Sustainability Certification of Bio and Circular Polymers with ISCC PLUS

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ISCC
International Sustainability & Carbon Certification

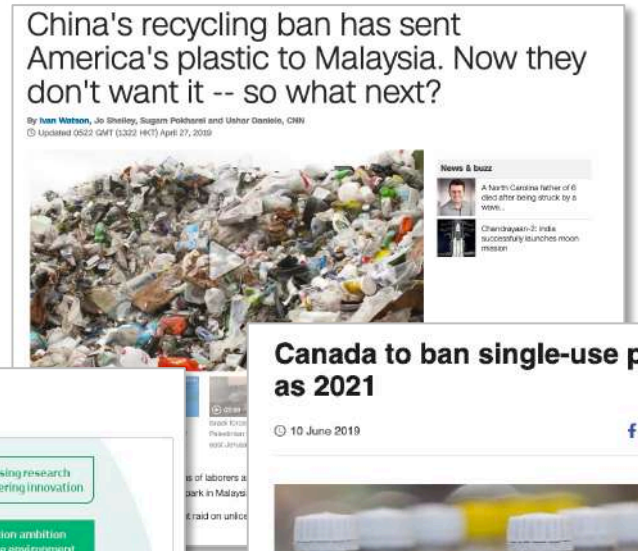
ISCC is a global sustainability certification system

- **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

Sources: Geyer (2017); Jambeck et al. (2015); National Geographic (2018), Eco-Business (2019), WWF (2019)

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



„Climate change and environmental concerns pose the number one risk for companies' growth!"

„8 out of 10 consumers aim to make more sustainable consumption decisions!"

Sources: BBC (2019), CNBC (2019), CNN (2019), European Parliament (2018), The Guardian (2019), European Commission (2019), KPMG (2019)

…companies and brand ownwers have to react by implementing sustainability solutions and communicate their efforts to the public

Selection

*"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**."*

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

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

*„KFC Canada testing **bamboo buckets**"*

*"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**."*

Sources: Companies' websites, The Guardian (2019), BBC (2018)

ISCC provides certification solutions for a sustainable bio- and circular economy

Examples

Bio economy

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

ISCC International Sustainability & Carbon Certification

Several NGOs and research organizations are ISCC members contributing to the further development of the scheme

Examples

ISCC Members

WWF Germany	Danube Soya	Welthungerhilfe	University of Illinois at Chicago, United States	Fachhochschule Nordwest Schweiz	Kiel Institute for the World Economy	Deutsche Umwelthilfe e.V.	DBFZ – German Biomass Research Centre
▪ „A Standard for the standard“ ▪ Pilot ISCC PLUS ▪ Certified WWF-panda key chain ▪ Project on Food markets ▪ IKI land use change project ▪ Food security project	▪ 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

Selection

Der Blaue Engel	ISCC has been accepted by the German ecolabel „Der Blaue Engel“ for bioplastic granulate for writing utensils and stamps.
Textile Exchange’s “2025 Sustainable Cotton Challenge”	ISCC is recognised as a sustainable initiative encouraging brands to commit to source 100% of their cotton from the most sustainable sources.
INRO	ISCC is recognised by the German initiative for sustainable supply of raw materials for the industrial use of biomass.
Green Deal	ISCC is recognised by the Dutch Green Deal “green certificates” for sustainable biomass in chemicals and plastics.

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

Examples

Waste and processing residues

UCO

Landfill gas

Tall oil

End-of-life tires

Municipal solid waste / mixed plastic waste

Crude glycerine

Renewable non-bio feedstocks

Power-to-Gas Power-to-Liquid

CO2

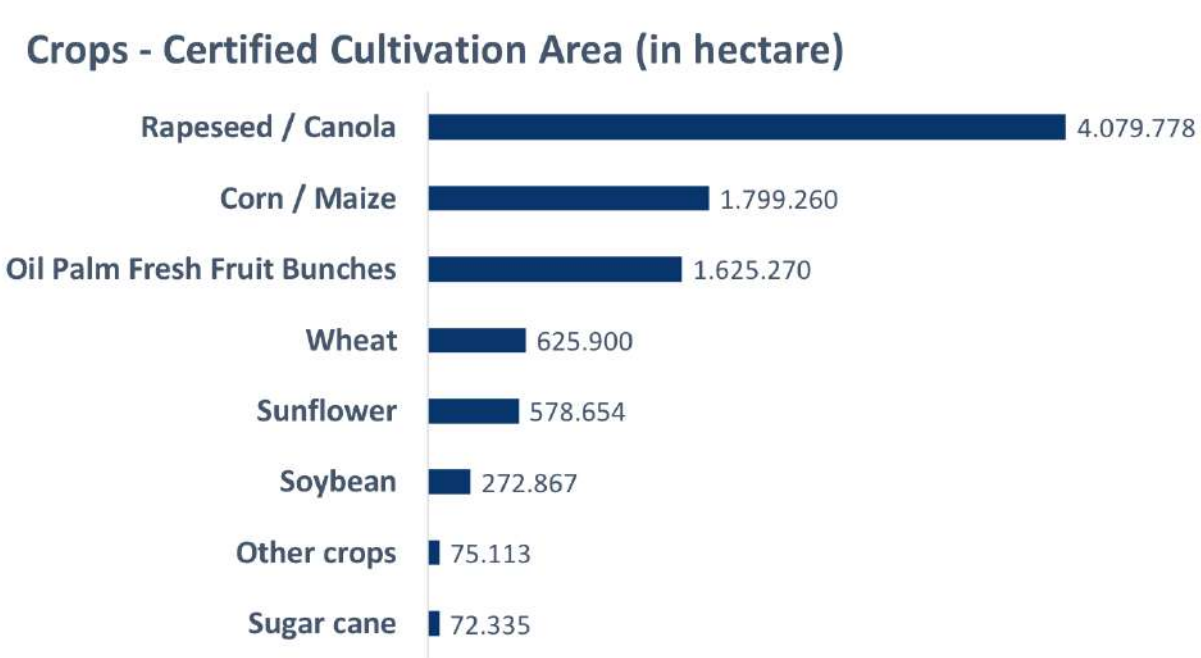
Forestry / agricultural crop residue

Forestry residue

Husks

Straw

In 2018, almost 90 million tonnes of raw material were ISCC certified – among those are many potential biopolymers feedstocks



Certified potential biopolymer feedstock (t)


~ 7,000,000


~ 225,000**


~ 1,800,000


~ 3,150,000


~ 750,000


~ 225,000


~ 1,500,000


~ 65,000


~ 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

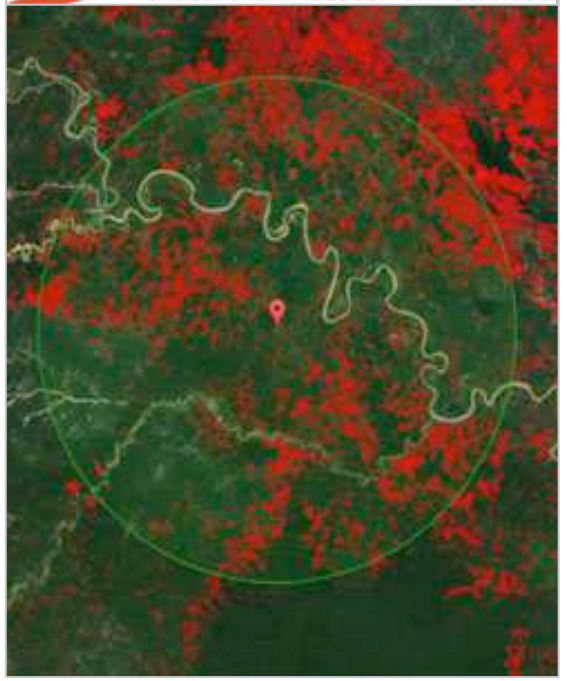
Biodiversity Areas

Deforestation

High Carbon Stock

Social Indices

GRAS
Global Risk Assessment Services



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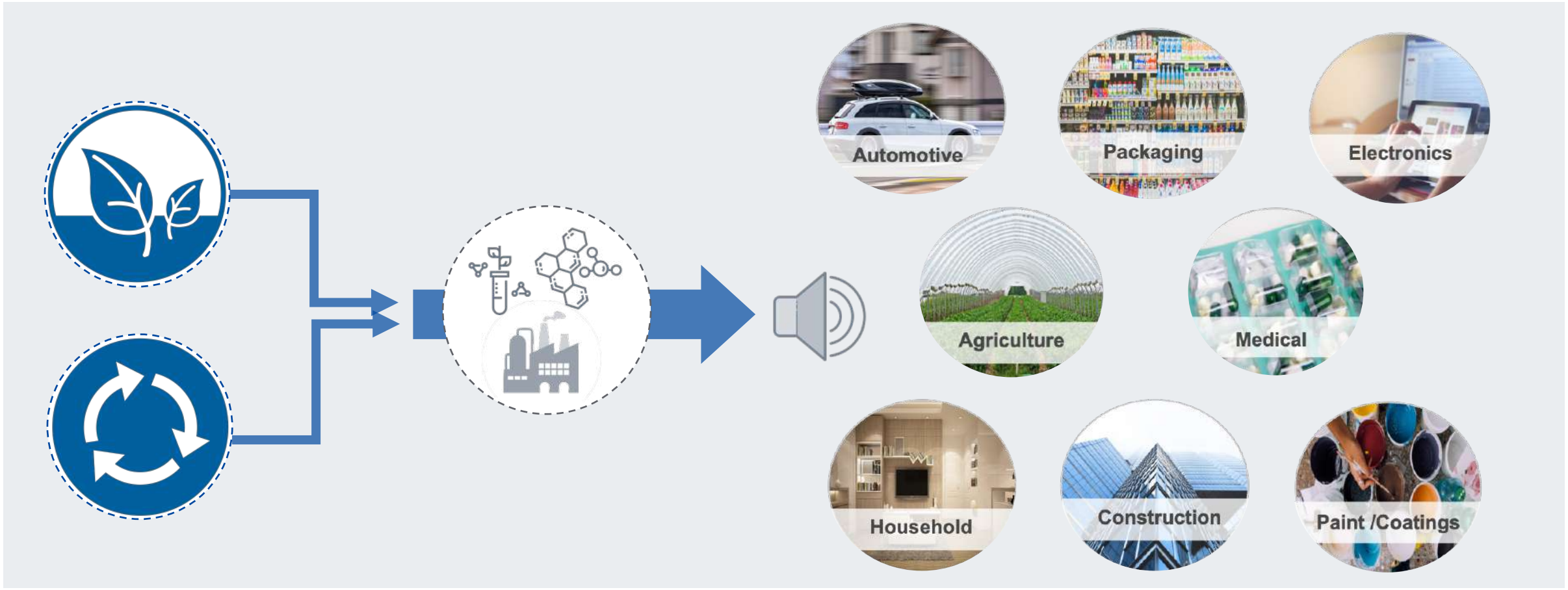
ISCC PLUS solutions for the bio- and circular economy

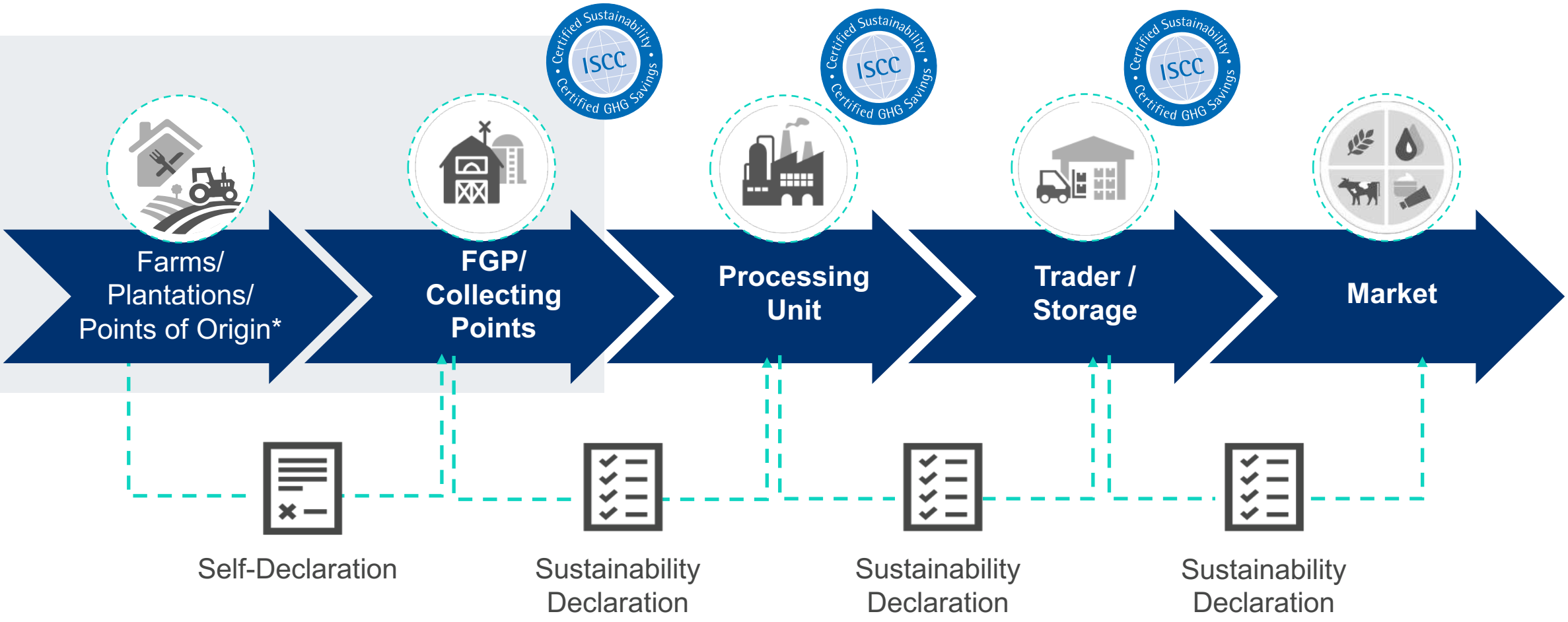


Feedstock level

Intermediates/ Products/ Converters / Brandowners

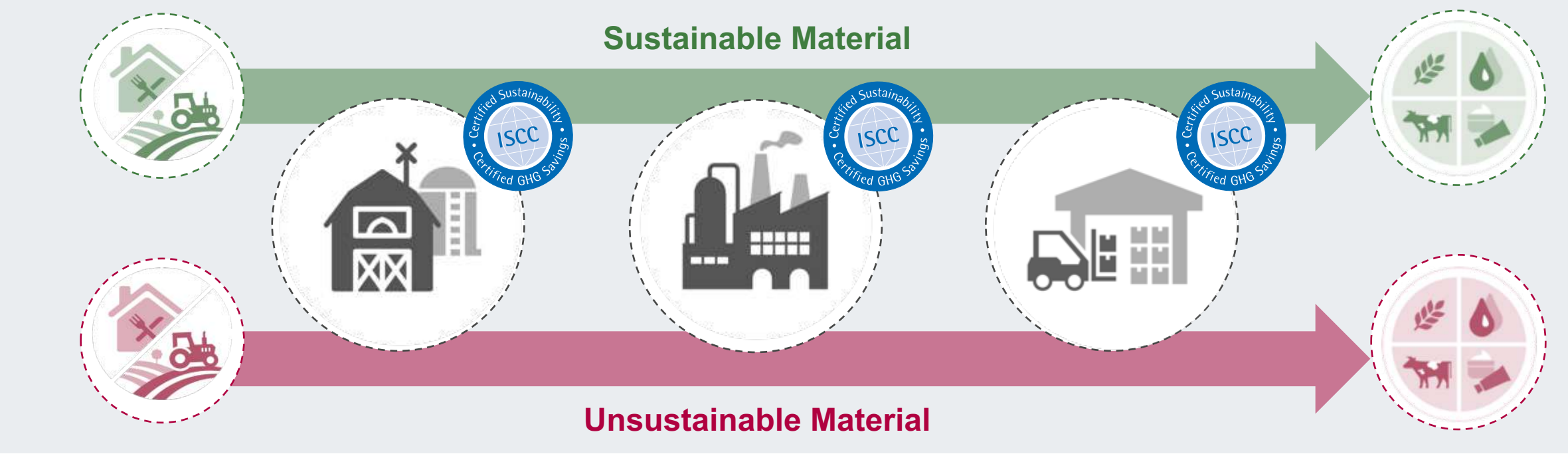
Markets/ Applications

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.

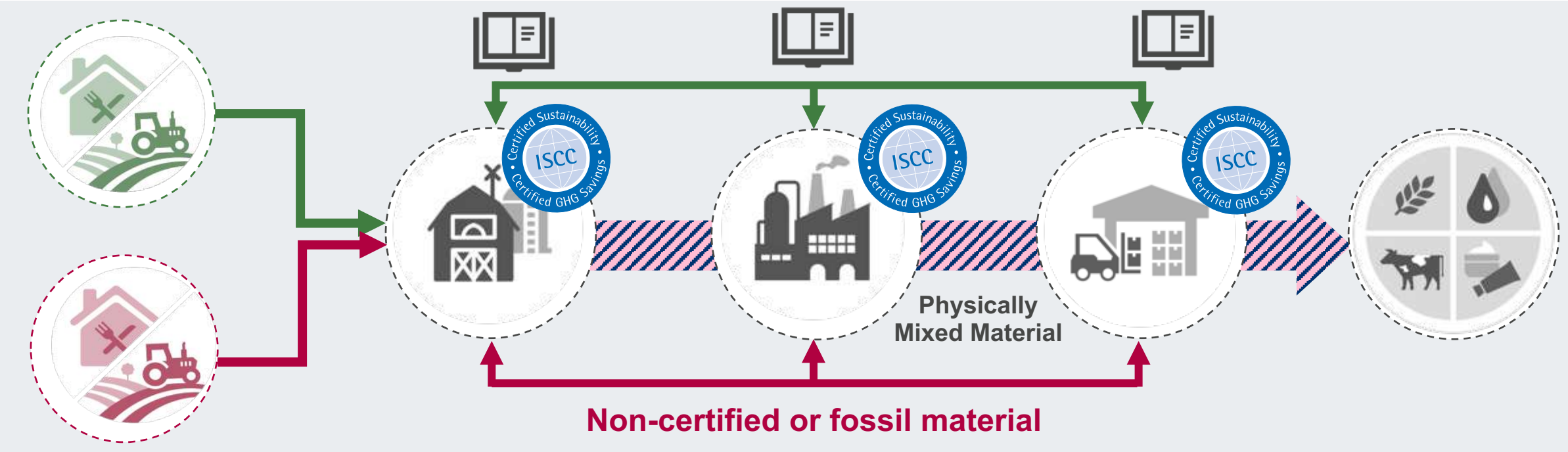
ISCC promotes physical segregation in the supply chain if this is requested by customers



- **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

ISCC International Sustainability & Carbon Certification

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

	Bio-based economy	Circular Economy
Physical Segregation		
Mass Balance		

Companies increasingly communicate their sustainability efforts related to an ISCC certification to external stakeholders

This process a
sequestration, compared to standard fossil derived PE resins[1], and the plastics produced can help brand owners meet their sustainability packaging goals. The entire supply chain is International Sustainability & Carbon Certification (ISCC) certified, based on mass balance approach, meaning all steps meet traceability criteria and reduce negative environmental impacts.[2]

NatureWorks announced that 100% of their feedstock for biopolymers and performance chemicals will be ISCC PLUS certified by 2020

NatureWorks Announces 100 Percent Third-Party Certified Sustainable Feedstock by 2020

AGRICULTURAL FEEDSTOCKS FOR INGEO BIOPOLYMER WILL BE CERTIFIED AS ENVIRONMENTALLY AND SOCIALLY SUSTAINABLE BY THE INTERNATIONAL SUSTAINABILITY & CARBON CERTIFICATION SYSTEM.

MINNETONKA, Minn., February 14, 2019 — A new initiative at NatureWorks will ensure that by 2020 100 percent of the agricultural feedstock for Ingeo™ biopolymers and Vercet™ performance chemicals will be certified by the International Sustainability & Carbon Certification System (ISCC) to the ISCC PLUS standard of best practices in agricultural production.

NatureWorks was the first biopolymers manufacturer to become certified to the new ISCC PLUS standard in 2012, and currently has more than 40 percent of its agricultural feedstock certified. At full capacity, more than 90 farms will be involved in the program by 2020.

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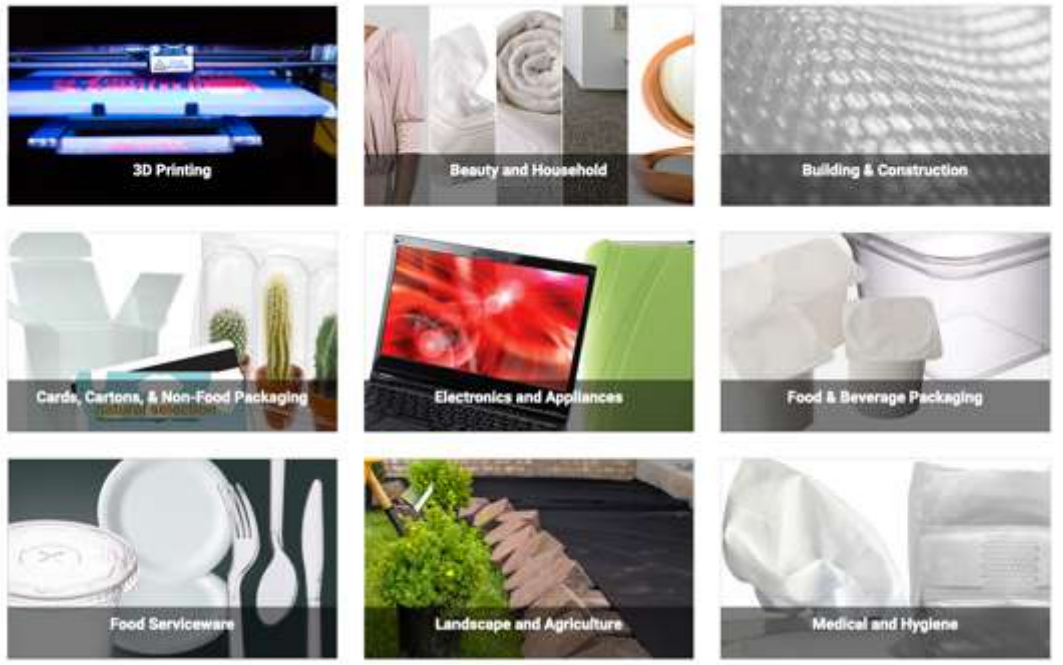
NatureWorks



Braskem is producing green PE processed from sugar cane. The company is ISCC PLUS certified since 2012

Braskem

I'm green™

be green
and be recyclable

Elopak uses ISCC PLUS certified PE aiming to reduce the use of fossil-based materials and to minimise CO_2 emissions

ELOPAK

Together we make packaging work

ISCC
International Sustainability & Carbon Certification

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

Source: https://www.sabic.com/en/news/17390-sabic-pioneers-first-production-of-certified-circular-polymers
https://www.sabic.com/en/news/21664-sabic-demonstrates-leadership-in-sustainable-packaging-solutions-at-k-2019

PRESS RELEASE

Sittard, The Netherlands, 1st February 2019

SABIC PIONEERS FIRST PRODUCTION OF CERTIFIED CIRCULAR POLYMERS

SABIC, a global leader in the chemical industry, has announced another major milestone in its ground-breaking 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.

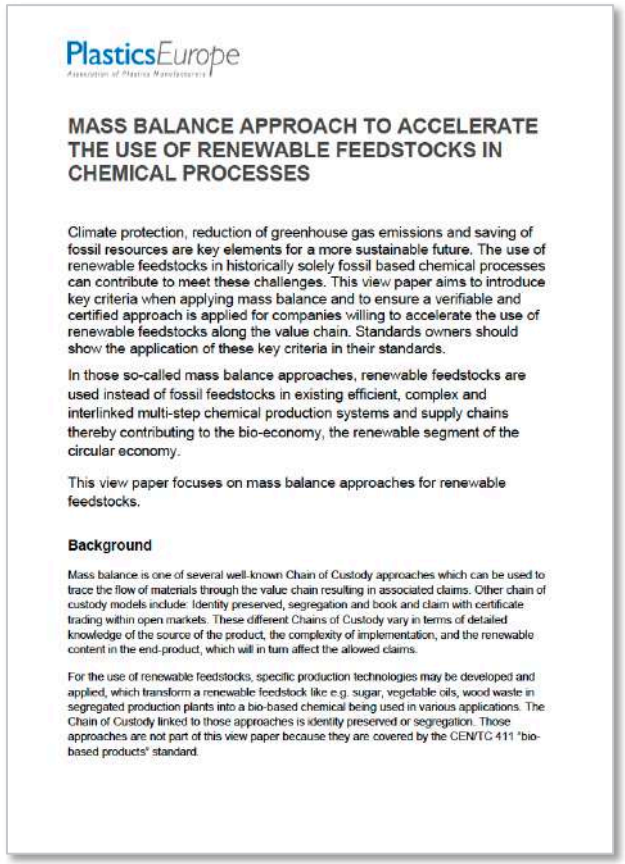
As part of the market foundation stage, SABIC has begun to produce and commercialize the first monthly volumes of certified circular polymers - polyethylene (PE) and polypropylene (PP)-, prior to the projected start-up in 2021 of the commercial plants planned by SABIC and PLASTIC ENERGY in the Netherlands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

ISCC PLUS requirements are in line with important initiatives



PlasticsEurope

MASS BALANCE APPROACH TO ACCELERATE THE USE OF RENEWABLE FEEDSTOCKS IN CHEMICAL PROCESSES

Climate protection, reduction of greenhouse gas emissions and saving of fossil resources are key elements for a more sustainable future. The use of renewable feedstocks in historically solely fossil based chemical processes can contribute to meet these challenges. This view paper aims to introduce key criteria when applying mass balance and to ensure a verifiable and certified approach is applied for companies willing to accelerate the use of renewable feedstocks along the value chain. Standards owners should show the application of these key criteria in their standards.

In those so-called mass balance approaches, renewable feedstocks are used instead of fossil feedstocks in existing efficient, complex and interlinked multi-step chemical production systems and supply chains thereby contributing to the bio-economy, the renewable segment of the circular economy.

This view paper focuses on mass balance approaches for renewable feedstocks.

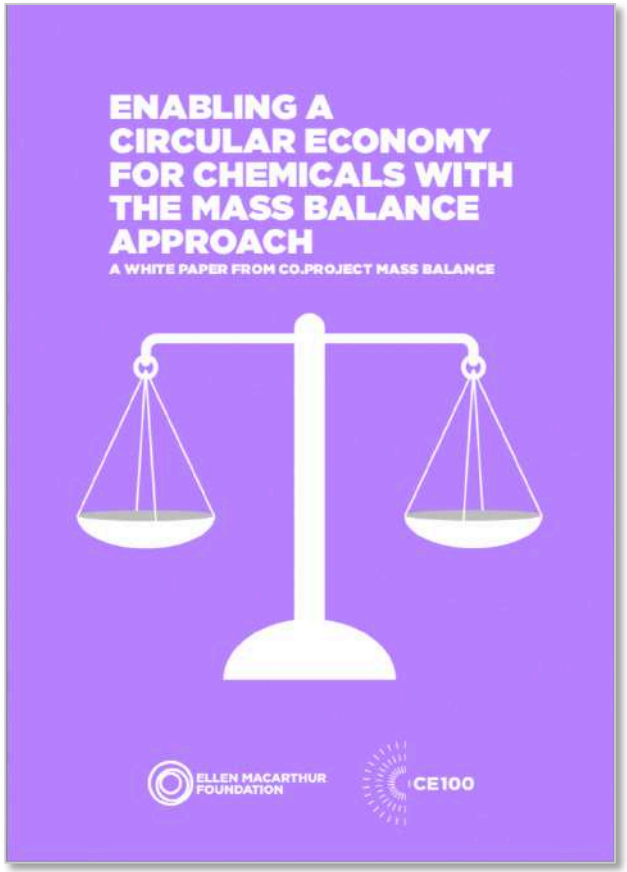
Background

Mass balance is one of several well-known Chain of Custody approaches which can be used to trace the flow of materials through the value chain resulting in associated claims. Other chain of custody models include: Identity preserved, segregation and book and claim with certificate trading within open markets. These different Chains of Custody vary in terms of detailed knowledge of the source of the product, the complexity of implementation, and the renewable content in the end-product, which will in turn affect the allowed claims.

For the use of renewable feedstocks, specific production technologies may be developed and applied, which transform a renewable feedstock like e.g. sugar, vegetable oils, wood waste in segregated production plants into a bio-based chemical being used in various applications. The Chain of Custody linked to those approaches is identity preserved or segregation. Those approaches are not part of this view paper because they are covered by the CEN/TC 411 "bio-based products" standard.

Plastics Europe Industry View Paper (2020)

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



Ellen McArthur Foundation White Paper (2019)

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

ISCC PLUS_

- 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

SELECTION

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

SUSTAINABLE DEVELOPMENT GOALS

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:

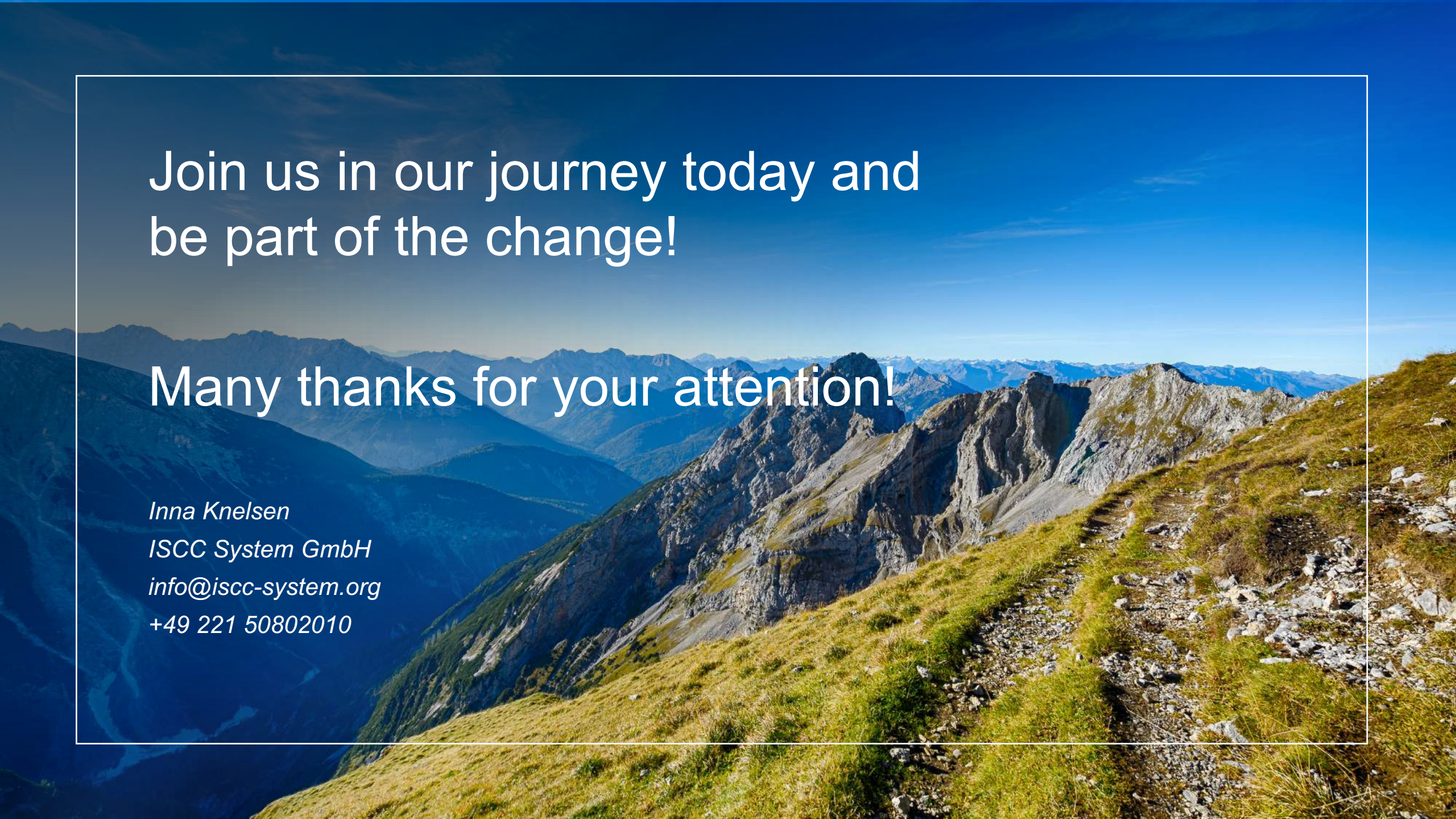
- SDG1 No poverty
- SDG2 Zero hunger
- SDG4 Quality Education
- SDG5 Gender equality

United nations conference on climate change

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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