

Sustainability Certification of Bio and Circular Polymers with ISCC PLUS

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ISCC System GmbH

The European Biopolymer Summit 2020, 12th February 2020, Zaragoza



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 90% of plastic is not recycled

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

More than a third of plastic is used for packaging

Packaging waste accounts for half of the plastic waste

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..

California proposes phaseout of single-use plastics by 2030

PUBLISHED SAT, FEB 23 2019 - 11:16 AM EST | UPDATED SAT, FEB 23 2019 - 12:07 PM EST

Julia Davis

KEY POINTS

- California lawmakers introduced legislation this week to phase out single-use plastic food containers and other packaging that can't demonstrate it's recyclable or compostable.
- Proponents of the legislation say it could help reduce the problem of plastic littering beaches and oceans.
- Last year the Golden State became the first in the nation to restrict the use of plastic straws in restaurants.



China's recycling ban has sent America's plastic to Malaysia. Now they don't want it -- so what next?

By Ivan Watson, Jo Shelley, Sugam Pokharel and Ushar Dasgupta, CNN

Updated 05:22 GMT (3:22 HKT) April 27, 2019



News & Buzz

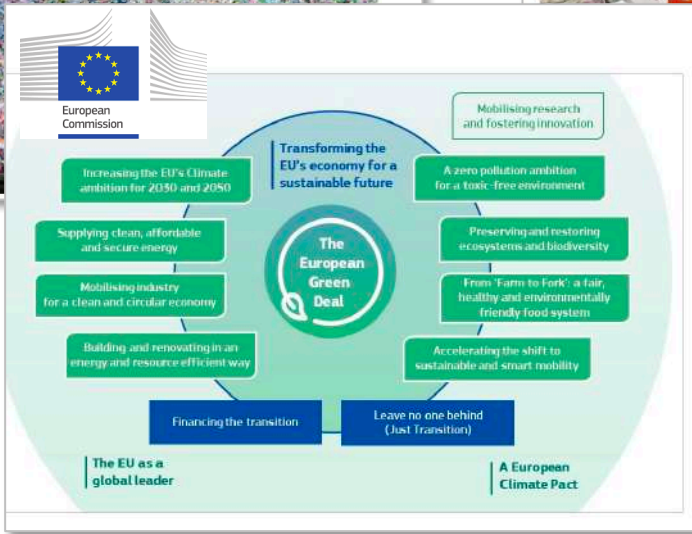
- A South Carolina father of 6 died after being struck by a wave...
- Chandrayaan-2 India successfully launches moon mission

NACHHALTIGES LEBEN 2020

Marken und Medien in der Pflicht

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

KPMG



Canada to ban single-use plastics as early as 2021

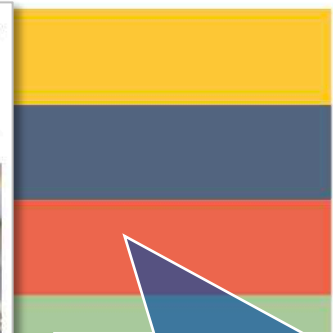
10 June 2019

Share



Canada to ban single-use plastics as early as 2021

Canada will ban "harmful" single-use plastics as early as 2021 in a bid to reduce ocean waste, Prime Minister Justin Trudeau has announced.



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

SPIEGEL Media

AdAlliance

Agile or irrelevant

Redefining resilience

2019 Global CEO Outlook



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



...companies and brand owners 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

„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**“



PEPSICO

“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

Examples

Bio economy



The Bio economy flow diagram shows a sequence of elements: three images of raw biomass (bamboo, wheat, and corn), a blue arrow pointing to a circular logo with two leaves, and a collection of logos for NatureWorks, bp, TOTAL, ELOPAK, Shell, and UPM.

Circular economy



The Circular economy flow diagram shows a sequence of elements: three images of waste (textiles, tires, and plastic), a blue arrow pointing to a circular logo with three arrows forming a triangle, and a collection of logos for سابك (SABIC), Vinventions, Dow, Tupperware, and PLASTIC ENERGY.

Over 4,000 companies in more than 100 countries are currently certified – 50% in the waste and residues sector

All Feedstocks, including:

- Camelina
- Canola / Rapeseed
- Cereal
- Corn
- Cotton
- Palm
- Shea
- Soy
- Sugarbeet
- Sugarcane
- Sunflower
- Waste & Residues
- Wood
- Mixed Plastic Waste



All Markets:

- Food
- Feed
- Energy
- Industrial applications

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

Examples

ISCC Members



WWF Germany

- „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

Danube Soya

- Non-GMO

Welthungerhilfe

- Development of practical criteria and checklists for food security
- Planning pilot audits
- Use of social indices for certification
- Integration of social indices into GRAS

University of Illinois at Chicago, United States

- LUC analysis
- GHG emission calculations
- Analysis of grassland to cropland conversion in the Prairies
- Policy advice

Fachhochschule Nordwest Schweiz

- Project on sustainable supply chain management
- Sustainability in the Swiss energy sector
- Nomination for Swiss innovation price

Kiel Institute for the World Economy

- Low iLUC approach
- Carbon mapping
- GHG calculation
- LUC analysis and GHG emissions from LUC
- Identification of low iLUC risk biofuels
- Policy advice

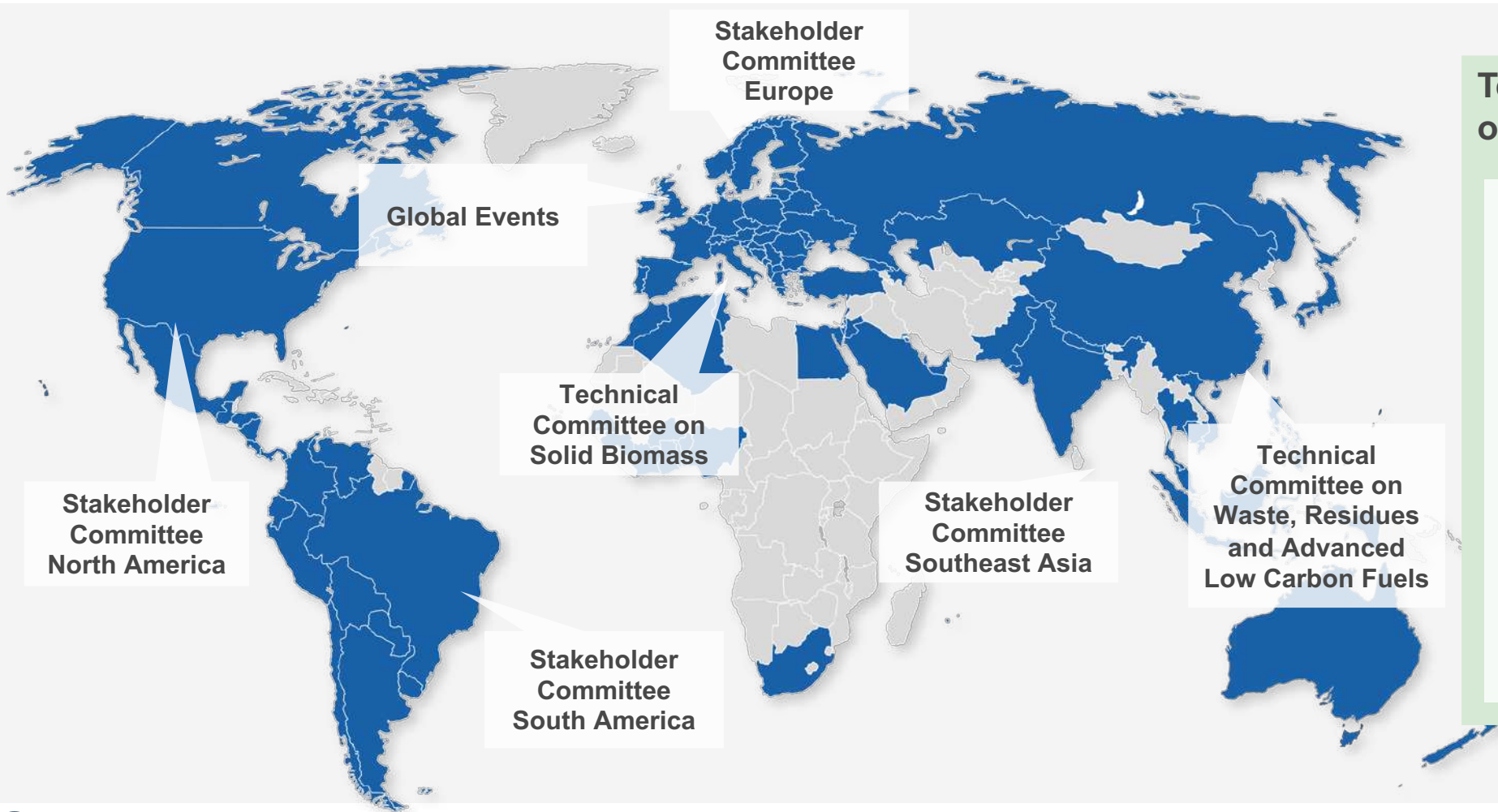
Deutsche Umwelthilfe e.V.

- Continuous information exchange w.r.t.
- Palm oil
- High iLUC risk
- Carbon recycling
- ISCC supports their network “bioeconomy”

DBFZ – German Biomass Research Centre

- 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

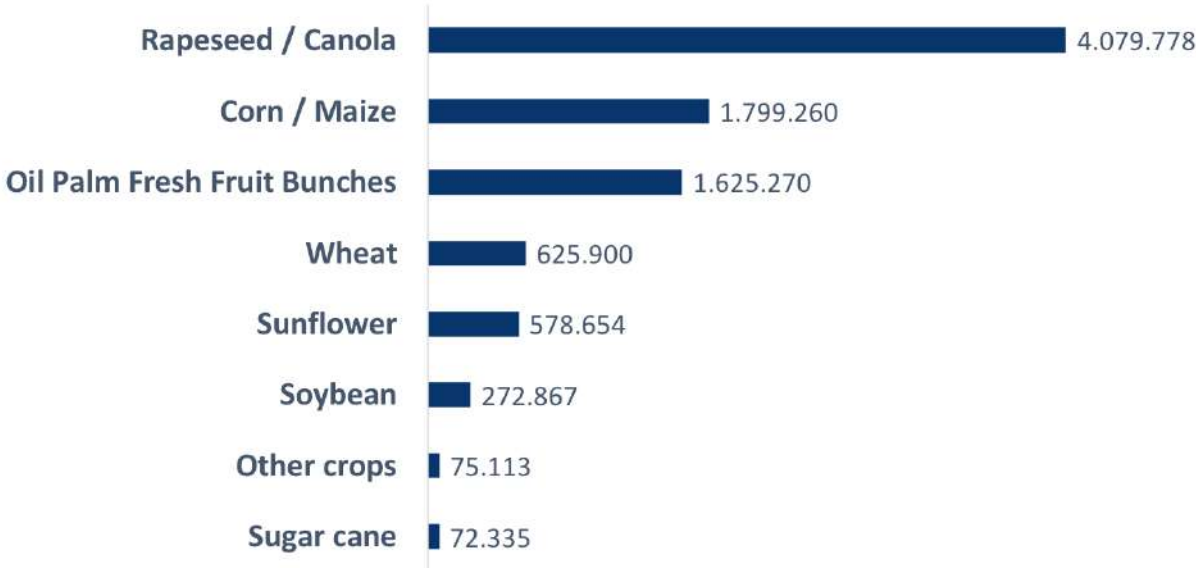
In 2018, almost 90 million tonnes of raw material were ISCC certified – among those are many potential biopolymers feedstocks












Certified potential biopolymer feedstock (t)



Crops - Certified Cultivation Area (in hectare)



 ~ 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



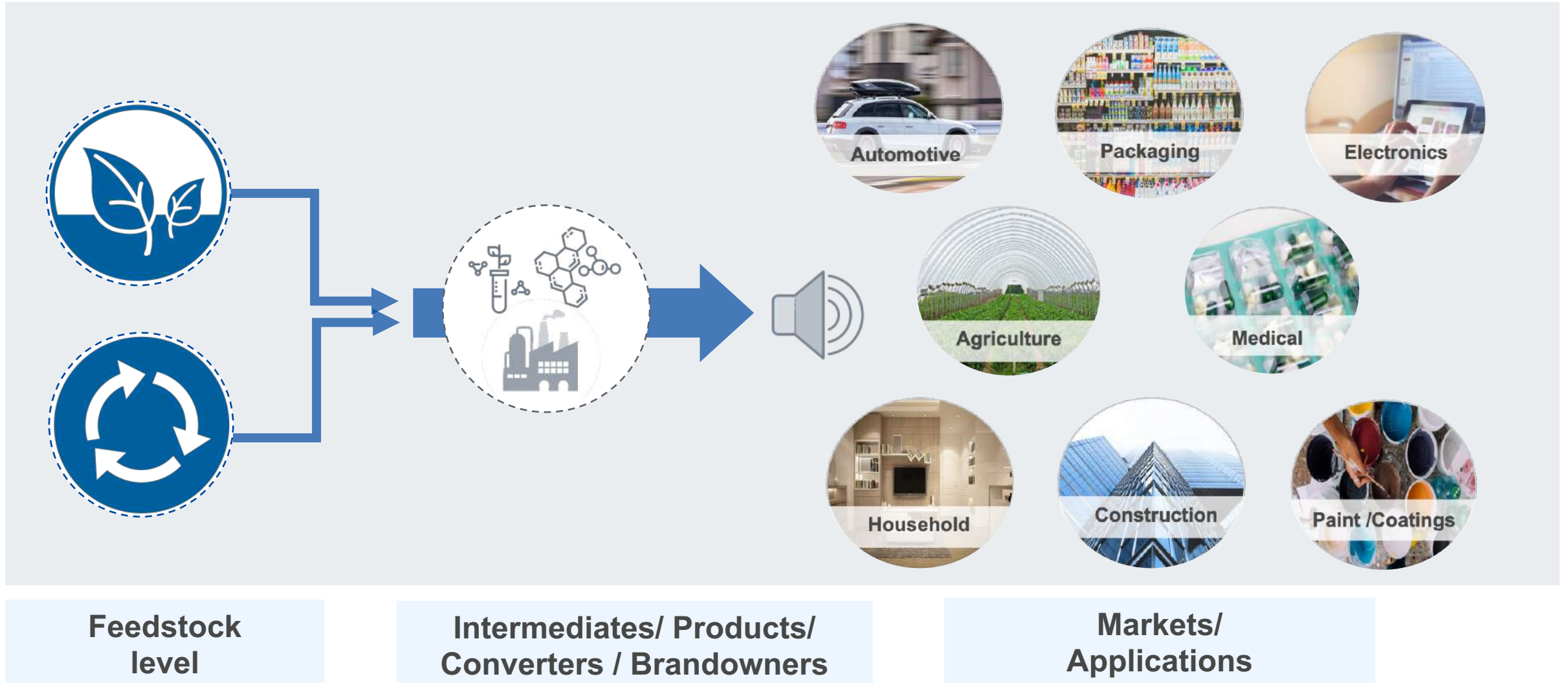
High Carbon Stock



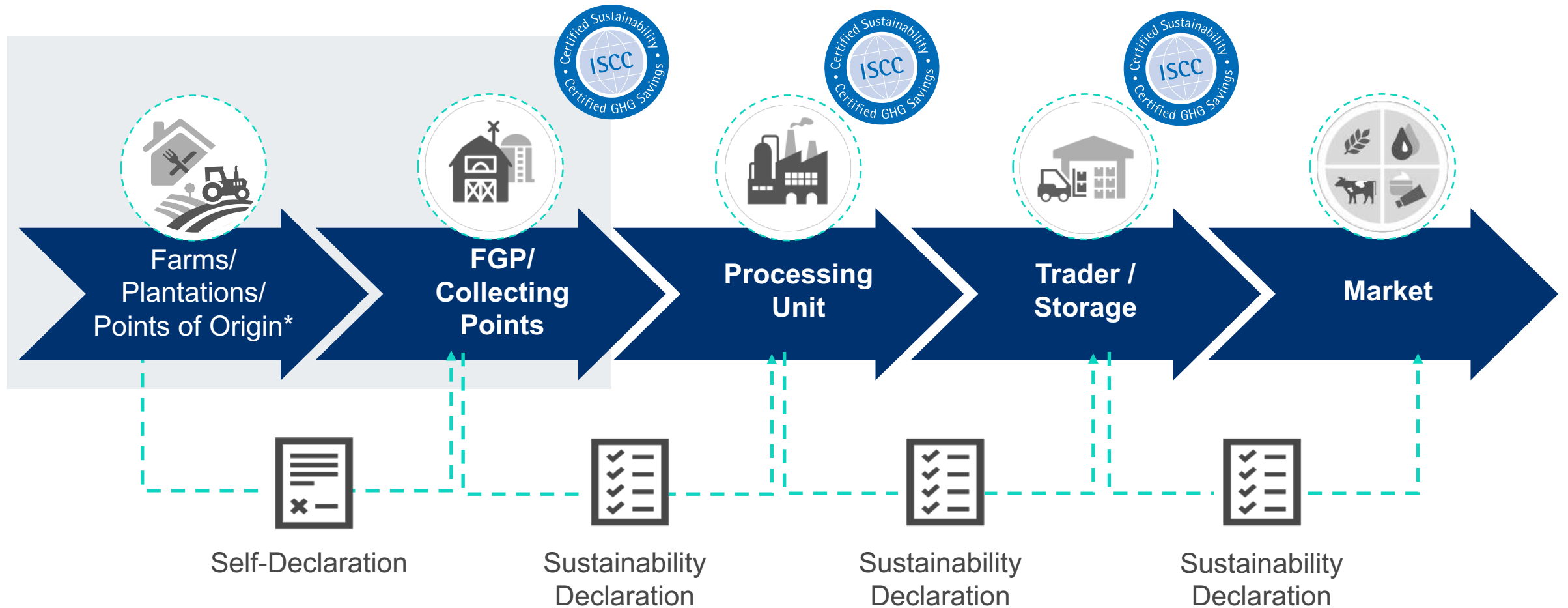
Social Indices



ISCC PLUS solutions for the bio- and circular economy

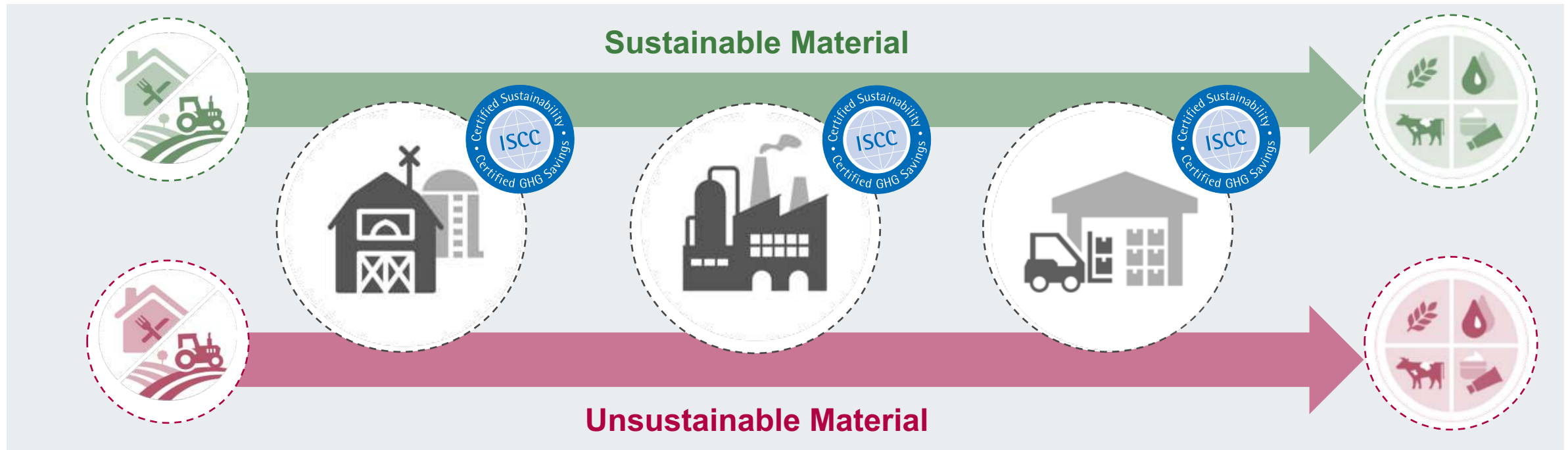


ISCC certification ensures sustainability, traceability, feedstock identity, and correct claims



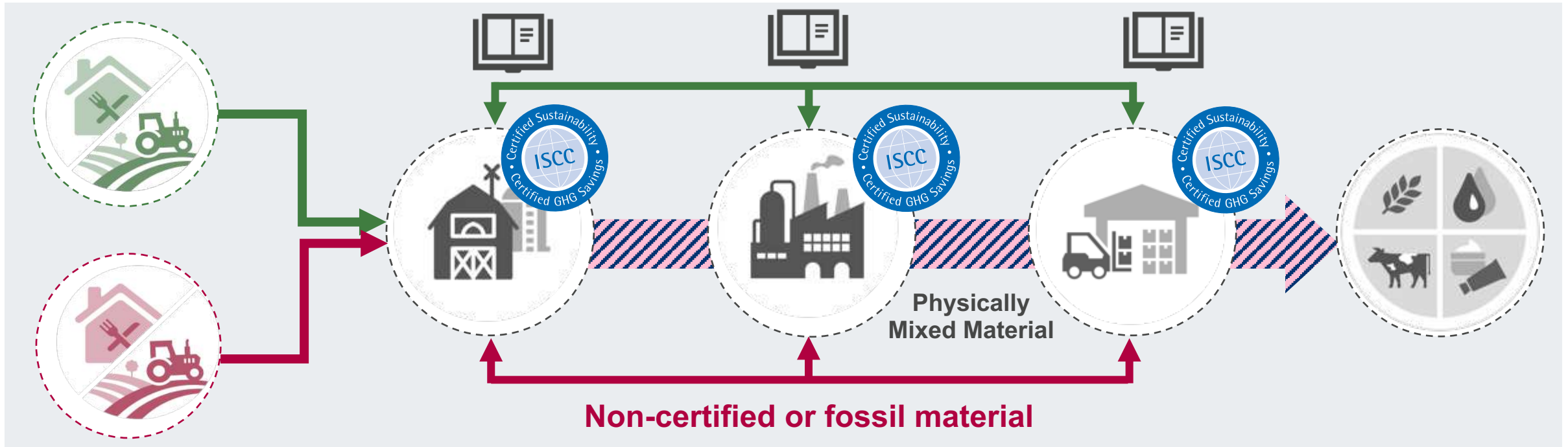
* Farms/Plantations and Points of Origin can get certified on a voluntary basis. Usually they are covered under the certificate of the FGP/CP. In this case they issue a self-declaration to the FGP/CP.

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

Bio-based economy



Circular Economy



Physical Segregation



Mass Balance



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

Explaining mass balance

Perstorp

ISCC
www.iscc-system.org
contributing to responsible sourcing of bio-based materials

Best of all, your participation is helping to speed up the flow to go pro-environmental for everyone.

Offering bio- and/or recycled-based alternatives for our entire portfolio by 2030

DSM

Understand and improve environmental performance

Jindal Films

Jindal Films has identified different sources of ISCC PLUS certified polypropylene, made of various vegetal renewable sources like sunflower, soybean, rapeseed, tall oils and other vegetal oils via a mass balance approach. These are ethically sourced and used to produce naphtha, which is itself converted into propylene, before being polymerized into polypropylene and introduced into Jindal Films' production process. As a result, without any compromise in the final film properties or its food contact approvals, Jindal Films is proud to announce a film range made out of these ISCC PLUS certified sustainable sources, through the mass balance concept used along the supply chain

EASTMAN

CARBON RENEWAL TECHNOLOGY

A game-changer for recycling

Eastman's recycled materials will be certified by International Sustainability & Carbon Certification (ISCC), an independent agency in a variety of industries. Costa said Eastman will work across the value chain – with Eastman customers, potential feedstock suppliers, and non-governmental organizations such as the Ellen MacArthur Foundation (EMF) and others – to implement this large recycling waste plastics. Eastman became a member of EMF's Circular Economy 100 Network earlier this year.

"The problem of waste plastics is not one that can be solved by a single company, but Eastman is taking definitive action to do commercial production of carbon renewal technology is a proof point of our determination to act quickly and decisively to accelerate this project to fruition so quickly – just eight months after we announced our intention to be a leader in chemical recycling – require world's brightest minds and effort by thousands of members of the Eastman team."

Plastics is launching bio-based grades of its Arnitel® and mass-balancing approach of bio-based feeds with the globally recognized sustainability certifies at DSM Engineering Plastics said: "Our

SIG

SIGNATURE PACK: 100% linked to plant-based renewable material

Developing a pack solution that adheres to consumer demands, in addition to ensuring that it is innovative within the industry is no small feat. However SIG have created the world's first aseptic pack 100% linked to plant-based renewable material – a solution that holds added value, meets the demands of the industry and has a clear core message.

UPM

DOW

Crude Tall Oil UPM BioVerno

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]

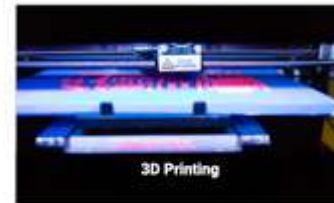
NatureWorks announced that 100% of their feedstock for biopolymers and performance chemicals will be ISCC PLUS certified by 2020

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

AGRICULTURAL FEEDSTOCKS FOR INGENO 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.



3D Printing



Beauty and Household



Building & Construction



Cards, Cartons, & Non-Food Packaging



Electronics and Appliances



Food & Beverage Packaging



Food Serviceware



Landscape and Agriculture



Medical and Hygiene

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



be **green**
and be **recyclable**



Elopak uses ISCC PLUS certified PE aiming to reduce the use of fossil-based materials and to minimise CO₂ 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



Tupperware®

walki



سابك
sabic



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>

Classification: General Business Use



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 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.

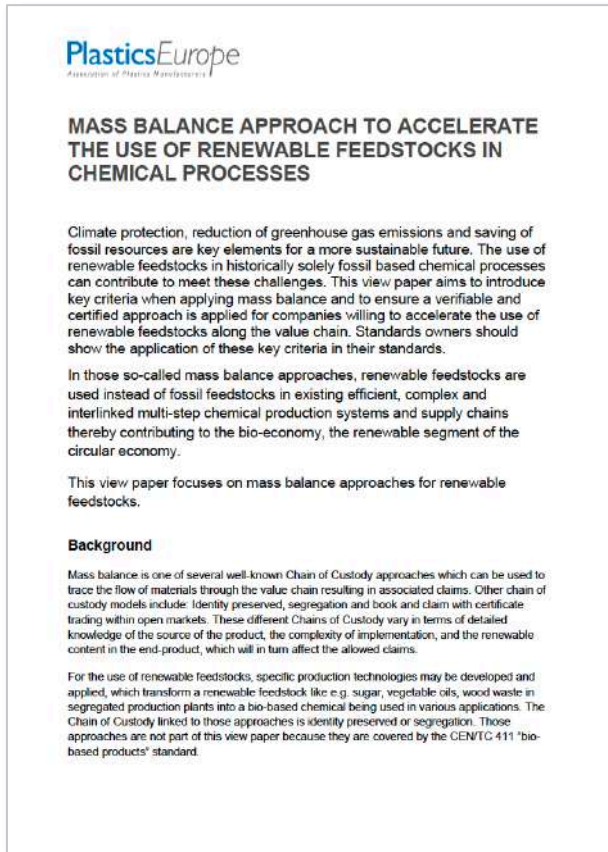
As part of the market foundation stage, SABIC has begun to produce and commercialize the first monthly volumes of certified circular polymers - polyethylene (PE) and polypropylene (PP)-, prior to the projected start-up in 2021 of the commercial plants planned by SABIC and PLASTIC ENERGY in the Netherlands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



Plastics Europe Industry View Paper (2020)

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



Ellen MacArthur Foundation White Paper (2019)

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



ISCC PLUS Self-Declaration		Point of Origin - Post-Industrial Material	
Name of Point of Origin (In case of Post-Industrial Material this is usually a Production Site)			
Street address			
Postcode, city			
Country			
Recipient of Self-Declaration (Collecting Point)			

No.	Requirements
1	Documentation is available to prove compliance with ISCC requirements* including contractual agreements with subcontractors and recipients (collecting points), delivery notes/ weighbridge tickets.
2	The respective material is a waste or processing residue and is end-of-life material (has reached the end of its intended life cycle). Its further use complies to the waste hierarchy approach introduced by the Waste Framework Directive 2008/98/EC: "any substance or object which the holder discards or intends or is required to discard" (Article 3(1)). The waste or processing residue was not intentionally produced.
3	The waste or processing residue is generated from a manufacturing process and is not reused, reworked, regraded or accepted for the same. The material may be sent to a second country for further recovery.
4	Materials for re-use or mechanical recycling were separated from the material covered under this self-declaration. Mechanical recycling for the waste material under this self-declaration would not have been economically feasible or its further use would have required an additional processing step.
5	Documentation of quantities delivered under ISCC, i.e. covered by this self-declaration is available. This can be proven e.g. by copy of contracts, delivery notes, weighbridge tickets.
6	Compliance with applicable national and regional legislation is ensured (in particular with respect to the definition of waste, waste prevention, waste collection, waste sorting, transport, labelling of waste, etc.).

I hereby confirm that all above-mentioned requirements are met and that my operations comply with the ISCC requirements*

Lists of material eligible for ISCC PLUS certification
(03 December 2019)

ISCC PLUS certification can cover all types of agricultural biomass and products, bio-based waste and residues as well as materials contributing to the circular economy for all markets and sectors not regulated by the RED or FOD, such as the food, feed and energy markets as well as diverse industrial applications (e.g. chemical industry and packaging). The lists below are not conclusive, but aim for the harmonization of the description of material under ISCC PLUS (e.g. on ISCC certificates). System Users engaging in the broker sector inside the European Union shall refer to the ISCC EU list of eligible material. All materials that can be covered under ISCC EU can also be covered under ISCC PLUS. This list hence outlines the materials that can only be covered under ISCC PLUS.

There shall be no brand names, nor technical characteristics of the material nor specifications of the production process included (e.g. bleached, deodorized, industrial grade, etc.) on the ISCC certificate. Products derived from sustainable raw material shall be stated on ISCC certificates according to table 2 (intermediate and final products). Sustainable material may be declared more detailed in contracts, on sustainability declarations or in mass balances. For amendments of the lists (e.g. to add an additional raw material) ISCC must be contacted before a certificate can be issued.

The table for raw material does not classify material as waste/residue. ISCC does not guarantee acceptance of the waste/residue status of a certain material by authorities. Auditors and system users are obliged to investigate and research the eligibility of material in the targeted country.

If mass balance is applied as chain of custody option, this must always be indicated by adding "based on a mass balance approach" behind intermediate and final products.

If intermediate or final products are produced from agricultural raw materials or bio-based wastes that have been defined to be end-of-life or residues that are generated during processing (example feedstock: UCO, sugar beet residues), this shall always be indicated by adding the prefix "bio-based" to the respective product on the certificate Annex.*

If intermediate or final products are produced from waste residue materials that derived from the mechanical and/or chemical processing of recyclable materials of non-biological origin (post-based) or of mixed origin (biobased & bio-based) whereas the bio-based content is not further determined or unknown, this shall always be indicated by adding the prefix "circular" to the product (example feedstock: mixed plastic waste). Therefore, ISCC PLUS for circular products also covers fossil materials and drop-in processes if the bio-based content is not determined via a 14C analysis as well as all kinds of non bio-degradable plastics, even if the feedstock is bio-based. Plastic material shall be named according to the recycling codes 1-7 while code 7 has to be further specified by the respective plastic type.

If intermediate or final products are produced from materials of non-biological origin using renewable energy sources, this shall always be indicated by adding the prefix "renewable" to the product (example feedstock: electricity). Unspecified terms (e.g. "bioplastic", "green PE") shall be avoided. System Users may have bio-based, circular and renewable products in parallel on one certificate Annex.

Certificates that have been issued prior the publication of this list do not have to be amended retrospectively.

* Only relevant for products in the field of industrial applications.

© ISCC System GmbH 1 of 7

ISCC for the Circular and Bio-based Economy

ISCC supports the transition to a circular and bio-based economy

Plastic is everywhere. With the start of mass production in the 1950s, plastic has become an indispensable part of everyday life. As a cost-efficient material, plastic is not only used for various household and medical applications, the construction and automotive industries but is also the preferred choice for packaging. Unfortunately, there is no globally standardised approach to handling plastic waste properly.

In combination with the durability, which gives plastic its value in the first place, the missing waste management has led to severe environmental pollution. Most plastics never degrade but decompose into smaller particles and become microplastics. Hence, the long-term impact on the oceans, wildlife and ultimately humans is beyond imagination.

In the past, recycling rates for major chemical and plastic products have been very low. Most of the plastic that has

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



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



Governments agreed:

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

- 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

A scenic mountain landscape with a clear blue sky and a path leading up a grassy slope. The foreground shows a dirt path with some rocks and green grass. In the background, there are several mountain ranges, some with snow-capped peaks, under a bright blue sky.

Join us in our journey today and
be part of the change!

Many thanks for your attention!

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