong>Danube Soya</strong></td>
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<tr>
<td>- Non-GMO</td>
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<tr>
<td>- Development of practical criteria and checklists for food security</td>
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<tr>
<td>- Planning pilot audits</td>
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<tr>
<td>- Use of social indices for certification</td>
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<tr>
<td>- Integration of social indices into GRAS</td>
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<tr>
<td><strong>Welthungerhilfe</strong></td>
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<tr>
<td>- LUC analysis</td>
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<tr>
<td>- GHG emission calculations</td>
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<tr>
<td>- Analysis of grassland to cropland conversion in the Prairies</td>
</tr>
<tr>
<td>- Policy advice</td>
</tr>
<tr>
<td><strong>University of Illinois at Chicago, United States</strong></td>
</tr>
<tr>
<td>- Project on sustainable supply chain management</td>
</tr>
<tr>
<td>- Sustainability in the Swiss energy sector</td>
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<tr>
<td>- Nomination for Swiss innovation price</td>
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<tr>
<td><strong>Fachhochschule Nordwest Schweiz</strong></td>
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<tr>
<td>- Low iLUC approach</td>
</tr>
<tr>
<td>- Carbon mapping</td>
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<tr>
<td>- GHG calculation</td>
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<tr>
<td>- LUC analysis and GHG emissions from LUC</td>
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<tr>
<td>- Identification of low iLUC risk biofuels</td>
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<tr>
<td>- Policy advice</td>
</tr>
<tr>
<td><strong>Kiel Institute for the World Economy</strong></td>
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<tr>
<td>- Continuous information exchange w.r.t. Palm oil</td>
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<tr>
<td>- High iLUC risk</td>
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<tr>
<td>- Carbon recycling</td>
</tr>
<tr>
<td>- ISCC supports their network &quot;bioeconomy&quot;</td>
</tr>
<tr>
<td><strong>Deutsche Umwelthilfe e.V.</strong></td>
</tr>
<tr>
<td>- Continuous dialogue on GHG calculations Monitoring of the bioeconomy</td>
</tr>
<tr>
<td><strong>DBFZ – German Biomass Research Centre</strong></td>
</tr>
</tbody>
</table>

**Examples**

- Non-GMO Development of practical criteria and checklists for food security Planning pilot audits Use of social indices for certification Integration of social indices into GRAS LUC analysis GHG emission calculations Analysis of grassland to cropland conversion in the Prairies Policy advice Project on sustainable supply chain management Sustainability in the Swiss energy sector Nomination for Swiss innovation price Low iLUC approach Carbon mapping GHG calculation LUC analysis and GHG emissions from LUC Identification of low iLUC risk biofuels Policy advice Continuous information exchange w.r.t. Palm oil High iLUC risk Carbon recycling ISCC supports their network "bioeconomy" Continuous dialogue on GHG calculations Monitoring of the bioeconomy
A new Technical Stakeholder Committee for the Circular Economy will be set up in Q1 – ISCC welcomes interested parties to participate.

Technical Committee on Circular Economy

- Platform to discuss and push the further development of ISCC PLUS for circular material
- Further information incl. registration for participation and kick-off meeting will be communicated soon
Voluntary initiatives of brand owners and associations recognize ISCC for industrial applications

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Recognition</th>
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<tr>
<td>Der Blaue Engel</td>
<td>ISCC has been accepted by the German ecolabel „Der Blaue Engel“ for bioplastic granulate for writing utensils and stamps.</td>
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<tr>
<td>Textile Exchange’s “2025 Sustainable Cotton Challenge”</td>
<td>ISCC is recognised as a sustainable initiative encouraging brands to commit to source 100% of their cotton from the most sustainable sources.</td>
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<tr>
<td>INRO</td>
<td>ISCC is recognised by the German initiative for sustainable supply of raw materials for the industrial use of biomass.</td>
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<tr>
<td>Green Deal</td>
<td>ISCC is recognised by the Dutch Green Deal “green certificates” for sustainable biomass in chemicals and plastics.</td>
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</tbody>
</table>
All kinds of agricultural and forestry feedstocks for industrial applications can be feedstocks for sustainable products at ISCC.

Examples:

- Soy
- Canola
- Palm
- Sunflower
- Cereals
- Corn
- Sugarcane
- Sugarbeet
- Wood
- Cotton
- Shea Nuts
- Camelina
In addition, ISCC is the leading system for the certification of waste and residue-based supply chains

<table>
<thead>
<tr>
<th>Waste and processing residues</th>
<th>Renewable non-bio feedstocks</th>
<th>Forestry / agricultural crop residue</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCO</td>
<td>Power-to-Gas  Power-to-Liquid</td>
<td>Forestry residue</td>
</tr>
<tr>
<td>Landfill gas</td>
<td></td>
<td></td>
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<tr>
<td>Tall oil</td>
<td></td>
<td></td>
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<tr>
<td>End-of-life tires</td>
<td></td>
<td></td>
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<tr>
<td>Municipal solid waste / mixed plastic waste</td>
<td></td>
<td></td>
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<tr>
<td>Crude glycerine</td>
<td></td>
<td></td>
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<tr>
<td>CO2</td>
<td></td>
<td></td>
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<tr>
<td>Husks</td>
<td></td>
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<tr>
<td>Straw</td>
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Examples
In 2018, almost 90 million tonnes of raw material were ISCC certified – among those are many potential biopolymers feedstocks.

Crops - Certified Cultivation Area (in hectare)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Area (hectare)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapeseed / Canola</td>
<td>4,079,778</td>
</tr>
<tr>
<td>Corn / Maize</td>
<td>1,799,260</td>
</tr>
<tr>
<td>Oil Palm Fresh Fruit Bunches</td>
<td>1,625,270</td>
</tr>
<tr>
<td>Wheat</td>
<td>625,900</td>
</tr>
<tr>
<td>Sunflower</td>
<td>578,654</td>
</tr>
<tr>
<td>Soybean</td>
<td>272,867</td>
</tr>
<tr>
<td>Other crops</td>
<td>75,113</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>72,335</td>
</tr>
</tbody>
</table>

Certified potential biopolymer feedstock (t)

- Rapeseed / Canola: ~7,000,000
- Corn / Maize: ~225,000**
- Oil Palm Fresh Fruit Bunches: ~1,800,000
- Wheat: ~3,150,000
- Sunflower: ~750,000
- Soybean: ~225,000
- Other crops: ~1,500,000
- Sugar cane: ~65,000
- Forestry processing residues, waste wood, roadside grass cuttings: ~45,000

** Forestry processing residues, waste wood, roadside grass cuttings
The standard provides a balanced set of ecological and social criteria for the certification of agricultural raw materials

**Principle 1:** Protection of biodiverse and carbon rich areas

**Principle 2:** Good Agricultural Practice

**Principle 3:** Safe Working Conditions

**Principle 4:** Compliance with Human, Labour and Land rights

**Principle 5:** Compliance with Laws and International Treaties

**Principle 6:** Good Management Practices and Continuous Improvement
Verification of compliance with Principle 1 can be supported with the innovative remote-sensing GRAS tool

- Biodiversity Areas
- Deforestation
- High Carbon Stock
- Social Indices
ISCC PLUS solutions for the bio- and circular economy

Feedstock level

Intermediates/ Products/ Converters / Brandowners

Markets/ Applications

Automotive
Packaging
Electronics
Agriculture
Medical
Household
Construction
Paint / Coatings
ISCC certification ensures sustainability, traceability, feedstock identity, and correct claims

* Farms/Plantations and Points of Origin can get certified on a voluntary basis. Usually they are covered under the certificate of the FGP/CP. In this case they issue a self-declaration to the FGP/CP.
ISCC promotes physical segregation in the supply chain if this is requested by customers

- **Physical segregation** of sustainable certified and non-certified bio-based or fossil material
- Deliveries **physically contain** 100% certified material
- **Possible claim:** 100% based on certified sustainable sources
Mass balance approach is mainly applied to support the bio- and circular economy

- Sustainable, unsustainable or fossil material mixed, segregated in bookkeeping
- No entity sells more certified products than sourced (conversion factors applied)
- Possible claim: e.g. “linked to 100% recycled sources/ biogenic sources”
Sustainability certification enables brands to make correct and credible claims. They depend on the applied chain of custody option.
Companies increasingly communicate their sustainability efforts related to an ISCC certification to external stakeholders.
NatureWorks announced that 100% of their feedstock for biopolymers and performance chemicals will be ISCC PLUS certified by 2020.
Braskem is producing green PE processed from sugar cane. The company is ISCC PLUS certified since 2012.
Elopak uses ISCC PLUS certified PE aiming to reduce the use of fossil-based materials and to minimise CO$_2$ emissions
Examples of on-product label for final products: Hammarplast uses the ISCC logo on its medical devices.
SABIC announced in 2019 innovative ISCC certified circular polymers in Davos

SABIC announced in 2019 innovative ISCC certified circular polymers in Davos.


SABIC, a global leader in the chemical industry, has announced another major milestone in its groundbreaking project to pioneer the production of certified circular polymers using a feedstock from mixed plastic waste.

The latest achievement – the production of the first certified circular polymers – is part of what is known as a “market foundation stage.” Launched in January, this stage is an important step towards creating a new circular value chain for plastics, during which initial volumes of pyrolysis oil from plastic waste are introduced as feedstock at SABIC’s Geleen production site in The Netherlands. The patented pyrolysis oil, known as TACOIL, has been produced by UK-based PLASTIC ENERGY Ltd at their plant in Spain from the recycling of low quality, mixed plastic waste otherwise destined for incineration or landfill.

As part of the market foundation stage, SABIC has begun to produce and commercialize the first monthly volumes of certified circular polymers - polyethylene (PE) and polypropylene (PP), prior to the projected start-up in 2021 of the commercial plants planned by SABIC and PLASTIC ENERGY® in the Netherlands to manufacture and process the alternative feedstock.

“Certified circular polymers are a disruptive innovation and SABIC’s market foundation stage is a critical phase in their development,” said Frank Kulipers, General Manager Corporate Sustainability at SABIC. “It will act as a bridge moving from a linear economy to a circular one and will enable the value chain to become familiar with the products and consider how they can best be implemented in their own markets. It will allow confidence in this pioneering product to grow before SABIC goes into full-scale production.”

The polymers are certified through the International Sustainability and Carbon Certification plus (ISCC+) scheme that certifies circular content and standards across the value chain from source to end product. The ISCC+ certification works on what is known as a “mass balance system”, meaning that for each tonne of circular feedstock fed into the cracker and substituting fossil-based feedstock, a tonne of the output can be classified as circular.

Certified circular polymers will help SABIC’s customers to meet consumer demand for more sustainable products and will contribute to closing the loop on realizing plastic waste.
ISCC PLUS requirements are in line with important initiatives

- Feedstock identity
- Defined system boundaries
- Clear allocation rules
- Credible claims
- Transparent documentation
- Third party verification

Plastics Europe Industry View Paper (2020)

ISCC PLUS has been updated to cover the bio and circular economy

- System Document, v. 3.2
- Material List
- Self-declarations
- Sustainability Declaration
- Procedures
- Logo and Claims guidelines
- New Website
ISCC PLUS Training
Bio-based and Circular Economy

17 – 18 March 2020 in Cologne, Germany

Content:
- Comprehensive information about the ISCC PLUS certification system
- ISCC audit requirements and ISCC application along the supply chain
- Chain of custody options, mass balancing, yield calculations and attribution approaches
- Overview on logos and claims

Target Group:
- Auditors
- Companies (especially from the chemical and packaging industry)
- Brand owners and retailers
- Other interested parties
More and more companies rely on the credibility of the ISCC certification system for the bio- and circular economy

Independent ISCC certification guarantees:

- Sustainability
- Segregation or mass balance
- Traceability
- Feedstock identity
- Conversion factors/ volumes
- Add-ons (e.g. GHG/ LCA)
- Logos and claims
ISCC supports the UN Sustainable Development Goals and Paris COP21

**ISCC PRINCIPLE 1 & 2:** Protection of land with high biodiversity value or high carbon stock. Production in an environmentally responsible way including the protection of soil, water and air:

- SDG7 Affordable and clean energy
- SDG13 Climate Action
- SDG14 Life below water
- SDG15 Life on land

**ISCC PRINCIPLE 3:** Safe working conditions:

- SDG3 Good health and well-being
- SDG6 Clean water and sanitation

**ISCC PRINCIPLE 4:** Human rights, labour rights and land rights:

- SDG1 No poverty
- SDG2 Zero hunger
- SDG4 Quality Education
- SDG5 Gender equality

Governments agreed:

- A long-term goal of keeping the increase in global average temperature to **well below 2°C** above pre-industrial levels
- To aim to limit the increase to **1.5°C**, since this would significantly reduce risks and the impacts of climate change
- On the need for **global emissions to peak as soon as possible**, recognising that this will take longer for developing countries
- To undertake **rapid reductions thereafter** in accordance with the best available science
- GHG requirements are already implemented in ISCC. Detailed methodology for international supply chains in place
Join us in our journey today and be part of the change!

Many thanks for your attention!

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