



The Roundtable on
Sustainable Biomaterials

Impact Report 2022





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Executive Director's Welcome

Dear RSB members, partners and supporters,

We need to fight the dragons of inaction! Every day, we experience the consequences of the climate crisis in real-time: extreme drought and floods, vanishing species and ecosystems, growing food insecurity and injustice. Yet for many, it seems to be too difficult to act. As a global community, we are too slow in changing our production systems, our feedstock sources and our regulatory patterns. We need to act while we still can.

At RSB, a growing network of thought-leaders, innovators, practitioners and business leaders have come together with a shared vision: a world we want to live in – where climate change has been mitigated, ecosystems restored and livelihoods enhanced. Leveraging our best-in-class sustainability framework, the RSB Principles & Criteria, we collaborate on creating solutions that support this vision, that take these solutions to market and scale! Together, we are fighting these dragons of inaction.

In 2021, having embarked on a strategic revitalisation, we charted a new path to leverage our strengths and maximise our impacts. Guided by the Principles & Criteria, we broadened our focus far beyond certification to build a truly collaborative community, and implement purpose-driven programmes that turn innovative ideas into scalable solutions.

In 2022, we explore our growing role and impact in the world. As the world recovered from the coronavirus pandemic, and the sustainability movement found its footing once again, we confidently put our new strategy into action – steered with courageous leadership by the RSB Board, and powered by a growing RSB Secretariat and membership community. The results of the first year on this powerful trajectory are shared in this report. They represent a learning journey – and we are gaining momentum.

In this report, our second integrated Impact Report, we will provide insight into how we have cultivated activity in our three core areas: membership, programmes and certification.

You will read about the 26 new member organisations bolstering our community and see our community celebrate the return of in-person RSB events – including the RSB Innovations Meeting in Boston, USA. You will read about the exciting developments of



the RSB Book & Claim System and learn about our contribution to regulatory incentive programmes, such as H2Global. You will read about the growing numbers and diversity of RSB-certified operators all over the world and get to know more about the RSB Impact Alliance – a disruptive new model for certification. And much, much more.

We extend our sincere gratitude to our stakeholder community for their support and commitment to advancing the biocircular economy. Your contributions have been invaluable in supporting RSB's ambition for a net-positive world, and I look forward to collaborating with all of you in the years to come. We've still got a lot of work to do.

With appreciation,

Elena Schmidt
Executive Director, RSB

Elena Schmidt

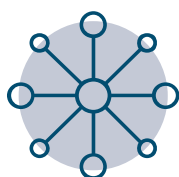
The RSB Story

RSB was started in 2007, as an academic initiative responding to the sustainability risks posed by a growing focus on biofuels. In 2013, RSB was formally registered as a not-for-profit association – expanding its mission to advance the just and sustainable transition of the bio-based and circular economy.

Today, RSB has evolved into a global, independent and collaborative network that leverages its best-in-class sustainability framework to create a world where climate change has been mitigated, biodiverse ecosystems have been restored,

and livelihoods have been enhanced. We do this by leveraging our three core areas:

- **Community:** Enabling collaboration for greater impact (see pages 4–11)
- **Programmes:** Building capability to make change happen (see pages 12–17)
- **Certification:** Providing clarity on what sustainability looks like (see pages 18–23)



Our membership community grew to **123** organisations across our 5 chambers



We hosted **1,295** participants across **27** events and engagements



20 advisory services projects delivered across aviation, energy and consumer goods sectors, and spanning 5 continents



Avoided GHG emissions in 2022 were equivalent to **1,480** flights from London to Tokyo



36,177 hectares of cultivated land protected



6,593 workers protected by our sustainability requirements

“RSB hires people who care about other people. It’s the why and how of what we do.”

– Aléz Odendaal, RSB’s Membership & Events Officer

“RSB has allowed me to be an independent thinker, giving me the opportunity and freedom to do my work. Being allowed to explore how my expertise can support RSB’s ambitions, has indeed been refreshing and rewarding.”

– Smriti Paul, RSB’s Learning Designer

“My colleagues are amazing! There is a good sense of teamwork and motivation around all the projects we are involved in, and I love being at the forefront of sustainability projects that seek to accelerate the transformation to a biocircular economy.”

– Alex Ehrenhaus, RSB’s Sustainable Feedstock Expert



Community

At the very core of our organisation, RSB is a collaborative network: an association of members from across the spectrum of stakeholders (from industry to civil society, academia and NGOs) and industry sectors. This is fundamentally who we are.

RSB's multi-stakeholder community regularly comes together to discuss and advance systemic change of the global economy via the uptake of bio-based and circular solutions. Through consensus-building and the construction of new knowledge on biocircular economy innovations, our members participate in the ongoing process of developing standards that serve as the lighthouse for setting sustainability policy across corporates, initiatives and regional and global regulation.

An engaged and active membership community is vital to the long-term success of RSB in driving the just and sustainable transition to a biocircular economy. We ensure that our community is a valuable place for organisations across our multi-stakeholder membership to invest their time and resources.

Our members access the full benefits of RSB via:

1. A programme of online and in-person events that brings fresh content and perspectives, reflective of our diverse stakeholder group, and provides unique networking opportunities with sustainability experts and transition leaders.
2. Topic-specific RSB community platforms where we convene our collaborative network to advance the development of new knowledge and sustainability guidance and explore new markets.
3. Continuous development of our sustainability framework and supporting standards, which inform the development of regional and global sustainability policy.
4. Privileged access to RSB's programmes that aim to advance sustainability transformations across industry sectors, regions and landscapes.



New members

RSB's members are producers of the next generation of fuels and materials; the brands and end-users of these products from sectors as diverse as aviation, shipping, fast-moving consumer goods, cosmetics and more; and the social and environmental NGOs, research institutions and others that are lighting the way for a global sustainability movement.

During 2022, RSB's membership community grew to 123 organisations across our 5 chambers.

New members in 2022

- 4Air
- Advanced Hydrocarbon Fuels
- Alder Fuels
- Arena Aviation Capital
- BioInnovate Africa
- Bluecat Paper
- Decarbon
- Deutsche Post DHL Group
- Enertrag
- GE Aerospace
- Green Fuels Research
- Indigo Ag
- International Olympic Committee (IOC)
- JIA RU SND BHD
- MSC Mediterranean Shipping Company
- Nova Pangaea Technologies
- Port of Seattle
- Preferred by Nature
- Raízen
- Sasol
- Twelve
- USA BioEnergy
- Virgin Voyages
- Vitol
- Walter J Palmer Consultants
- WasteFuel

Platforms & working groups

Through RSB's platforms and working groups, our membership community comes together to develop new knowledge and guidelines that advance the biocircular economy by:



Developing expertise and solutions on the most relevant topics and technologies shaping biocircular economy development.



Sharing wisdom in a pre-competitive space to raise sustainability ambition and action together.



Shaping revisions to the RSB sustainability framework and certification system to provide a continuously developed model of best practice.

RSB Platforms in 2022

1 RSB SAF Policy Platform

Brings together key stakeholders to explore global policy for sustainable aviation fuel (SAF) and support the engagement of RSB members towards policy-makers with guidance and advice grounded in the RSB sustainability framework.

Key outputs: A white paper on [Implementing successful public policies to shape the sustainable future of the aviation industry](#)

3 Sustainable Airports Platform

Developed under the Horizon Europe ALIGHT project, this is a platform to collaborate in the development and exchange of knowledge on sustainability and the role of airports in the growing SAF economy.

Key outputs: A toolkit for airport sustainability teams that provides comprehensive, non-technical information around SAF sustainability to facilitate discussions and decision-making; a communications toolkit to support airports with internal and external SAF communications.

2 RSB Power-to-X Working Group

Brings together stakeholders from across industry and civil society to explore emerging Power-to-X technology, understand sustainability risks it poses and develop approaches for mitigating these risks. The working group aimed to support the growth of this emerging field with robust and consistent sustainability requirements – including definitions of and requirements for certifying electrofuels, renewable hydrogen and renewable fuels of non-biological origin.

Key outputs: The working group developed a formal amendment to the RSB Standard for Advanced Fuels, which was adopted by the RSB Assembly of Delegates on 1 December 2022.

4 RSB Standards Working Group

RSB's original formal working group for experts from across the membership community to work together to ensure the continuous and robust development of RSB's standards.

Key outputs: The revision of the RSB Principles & Criteria with updated requirements on continuous improvement, FPIC (free, prior and informed consent), GHG reduction thresholds, human and labour rights, food security, soil carbon, water management, air quality, land-use, and more; inclusion of requirements developed for Power-to-X and the flexible allocation of sustainable feedstocks to an output of choice in the RSB Standard for Advanced Fuels (Global Scope).

Events

RSB hosts a range of events, both virtually and in-person, to engage its members and select key stakeholders on policy discussions, emerging technologies and relevant sustainability topics.

From webinars covering the basics of RSB certification or our sustainability framework to regional fora around the globe, there are multiple opportunities throughout the year to engage with the RSB team and membership community, and network with key partners and transition leaders.

2022 was the first year since 2019 that RSB was able to host its membership community at in-person events. While there was still some uncertainty regarding regional coronavirus restrictions, RSB hosted a mixture of in-person and virtual events.

In total, RSB was able to host



1,295
participants



across **27**
events and engagements

RSB Events in 2022 - Highlights



Sustainable Aviation Fuel (SAF) Stakeholder Meeting in South Africa

Johannesburg, South Africa

21 April 2022

Participants: 63

About: RSB convened a meeting on the status of SAF development in South Africa and explored what the future of a national SAF economy should look like. The event also launched the South African SAF Blueprint, compiled by WWF-SA in collaboration with Stellenbosch University, which identified seven value chain opportunities for SAF production in South Africa. Read more about the event [here](#).



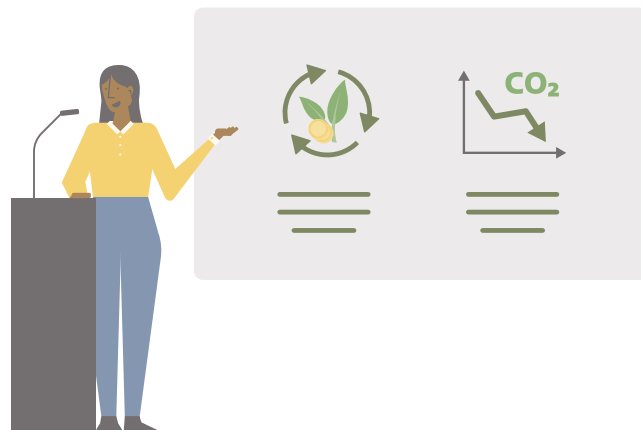
Fuelling the Bioeconomy and the Sustainable Future of the Aerospace Industry

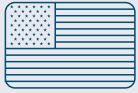
São Paulo, Brazil

28 September 2022

Participants: 141

About: RSB collaborated with long-time partners, The Boeing Company, to host a sustainability summit for leading proponents of the SAF economy in São Paulo, Brazil and celebrate 90 years of Boeing's work in the country. Leading voices from the aviation industry bioeconomy spent a full day taking stock of the current context of challenges and opportunities in Brazilian SAF research, development and production.





RSB Innovations Meeting

Cambridge, MA, USA

4-6 October 2022

Participants: 56

About: RSB brought together leaders from around the world – representing RSB’s multi-stakeholder community across sectors such as aviation, shipping, textiles, chemicals and more – to dig deeper into the next stage of sustainability innovation and the bioeconomy. At the Massachusetts Institute of Technology (MIT) Innovations HQ, the RSB Innovations Meeting offered guests the opportunity to participate in practical working sessions that are closely tied to RSB’s varied platforms and initiatives, and which examined the global transition to a bio-based and circular economy, including:

- Innovative supply chain solutions needed to demonstrate sustainability of materials
- The latest policy development affecting the switch to sustainable biomass feedstocks
- The role of airports in the SAF value chain and how they can be engaged
- The latest sustainability guidance for Power-to-X technologies
- Exploring the challenges of sustainable feedstock supply across industry sectors
- Continued innovation in sustainability for the circular bioeconomy through revisions to RSB’s best-in-class sustainability standard



RSB members come together at the RSB Innovations Meeting, held at the MIT Innovations HQ in Cambridge, Massachusetts.



RSB Annual Conference 2022

Virtual

28 November – 1 December 2022

Participants: 428

About: From 28th November to 1st December 2022, we hosted our second fully-virtual Annual Conference, RSB's flagship event. Making the most of the virtual environment, we were joined by 428 attendees from all across the world,

representing 84 RSB member organisations (and 115 non-RSB member organisations). We shared the online stage with 58 speakers from across the globe, with a balanced gender representation.



Day 1 started with a keynote address from **Elizabeth Wathuti** – a young Kenyan climate activist - whose powerful speech was an example of the vision, leadership and courage required to push for meaningful and sustainable change. We reviewed what it meant to innovate towards a circular bioeconomy, as part of "The world we're in: And the promise of the bioeconomy", in which a new RSB platform was announced: The RSB Sustainable Biomass Policy Platform. We looked at the mix of ingredients needed to ensure emerging tech benefited both people and the planet during the session, *"Magic ingredients: Making emerging tech work for people and planet"*, sponsored by Airbus. And we explored the role of the financing community in advancing decarbonisation activities that ensure broader positive impacts in *"Funding futures: How financing can advance the bioeconomy"*.



Day 2 started with a keynote address from author and academic **Suzanne Simard**, who shared fascinating insights from her decades of work on the amazing collaboration in nature – emphasising the importance of breaking down siloes. We reviewed the opportunities of the EU's Horizon Europe programme, from the perspective of RSB's multi-project contribution, during *"Horizon Europe: Advancing sustainability in diverse projects"*. We built on the progress of the RSB Power-to-X Working Group and made future plans for the platform's next iteration, as part of *"Power to PtX: Building towards sustainable scale"*. And we learnt about the value of bioplastics, overcoming barriers in the biomaterial industry, and discussed how to accelerate the shift away from virgin fossil material in *"Full circle for plastics: The biomaterial revival"*.



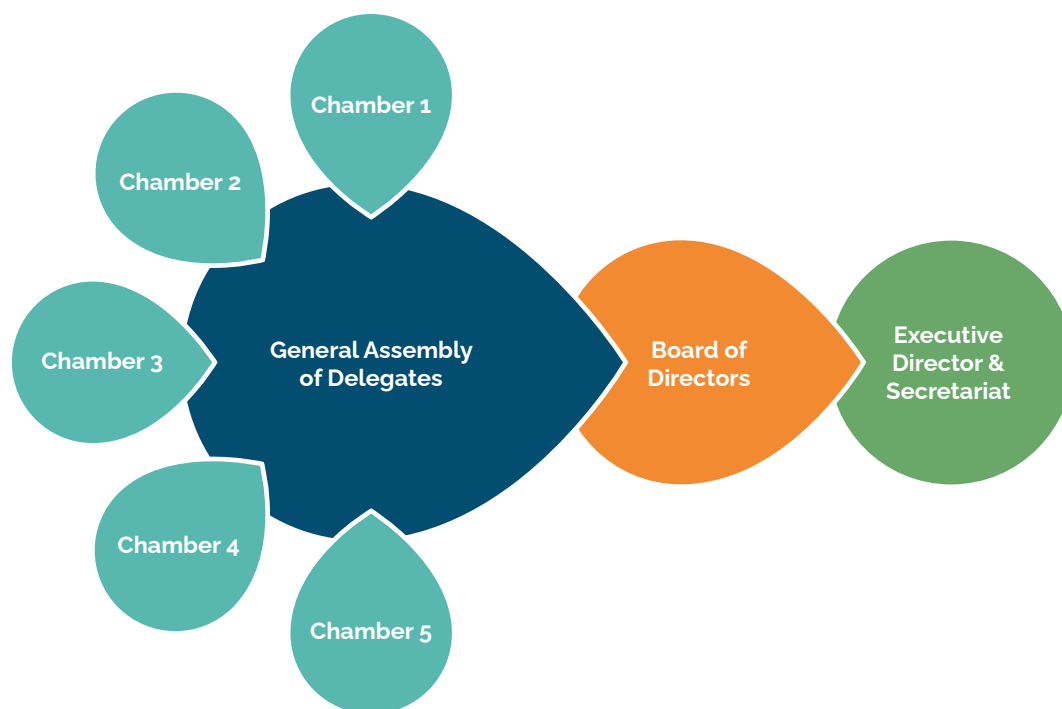
Day 3 started with a keynote address from leadership coach **Andres Roberts**, who focused on the conditions and new leadership mindsets needed to create a sustainable and circular bioeconomy. We reflected on what is needed to scale RSB's Impact Alliance during *"Critical mass: What an Impact Alliance looks like in practice"*, in which it was announced that a Memorandum of Understanding has been signed between RSB and CertifHy to accelerate the development of a sustainable hydrogen economy. We discussed Brazil's potential to lead on SAF production and showcased RSB and Boeing's partnership in the region as part of *"Scaling impact: The sustainable future of Brazil's aerospace industry"*. And we learnt more about the RSB Book & Claim System pilots in the aviation sector, and how the shipping sector will be tackled next in the session, *"Book and claim: Where to next?"*



Governance

RSB members elect our highest decision-making body, the RSB Assembly of Delegates, who make decisions on the RSB sustainability framework's ongoing development, support normative standards, and elect the RSB Board of Directors who, in turn, provide oversight running the RSB organisation via the Secretariat.

Members commit themselves to support the biocircular economy's sustainable development and advance the aims of RSB. However, none commit more than those taking on formal roles within our organisation. RSB's Delegates and Board Directors guide and advance RSB's work and provide vital support to the RSB Secretariat.



RSB Delegates as of 31 December 2022

Chamber 1	Chamber 2	Chamber 3	Chamber 4	Chamber 5
Christophe Beaunoir, <i>SAIPOL</i>	Steven le Moing, <i>Airbus</i>	Fongoh Eric, <i>ICENECDEV</i>	Neva Murtha, <i>Canopy</i>	Richard Olliver, <i>Aplethora Energy Services</i>
Julie Aguilhon, <i>TotalEnergies Raffinage Chimie</i>	Ingrid Marie Andersen, <i>Maersk</i>	Harry Stokes, <i>Project Gaia</i>	Edie Juno, <i>NWF</i>	Patrick Lynch, <i>Bioledger</i>
Oona Koski, <i>UPM</i>	Graham Cox, <i>Tensei</i>	Humphrey Nxumalo, <i>Solidaridad</i>	James Reeler, <i>WWF</i>	Kevin Fingerman, <i>Schatz Energy Center at Humboldt State University</i>

RSB Board of Directors as of 31 December 2022

Maiju Helin, <i>Neste</i> (Chair)	Fongoh Eric, <i>ICENECDEV</i>
Laurel Harmon, <i>LanzaTech</i> (Vice Chair)	James Onchieku, <i>Kisii University</i>
Andrew Pozniak, <i>Green Aviation</i> (Treasurer)	Adam Klauber, <i>World Energy</i>
Jayant Sarnaik, <i>AERF India</i>	

Sustainability framework development

Revision of RSB's Principles & Criteria (P&C) happens every five years to ensure that our world-class sustainability framework remains fit for purpose and guided by best-practice:

- In July 2022, RSB built on the first round of public consultations held in 2021, and began working on revising the P&C through a climate-smart lens – with the ambition to facilitate feedstock producers and their supply chains to increase productivity, enhance resilience and reduce GHG emissions.
- In August 2022, RSB opened up the second round of public consultations in order to obtain feedback on the improvement propositions made to the P&C. After an internal review of feedback comments, the revisions were then presented and approved for a one-year pilot period by the RSB Assembly of Delegates at the Annual Conference.
- During 2023, operators will be able to pilot the revised requirements on continuous improvement, FPIC (free, prior and informed consent), GHG reduction thresholds, human and labour rights, food security, soil carbon, water management, air quality, land use, and more.

In addition, two major amendments were made to RSB's Standard for Advanced Fuels (Global scope):

- Requirements on Power-to-X technologies to support the growth of this emerging field with robust and consistent sustainability requirements. These requirements include definitions of and requirements for certifying electrofuels, renewable hydrogen and renewable fuels of non-biological origin.
- Requirements to allow flexible allocation of sustainable feedstock to an output of choice. The new requirements on accounting, bookkeeping, balancing period and assessment boundary rules among others, align with the RSB Standard for Advanced Products, supporting supply chains to scale the bio-based and circular economy – while making certain robust chain of custody and claims rules are in place. This will ensure that RSB's Standard for Advanced Fuels will continue to advance the global transition to a sustainable biocircular economy.



Programmes

Organisations of all sizes and across sectors – from investors and industry leaders to NGOs and government agencies – are increasingly looking to the bio-based and circular economy for solutions to today's challenges. Through the lens of our globally-recognised sustainability framework, RSB's international team of experts provides unique approaches to assessing and implementing policy and operations – with the aim to support the development of projects that can create positive sustainability impacts at scale. By grounding the important knowledge, advice and guidance needed for early project development and investment decisions within the RSB sustainability framework, RSB's programmatic approach complements the RSB certification scheme for established projects and supply chains.

RSB works with partners at a regional and global level to provide technical and strategic advice, hands-on implementation, staff training and research services, and manage landscape-level projects that support the implementation of the RSB Principles & Criteria outside traditional certification. In doing so, RSB builds capacity to make change happen. By providing advisory services and developing projects that encourage the development of a holistic sustainability approach in supply chains and policy development, RSB contributes to the development of a biocircular economy foundation rooted in best-practice.



Implementation of our sustainability framework

The development of new supply chains that convert bio-based and circular raw materials into fuels and materials requires careful planning to avoid potential unintended negative consequences.

For example, removing residues from a forest or farm can provide a new raw material to build the bioeconomy – helping to reduce our reliance on virgin fossil resources. But if not carefully planned, it could adversely impact biodiversity and soil quality, including long-term soil carbon storage. As soils hold around 80% of terrestrial carbon, it is clear that even the best intentions to grow the bioeconomy carry risks.

The key to ensuring positive outcomes is to assess all biocircular opportunities with a consistent, comprehensive and robust sustainability framework. By doing this, we can look at the full spectrum of risks and opportunities, from food security to water protection, and human and labour rights.

RSB's programmes work to collectively ensure that the full potential of the biocircular economy can be realised. We assess the sustainability impacts of new raw materials, technologies and production landscapes in their local context, and help users – from local communities to industrial operators – to build more resilient, locally-appropriate and truly sustainable supply chains.

Landscape-level programme

RSB recognises that the development of the biocircular economy in a region touches several key areas – such as agriculture, waste management, industrial development, technology, policy, market, skills and the investment environment of that region. RSB’s landscape-level programmes, therefore, support this transition by ensuring that sustainability is designed within sectoral transition strategies that have been co-developed and validated with stakeholders. The goal of RSB’s landscape-level programmes is to support stakeholders in taking decisions that maximise the sustainability impact of this transition at

the landscape level, going beyond specific supply chains and individual operators.

RSB has been partnering with The Boeing Company to implement landscape-level programmes in Brazil, Ethiopia and South Africa to support these economies in identifying the most sustainable pathways to develop sustainable aviation fuels (SAF). In 2023, we expect this approach to be replicated in South-East Asia, and further regions in the coming years.

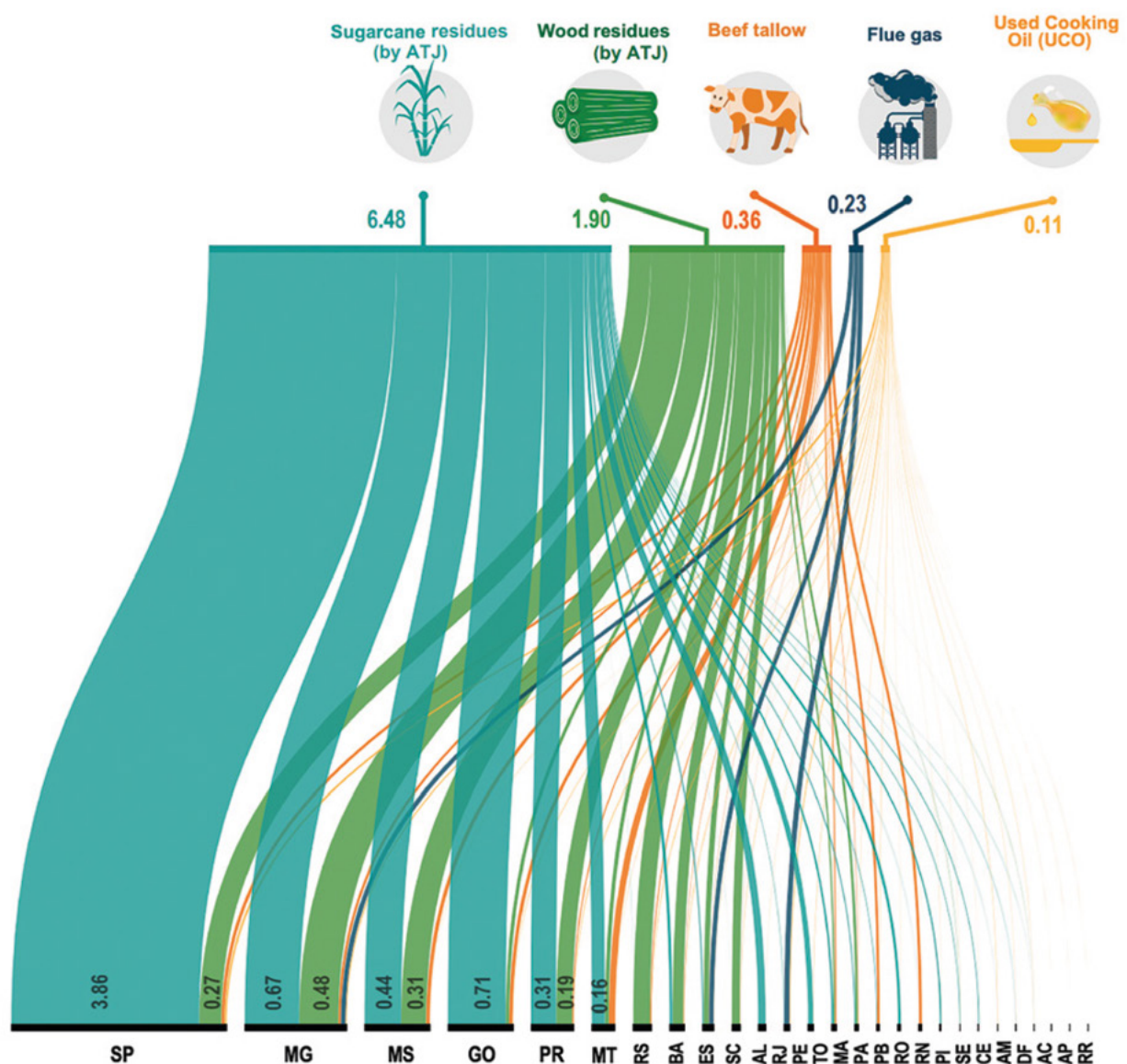


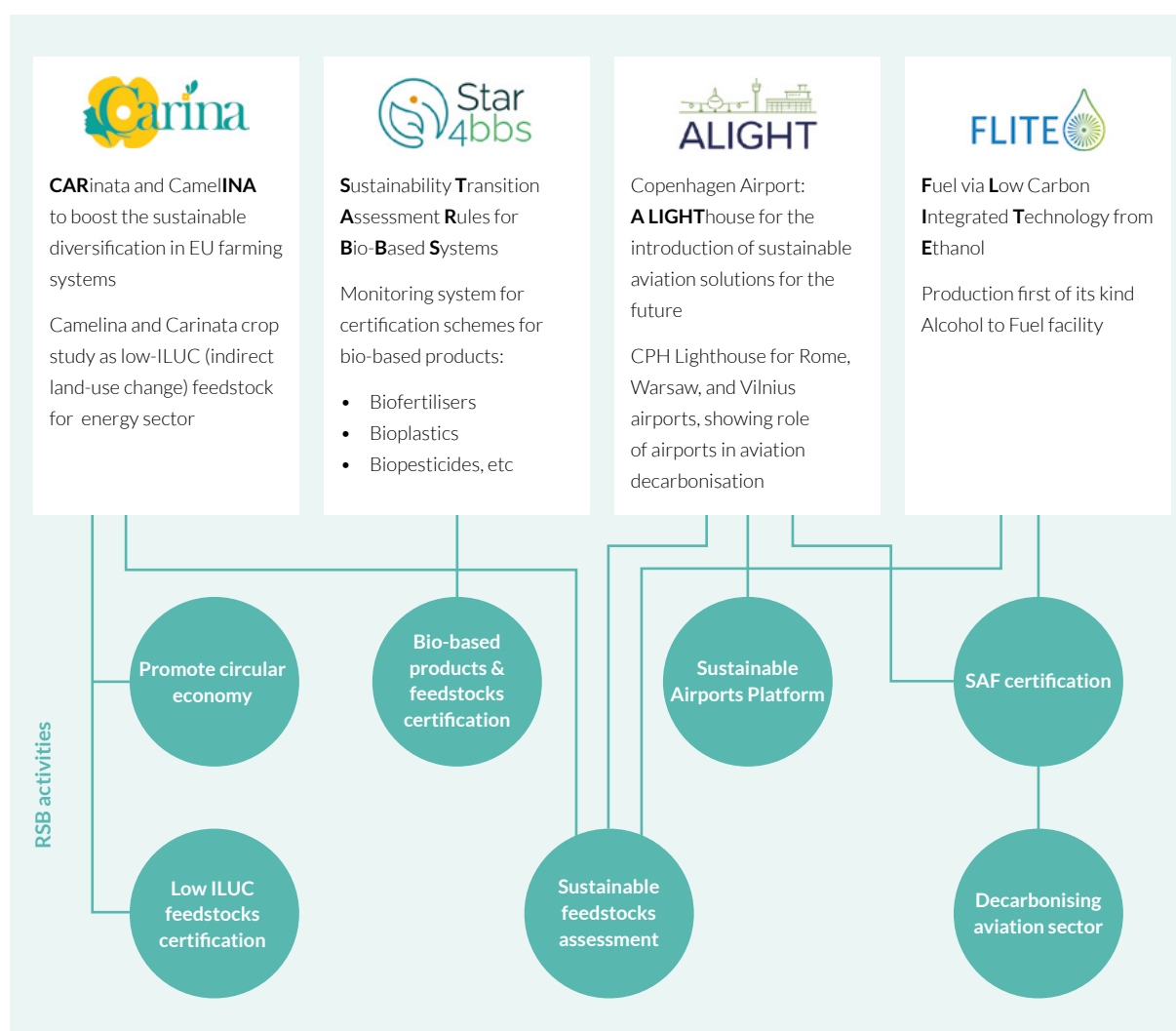
Illustration from the *Fuelling the Sustainable Bioeconomy* report showing the potential production of SAF (in billions of litres) from each feedstock in Brazilian states – the majority being in São Paulo (SP), Minas Gerais (MG) and Mato Grosso do Sul (MS).

Partner projects

RSB also participates in several projects funded by the European Union's Research and Innovation programmes aimed to tackle climate change, achieve the UN's Sustainable Development Goals and boost the EU's competitiveness and growth.

The role of RSB in these projects is to support the identification of sustainable feedstock options for the bio-based and circular

economy, including fuels and materials, with the goal to achieve RSB certification. RSB also leverages these projects to convene stakeholders and share knowledge and co-create sectoral best practice.



Sustainable Airports Platform

In 2022, RSB launched the Sustainable Aviation Platform (SAP), in partnership with Copenhagen Airports, under the auspices of Project ALIGHT, with the objective to create a space for ALIGHT partner airports and other global airports to collaborate in developing and exchanging knowledge on sustainability and the role of airports in the growing SAF economy. This initiative led to the publication of a SAF Guidance for Airports, which can be found [here](#) and includes information on:

- the current role of airports in the SAF value chain
- examples of airports' SAF initiatives
- research into how SAF is included in airports' sustainability strategies
- how SAF contributes to airports' decarbonisation goals
- SAF communications by airports

Advisory services

RSB's advisory services programme provides clients with tailored solutions and capacity-building to help them navigate sustainability complexities and build positive impacts to support a growing biocircular economy. This programme is delivered on the bedrock of RSB's sustainability framework, RSB's Principles & Criteria, and is complemented by our suite of supporting documents and tools.

This ensures that for a wide range of sustainability topics – ranging from green hydrogen production to crop production to book and claim – advice is always based on an ambitiously robust normative framework that has been developed by the full range of RSB member and expert specialists, and gone through a rigorous multi-stakeholder review. As a result, companies that work with RSB via advisory services have confidence that delivered work is grounded in RSB's uniquely credible sustainability approach – covering all relevant sustainability risks.

RSB's trusted advisory services programme has continued to grow in 2022, with over 20 projects delivered covering aviation, energy and consumer goods sectors, and spanning North and South America, Asia, Africa and Europe. Key challenges tackled include, but are not limited to:

- LCA GHG emissions assessments of innovative feedstock-pathways for fuels
- Development of sustainability criteria for hydrogen production
- Sustainability advisory support for net-zero commitments
- Preparation for certification
- Capacity-building of clients and their supply chain partners
- Feedstock sustainability assessments for energy and material production
- Book and claim pilots (for more information, see page 17)



Case study – H2Global

RSB has played a supporting role in the H2Global funding programme – an important instrument of the German government to ramp up the hydrogen economy. RSB's role – in collaboration with a number of other leading organisations, like TÜV SÜD and LBST Ludwig-Bölkow-Systemtechnik GmbH – has been to refine H2Global's sustainability criteria and contribute to market consultations. [RSB's Principles & Criteria](#), together with [RSB's extensive guidance materials](#) and our team's implementation expertise, has helped to provide critical support and guidance to further refine the H2Global programme.

Similar to H2Global, the backbone of the RSB sustainability framework is Principle 2 on "Planning, Monitoring & Continuous Improvement". This means that RSB requires certified operations to be planned, implemented and continuously improved through an open, transparent and consultative impact assessment and management process. The first step of this process is to undertake an impact assessment to assess sustainability impacts and risks. RSB provides the RSB Screening Tool, to guide operators through this process. Whenever potential impacts are identified, operators are guided to undertake specialist assessments to understand the impact better and define mitigation measures. RSB is aligned with the IFC Performance Standard on Assessing and Managing Environmental and Social Risks and Impacts.

This has helped to make the H2Global mechanism more robust, which will help ensure large-scale investments in new technologies are done sustainably.



"Over the past few years, RSB has been a strategic partner and great supporter of S.Oleum in the development of Macaúba as an alternative for the production of sustainable feedstocks. RSB's studies on Carbon Life Cycle Assessment (LCA) and Gap Analysis have been essential for fine-tuning our business plan and ensuring consistency in our discussions with stakeholders.

In addition to their technical expertise, the dedication and commitment of the RSB team have been crucial to the success of the project. This year, we will further expand the reach and scope of work with RSB, reinforcing our commitment to sustainability and transparency."

– Francisco de Blanco, CEO of S.Oleum

Picture credit: S.Oleum

Book and claim

In 2022, RSB created the building blocks of the RSB Book & Claim System. This aims to accelerate the decarbonisation of hard-to-abate sectors of aviation and shipping by providing a credible book and claim mechanism that:



links limited supply locations with global demand, while global logistic networks are created;



meets the growing demand from corporations and consumer brands for in-sector solutions to decarbonise both their freight and their business travels;



and allows for the price premium of sustainable fuels to be cost-shared.

We hosted several stakeholder consultations that supported the development of the RSB Book & Claim Manual. This set out the requirements for registering, transferring and retiring the sustainability attributes of sustainable aviation fuels (SAF), including the greenhouse gas emission reduction benefit, in the form of a Book & Claim Unit, and aspects related to sustainability certification, sustainability data points, claims, double counting and additionality.

We also started several pilots with industry stakeholders performing BCU transactions on real SAF deliveries using the foundational RSB Registry, including (in alphabetical order) *Airbus, Airbp, Etihad, Microsoft, the Sustainable Aviation Buyer's Alliance (SABA), Singapore Airlines, TotalEnergies, World Energy and United Airlines* – as well as *Shell Aviation* for the related registry recognition framework development. In 2023, the RSB Book & Claim System will be launched in the aviation sector, and we expect the first pilots in the maritime sector to start.



RSB Programme Director, Arianna Baldo, sharing latest developments on book and claim at the RSB Innovations Meeting at the Massachusetts Institute of Technology (MIT).



Certification

RSB offers trusted, credible standards, tools and solutions for sustainability certification of the highest standard – mitigating business risk, fuelling the bioeconomy and contributing to the UN Sustainable Development Goals, in order to enable the protection of ecosystems and the promotion of food security.






RSB's certification is:

- User-friendly.
- Recognised as the strongest and most trusted of its kind by WWF, IUCN and NRDC.
- Comprehensive, ensuring credibility in diverse contexts.
- Widely recognised by ICAO, regulatory authorities in Europe, the US, Japan, Australia and elsewhere, allowing RSB-certified products swift approval and preferential market access.

RSB is a feedstock-neutral standard that can certify complete supply chains, as well as novel biomass and bio-based or advanced material technologies, including fossil-based waste and end-of-life materials. As such, RSB's system can include oil and sugar-based biofuels, cellulosic ethanol and chemicals, renewable diesel and alternative fuels for aviation, bio-based and advanced plastics, lubricants, and other chemicals.

In total, RSB has certified 36 different feedstocks since 2012. This diversity highlights RSB's applicability for a wide range of feedstocks and means that operators with a variety of feedstocks, processes, and products can demonstrate their sustainability within a single certification system.

Since 2012, feedstocks that have been certified by RSB include:

 Crop / plantations-based feedstock	 Wastes & residues feedstocks	 Intermediary products used as raw materials in RSB-certified supply chains
Camelina	CO flue gases	Renewable naphtha
Carinata	Crude glycerin	Bio-attributed ethylene
Coconut	Starch from industrial wastewater	Bio-attributed benzene
Corn	Tall oil	Bio-attributed styrene
Poplar	Tallow and other animal fat residues	Bio-attributed polymers
Jatropha	Used cooking oil	Polymers with recycled content
Macaúba	Grease trap oil	Bio-dichloropropanol
Sugar cane	Molasses (C-grade)	
Solaris	End-of-life plastics	
	Gliricidia tree sticks	
	Rice husk	
	Palm kernel shells	

Impact Alliance

The RSB Impact Alliance is a new and exciting model for certification – designed to scale climate action and sustainability impacts at the rapid rate required to meet global goals on decarbonisation and the climate crisis.

At the moment, the certification market is such that a single raw material producer might be required to hold multiple different certifications – all requiring management systems, audits and different compliance mechanisms. This disincentivises and delays the level of sustainability certification required, even when demand from brands and other end users is high.

RSB's Impact Alliance model aims to solve this challenge by having a more collaborative approach to certification. It will allow partner certification systems to apply RSB's environmental and social sustainability requirements in their own system – without demanding a parallel certification. Importantly, this removes red tape and dramatically reduces the burden on producers to demonstrate compliance, while incentivising better practices.

In 2022, RSB and CertifHy signed a [Memorandum of Understanding \(MOU\)](#) outlining their intention to work together on the RSB's Impact Alliance. CertifHy's ambition is to build hydrogen and derivatives certification schemes for the hydrogen industry in order to promote the role of hydrogen and e-fuels for the energy transition. As part of the MoU, CertifHy will be responsible for supporting the sustainability ambition as enshrined in RSB's Principles & Criteria, eventually offering two different sets of criteria under their CertifHy EU RFNBO (renewable fuels of non-biological origin) certification. CertifHy EU RFNBO will ensure compliance with RED2 criteria, and CertifHy RFNBO+RSB will ensure additional compliance with RSB's Principles & Criteria.

This is just the start of the RSB ambition with the Impact Alliance. We have been in contact with several organisations and hope to have further news on these developments in the coming years.

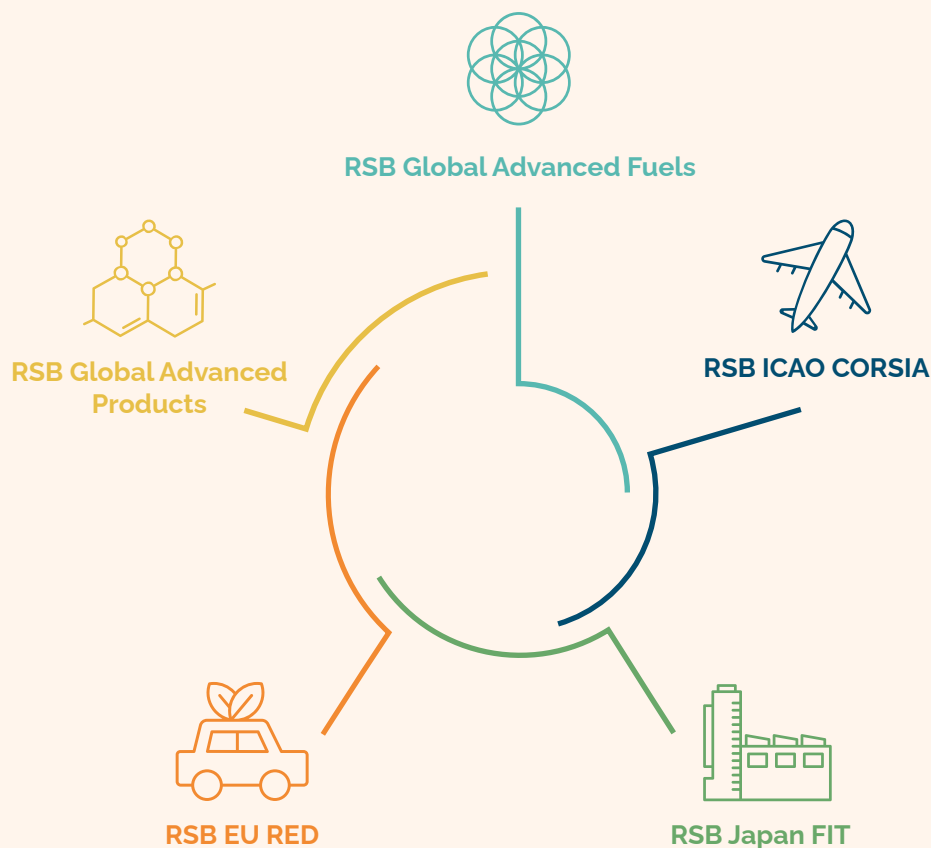
“The clean hydrogen economy needs to be accelerated to maximise its role for the energy transition. This MoU is an important milestone for CertifHy™ and RSB to leverage their expertise on e-fuels and sustainability frameworks towards developing a robust certification system adapted to the urgency of climate change and the needs of the market. This is an important achievement for the development of CertifHy™. We are very excited about the opportunity to take part in the development of the Impact Alliance and to access new markets together with RSB.”

– [Matthieu Boisson](#), CertifHy™'s project coordinator



RSB certification schemes

RSB can certify a company against five different schemes, covering different industries and geographic locations. However, the foundational sustainability requirements of each scheme, RSB's Principles & Criteria, remain constant.



- The RSB Global Standard is the RSB's flagship standard that covers both fuels and advanced products for the voluntary market. Between the two schemes (Global Fuels and Global Advanced Products), they cover over 50% of the RSB certifications and include products ranging from biofuels through to polymer and chemical products.
- RSB ICAO CORSIA is a regulatory standard that covers the sustainable aviation fuel (SAF) market worldwide. The RSB is one of two scheme owners who can certify against CORSIA. We expect this scheme to grow steadily in the future as mandatory SAF targets hit the global aviation industry.
- RSB EU RED is another regulatory standard that the RSB is involved with that covers biofuels and bioenergy within the EU market. It is overseen by the EU Commission, and the RSB has been involved with it since its early days.
- RSB Japan FIT is a scheme provides the Japanese energy market with biomass and is a relatively new standard.

The below table shows the certification scheme mix in 2022. The year saw a large increase in the RSB Japan FIT standard from 2021 and also increases in the RSB Global Scheme uptake.

Certifications 2022	Certificates	Sites*	Percentage
RSB Global (Advanced Fuels)	12	142	21
RSB Global (Advanced Prod)	20	116	34
RSB EU RED	9	140	16
RSB ICAO CORSIA	3	6	5
RSB Japan FIT	14	28	24
Total	58	432	100

*Sites included within scope of RSB certification, excluding waste and residue points of origin

Outcomes

Year-on-year changes		
Indicators	2021	2022
Percentage of operators processing or trading waste and residue materials	50%	50%
Total amount of RSB-certified products (combined fuel and advanced products) sold by the certified operators (metric tonnes)	262,642	289,265
Savings on CO ₂ eq emissions from fuel (metric tonnes)	416,540	315,159
Workers protected	8,632	6,593
Certified cultivated area (hectares)	23,584	36,177

Cumulative Totals:	
Number of certificates since 2012	85
Number of countries since 2012	46
Number of feedstocks since 2012	36

GHG Emissions



In 2022, RSB-certified operators sold

233,031

metric tonnes of alternative fuels.



All operators comply fully with RSB's Principle 3 on Greenhouse Gas (GHG) emissions, meaning the produced amount of RSB-certified alternative fuels corresponds to an **emissions reduction of**

315,159

metric tonnes CO₂eq.



Avoided GHG emissions in 2022 were equivalent to

1,480 flights

from London to Tokyo.



Since 2012, RSB-certified operators have produced GHG emissions savings of

3,222,602

metric tonnes CO₂eq – equivalent to a large container ship making 96 trips around the equator.¹

Environmental & social aspects



36,177 hectares

of cultivated land are protected by RSB certification – an increase from 2021's 23,584 hectares.

On this land, responsible and sustainable practices are implemented, as per RSB's Principles & Criteria, including:

- Soil erosion reduction and soil conservation
- Improvement of soil quality
- Water management
- Protection of conservation values



RSB certification ensures that

6,593 workers

are protected by our sustainability requirements for human and labour rights, including:

- Freedom of association
- No slave labour or forced labour
- No child labour
- No discrimination
- Minimum wage
- Safety and health
- Grievance mechanisms for workers

¹ Based on a large container ship (average cargo capacity = 68,600 tonnes) with a CO₂ efficiency of 12.5 gCO₂/tonne-km Source: 2nd IMO GHG study: <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/SecondIMOGHGStudy2009.pdf>

Non-conformities and grievances

A non-conformity can be raised during an RSB assessment when the auditors find that an operator is not conforming with an RSB requirement. Once identified, the operator is given time to correct the issue. Depending on the severity of the non-conformity, the operator will be allowed between 3 and 12 months in which to reach conformity.

The requirement that all non-conformities must be closed by certified operators in the defined timeframes means that RSB has a direct impact on improving the social and environmental performance of these operators and driving the implementation of good practices at farms and industrial facilities.

An analysis of valid certificates in 2022 found the following regarding non-conformities raised during RSB audits against the RSB Principles & Criteria:

- None of the non-conformities were related to environmental requirements (GHG reduction, conservation, soil, and water and air).
- 33% of the non-conformities were related to social requirements (labour and human rights, rural development, food security, and land rights).

- 33% of the non-conformities were related to RSB's requirement for planning, monitoring, and continuous improvement under Principle 2.
- The remaining non-conformities were related to legal, technical, and other requirements.

This distribution of the types of non-conformities remains much the same as in previous years and indicates the key areas where RSB continues to have a tangible impact in ensuring improvement.

In 2022, as with 2021, most of the non-conformities were related to a company's management system and chain of custody as opposed to their compliance with RSB Principles & Criteria, with a total of 106 major, minor and observation non-conformities logged. This reflects the fact that more traders and intermediary organisations work with the RSB standards than primary biomass producers and industrial units. It is important to note that in order for a certification to be granted or remain valid, all major non-conformities need to be closed.

RSB has a public grievance mechanism in line with the same requirements we expect from our own operators, which can be found on our website [here](#). During 2022, the RSB had no major grievances from any of its stakeholders or the public in general.



Case studies

Greatview: In response to the growing demand for sustainable packaging solutions for liquid dairy and non-carbonated beverages, Greatview launched its first sustainable packaging solution 'Greatview Planet' in co-operation with INEOS and UPM Biofuels – all certified by the RSB. Made primarily from FSC-certified paperboard, Greatview's aseptic packaging material uses natural feedstock from sustainably-managed forests and other controlled sources. To protect the product inside, cartons are laminated with polymers.

SINOPEC Zhenhai: SINOPEC Zhenhai Refining & Chemical Company's 100,000 tonnes/year HEFA SAF plant successfully obtained certification, becoming the first RSB-certified SAF production unit in Asia. Established in 2020, the Zhenhai plant is the first and only HEFA SAF production unit in China. The certification demonstrates that SINOPEC Zhenhai's supply chain and production management has met the top sustainability standard, and sets a solid foundation to enter the global market.

SGS Spain: In September 2022, SGS obtained accreditation under the RSB sustainability framework. As a result, SGS Spain was recognised by the European Commission to verify and certify the sustainability of biofuels – making them the first entity in Spain to be accredited by the RSB. SGS Spain join SCS Global as one of two RSB Accreditation bodies capable of certifying the RSB across our five schemes.



Methodology and approach

RSB's monitoring & evaluation system

RSB's monitoring and evaluation (M&E) system not only collects actual data on volumes produced, hectares covered, and workers protected in the scope of certification, but also data about where non-conformities have been issued during the certification process. This information helps RSB to draw conclusions about the areas of change and the impacts of the RSB certification system. The results of this M&E reporting period feed into the organisational learning process and help RSB to analyse its evolving footprint in greater depth.

The impacts achieved by RSB-certified operators and other stakeholders implementing the RSB sustainability framework – the Principles & Criteria (P&C) – are expected to bring social, environmental, and economic improvements with the certification cycle.

Starting in 2021, RSB has been designing and developing an expanded M&E System that includes information and data on impacts of the P&C – outside the traditional certification role. This is presented in our integrated Impact Report, which combines data from RSB's traditional M&E system that looks at certification with data from RSB's other areas of work: namely implementing our programmes and convening our community.

Results from the M&E System feed into the continuous improvement of the P&C, including the policies, guidance, and tools of the certification system, as well as RSB's strategies and activities. Committed to transparency, RSB prepares M&E outcome reports annually and circulates these among RSB stakeholders for commentary and further improvements to the system.

Internal & external influencing factors

Influencing factors are factors that influence the effectiveness of RSB activities, but that are out of the direct control of the organisation.

During 2022, demand for RSB membership, advisory services and project work continued to be strong and showed that the new RSB approach to membership and projects work started in 2022 had been beneficial to the overarching RSB strategy.

Potential limitations due to data uncertainty

Data used in the M&E for evaluating the areas of non-conformities are from the audit reports. Potential limitations are those inherent to any audit process and may be influenced by the sampling selected during the audit, the audit team experience,

and specific operations under development during the audit, among other factors.

Data used in the M&E report are extracted from 100% of audit reports, covering all types of operators participating in the RSB system, as well as all certification bodies and auditors active in the period – reducing the risk of the sampling only covering a limited number of audit documents.

It is important to highlight that RSB's audit procedure requires a reasonable assurance level, meaning that the degree of confidence in the audit findings and certification statement provides a high but not absolute level of assurance regarding historical data and information.

Authors

A multi-disciplinary team from the RSB Secretariat is involved in data collection, data analysis, and M&E reporting:



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Methodology

Data collected

RSB monitors its performance by processing data collected among its certified operators and RSB records through a set of outcome indicators that cover environmental, social, and economic issues.

Methods to collect

The data points required for the RSB M&E System are collected through ongoing certification processes. This data collection method allows the RSB Secretariat to continuously collect actual and third party verified data. RSB maintains up-to-date records of past, present, and planned projects and advisory services in Salesforce, tracking information to apprise operations.

Interpretation & evaluation

The results obtained through the aggregation of data from certified operators and RSB activities are interpreted and evaluated with the expected outcomes in mind. RSB created Salesforce reports to summarise and analyse project timelines, sector and regional engagement, and operational capabilities.



Objectives

This report aims to evaluate the results obtained by RSB and evaluate them against the outcome indicators, as defined in RSB's M&E system. Specific objectives of this report are to:

- aggregate data from certified operators and RSB records in order to analyse it and draw conclusions;
- evaluate RSB's achieved outcomes;
- feed findings into RSB's general strategic discussions; and
- comply with the ISEAL Impact Code.



Scope

This evaluation includes all operators certified by RSB, as well as all RSB activities during 2022. It was conducted internally by the RSB Secretariat staff, and is based on data collected by independent third party auditors. Production volumes were calculated for the period of 1 January 2022 to 31 December 2022.

It is worthwhile noting that, in 2022, a number of operators were not audited. This is because one of the RSB's two certification bodies elected to no longer work with RSB, and as result, around half of the RSB certifications needed to be transferred to another certification body. This sudden increase in workload led to the need for a number of audits to be postponed and the certifications to be extended by up to six months.



Outcome indicators

The outcome indicators that guide this report are made up of different data points, which guide our data collection and analysis. These indicators cover each of our Principles and help RSB to ensure that every aspect of the sustainability framework is continuously measured and evaluated. View the outcome indicators [here](#).



Complying with the ISEAL Alliance Impact Code

The International Social and Environmental Accreditation and Labelling (ISEAL) Alliance lays out an Impact Code with which all members of the alliance must comply. This code specifies the requirements for the development and implementation of a M&E system by member Standards. The Impact Code is underpinned by five Credibility Principles, which are the foundation of our M&E System:

1. Sustainability
2. Improvement
3. Rigour
4. Transparency
5. Truthfulness



Finances

Pending the finalised audited accounts for 2022, RSB concluded the 2022 financial year with 1,861,497 CHF in total revenues, 1,709,403 CHF in total costs, and 8,086 CHF in total amortisation and depreciation. These resulted in a 160,181 CHF net revenue for the year, continuing RSB's trend of year-end net positives.

Revenues

RSB saw significant growth in revenues from both membership dues and other services (which includes event registrations, RSB tools and advisory service projects), which rose 57% and 132% from the 2021 year-end values, respectively.

Category	Amount (CHF)	Percentage of total
Membership dues	287,336	15.4%
Certification licensing fees	51,943	2.8%
Grants	991,786	53.3%
Sponsorship	78,838	4.2%
Other services	451,595	24.3%
TOTAL REVENUES	1,861,497	



Costs

RSB groups costs into two categories: operational and core. Operational costs include activities related to RSB projects, programmes, governance and development. Core costs capture personnel costs, professional services, insurances and other related expenses.

Operational costs		
Category	Amount (CHF)	Percentage of total
Marketing and communication	67,736	9.9%
Business development	25,097	3.7%
Standard development and policy	5,130	0.8%
Certification and training	3,856	0.6%
Advisory services	248,605	36.5%
Annual Conference and RSB Board meetings	113,128	16.6%
Other projects	217,077	31.9%
TOTAL COSTS	680,629	

RSB's operational costs increased in every area, except certification and training, which decreased by 74% compared to 2021. RSB attributes the overall growth in these costs to additional engagement efforts and project work resulting from increased organisational recognition and new opportunities. The year-to-year drop in costs associated with certification and training is the result of increased costs in 2021 related to special certification projects.

Core costs		
Category	Amount (CHF)	Percentage of total
Personnel	815,456	79.2%
Rent	7,075	0.7%
Travel	40,655	4.0%
Insurances	5,420	0.5%
Office expenses	8,781	0.9%
Professional fees	97,828	9.5%
Membership fees and donations	11,273	1.1%
Information technology	42,286	4.1%
TOTAL COSTS	1,028,773	

In 2022, RSB's core costs increased as the organisation grew, travel normalised, and RSB moved into new offices at the International Environment House 2 in Geneva.

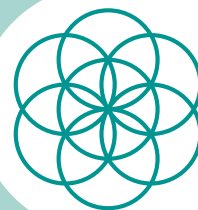
Financial results

RSB ended 2022 in good financial health. With a debt-free balance sheet and good cash reserves, RSB entered 2023 well-positioned to continue to seek and invest in opportunities to create impacts across our three key areas: RSB's membership community, our programmatic work and our global certification scheme.

Category	Amount (CHF)
Total revenues	1,861,497
Total expenditures and diminution	1,709,403
2022 financial results	160,181



The Roundtable on Sustainable Biomaterials (RSB) is a global membership organisation that drives the just and sustainable transition to a bio-based and circular economy. Our sustainability framework has been developed by our multi-stakeholder membership, and is a uniquely robust and credible foundation for addressing the climate crisis. We use this foundation to develop projects, guidance and new knowledge and solutions that equip key decision-makers to deliver net-positive impacts for people and the planet.



RSB

Roundtable on
Sustainable Biomaterials
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