

UNDERSTANDING OUR FOOTPRINT



RSB
Roundtable on
Sustainable Biomaterials
www.rsb.org

Outcomes of RSB's Monitoring & Evaluation System in 2018



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EXECUTIVE SUMMARY

RSB is committed to the continuous monitoring, evaluation and improvement of our standard and certification system. Since 2016 we have been compiling our assessments into an annual public report to help our stakeholders recognise our work and how it is contributing to sustainable development worldwide. This year's report is the second such report produced using a much-improved data collection process that is helping to ensure the accuracy of our reporting.

RSB has seen strong growth in 2018 in the volume of certified fuel produced – from 212,790 metric tons of fuels in 2017 production has grown by almost 30% in one year to 273,224 metric tons. This is a reflection of the continued maturation of the alternative fuels market, particularly in the aviation sector. While certificate numbers have dropped slightly with a few pilot projects not renewing their certification, encouragingly commercial plants are producing ever greater volumes of fuel with RSB-certified greenhouse gas emissions reductions and social and environmental sustainability guaranteed.

The volume of fuel produced in 2018 contributed to a saving of 477,152 metric tons of CO₂eq emissions – which is the equivalent of 1880 flights between London and Tokyo. This contributed to a total saving of 1,615,813 metric tons of CO₂eq emissions since 2012 – this is equivalent to 175 large container ships travelling from Shanghai to Los Angeles. These figures show that fuels can be produced ethically and sustainably, and have a significant climate impact.

With 55.5% of operators using waste and residues in their supply chains, RSB-certified products are significantly reducing pressure on agricultural land. The 14.4% growth in the volume produced from waste and residue materials from 2017 to 2018 has led to a reduction of pressure on a total of over 200,000 hectares of agricultural land (if the same volume of fuel had been produced from a dedicated crop).

Change in key RSB indicators from 2017 to 2018

Indicator	2017	2018
% of operators using waste and residue materials	48	55.5
Alternative fuel produced by certified operators (metric tons)	212,790	273,224
CO ₂ eq emissions savings from fuel (tons)	406,365	477,152
Workers protected	5339	5680
Cultivated area (hectares)	14,165 ha	18,100 ha

EXECUTIVE SUMMARY

The growing importance of waste and residue materials in all supply chains has been reflected in the further development of the RSB Standard to include an approach for advanced products which for the first time will allow non-energy products from recycled carbon and non-biogenic waste to carry the world's most credible sustainability certification – RSB.

The number of workers protected by RSB requirements on human and labour rights, as well as the land area subject to RSB sustainability principles, continues to grow.

We found that 20% of all non-conformities among operators were related to social aspects of the RSB Standard, while 53% were environmental. By requiring that all non-conformities are dealt with within defined timeframes, RSB is having a tangible impact on social and environmental performance.

Looking to our overall impact, for the first time this year we include a look at how our Standard is supporting sustainable operations beyond certification. Our advisory services are being used worldwide to embed best practice in projects, supply chains and legislation. This is particularly meaningful as we are able to support improved practices in many different sectors and regions which may assist operators in eventually achieving RSB certification.

Overall, 2018 has been a varied year for the RSB system with a slight decline in sites, farms and operators counterbalanced with significant growth in certified volumes. The outlook is broadly positive with a maturing market in the fuels sector and the search for solutions in meeting critical sustainability commitments, particularly in the plastics and packaging industries, likely to see growing demand for a credible certification. The business case for certification continues to be understood and sought after, and we expect to see growth over the next several years.

INTRODUCTION

The regular monitoring and evaluation of the RSB certification outcomes enables us to continuously work to improve the RSB Standard and certification system.

The RSB Monitoring & Evaluation (M&E) System is designed to measure RSB's success in ensuring sustainable practices in bio-based and advanced supply chains. The RSB monitors its performance by analysing data collected among its certified operators and other stakeholders through a set of indicators, which cover environmental, social and economic issues and the context in which operators work.

Covering the 2018 calendar year and employing continuous data collection methods, this report evaluated actual data on volumes produced, GHG emissions reduced, hectares covered and workers in the scope of certification as well as data about areas in which non-conformities have been identified. In recording and evaluating non-conformities, RSB is able to identify measurable improvements in operators' sustainability practices.

This year RSB has also examined the cumulative totals of several indicators since measurement began. These cumulative totals demonstrate both the broad applicability of the RSB Standard by region and the diversity of feedstock and products.



ABOUT RSB'S M&E SYSTEM

The RSB System is applicable globally and to all types of bio-based and advanced fuels and products from bio-based feedstocks as well as end-of-life products and production residues, including fossil waste.

RSB's M&E System collects actual data on volumes produced, hectares covered and workers in the scope of certification, but also data about where non-conformities have been issued. 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 feeds into the organisational learning process and helps RSB to analyse our evolving footprint in greater depth.

The impacts achieved by RSB-certified operators and other stakeholders implementing the RSB Standard are expected to bring social, environmental and economic improvements over the certification cycle.

Results from the M&E System feed into the continuous improvement of the RSB Standard, Policies, Guidance and Tools of the certification system, as well as the RSB strategies and activities. Committed to transparency, the RSB prepares M&E Outcome reports annually and circulates these amongst RSB stakeholders for comments and further improvements to the system.

METHODOLOGY



Data Collected

The RSB monitors its performance by processing data collected among its certified operators and RSB records through a set of outcome indicators, which 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.



Interpretation and Evaluation

The results obtained through the aggregation of data from certified operators and RSB activities are interpreted and evaluated considering the expected outcomes.

EVALUATION OBJECTIVES AND SCOPE

Objectives

This report aims to evaluate the results obtained by the RSB against the outcome indicators, as defined in RSB's Monitoring & Evaluation System.

Specific objectives of this report are to:

- Aggregate data from certified operators and RSB records in order to analyse this information and draw conclusions.
- Evaluate achieved outcomes of the RSB.
- Feed into general strategic discussions at the RSB.
- Comply with the ISEAL Impacts Code of Good Practice.

Scope

This evaluation includes all operators certified by the RSB and all RSB activities during 2018. The evaluation was conducted internally by RSB Secretariat staff and is based on data collected by independent third-party auditors. Production volumes were calculated for the period of 1 January 2018 – 31 December 2018.

Outcome Indicators

The outcome indicators which guide this report are made up of different data points, which guide our data collection and analysis. These indicators cover each of our 12 Principles and help RSB to ensure that every aspect of the standard is continuously measured and evaluated.

View the outcome indicators [here](#).

ISEAL Alliance Impacts Code of Good Practice

The International Social and Environmental Accreditation and Labelling (ISEAL) Alliance lays out an Impact Code which all members of the alliance must comply with. This code specifies the requirements for the development and implementation of a Monitoring and Evaluation System by member standards.

The Impact Code is underpinned by five Credibility Principles, which are the foundation of our Monitoring & Evaluation System:

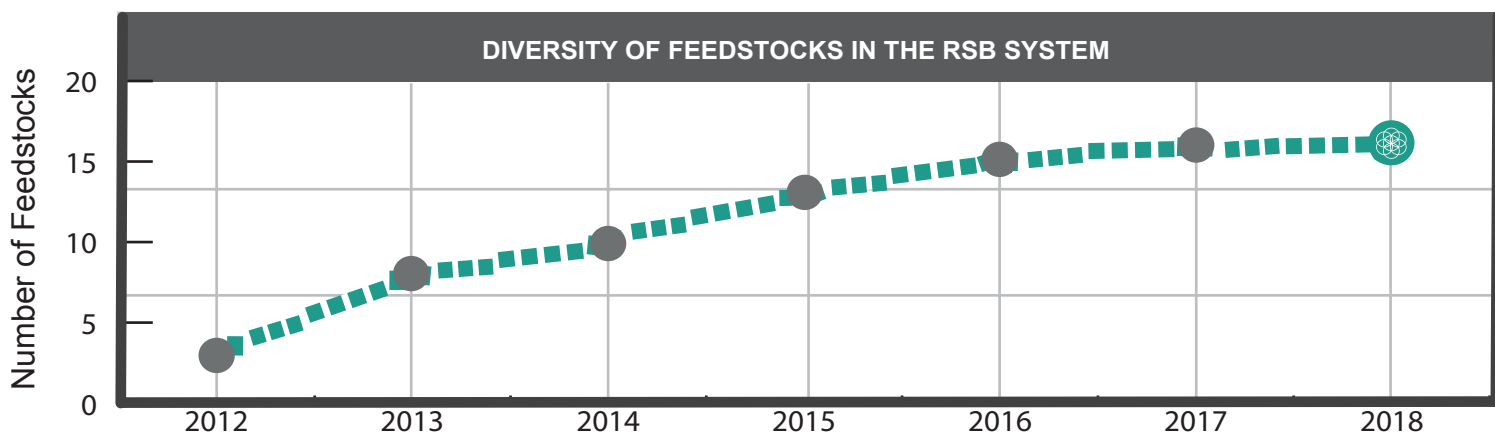
1. Sustainability
2. Improvement
3. Rigour
4. Transparency
5. Truthfulness

UPTAKE OF THE RSB STANDARD

Diversity

RSB is a feedstock agnostic standard which can certify complete supply chains, as well as novel biomass and biomaterial 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, bioplastics, bio-lubricants and other bio-based chemicals. In 2018, thirteen feedstocks were covered by current certificates, a small drop from 2017 which was caused by several pilot projects not being re-certified.

The total number of feedstocks that have been certified by RSB since 2012 is sixteen. 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 the sustainability with a single certification system.

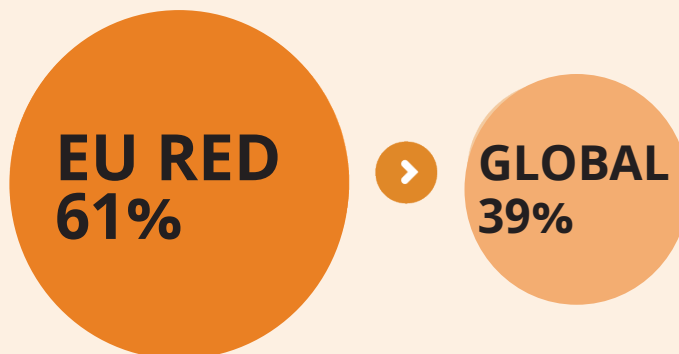


Feedstocks included in the RSB System since 2012 are:

Camelina, Carinata, Coconut, CO feed gases, Gliricidia, Glycerin, Grease trap oil, Hybrid poplar, *Jatropha curcas*, Macaúba (*Acrocomia aculeata*), Sugar cane, Solaris (tobacco), Starch from industrial wastewater, Tall oil, Tallow and other animal fat residues, Used cooking oil.

Certification Types

In 2018, 61% of all RSB certifications were to the EU RED Standard, while 39% of certificates were to the Global Standard.



RSB EU RED certification consists of a set of RSB Standards recognised by the European Commission to certify biomass and biofuels as compliant with the requirements of the EU RED (European Renewable Energy Directive on the promotion of the use of energy from renewable sources).

UPTAKE OF THE RSB STANDARD

In response to the important role of wastes & residues in the circular economy, in 2017 RSB began to monitor the specific role of these feedstocks among our operators. In 2018 we found that 55.5% of Certified Operators are using end-of-life products and/or production residues in their supply chains.

By producing fuels from wastes and residues, certified operators are able to significantly reduce pressure on agricultural land and natural resources. The 234,118 metric tons of RSB-certified fuels produced from wastes in 2018 would have required the equivalent of 201,132 hectares of agricultural land, had the same volume been produced from a dedicated crop (e.g. biodiesel from rapeseed plantations).

This figure represents a 14.4% increase in volume from 2017, which saw production of 204,651 metric tons of RSB-certified fuels produced from wastes – equivalent to 175,000 hectares of agricultural land.

The RSB has defined a credible approach for using waste and residual material for advanced fuels and products and is supporting participating operators to enter this developing market with clear sustainability and traceability objectives.

201,132

HECTARES



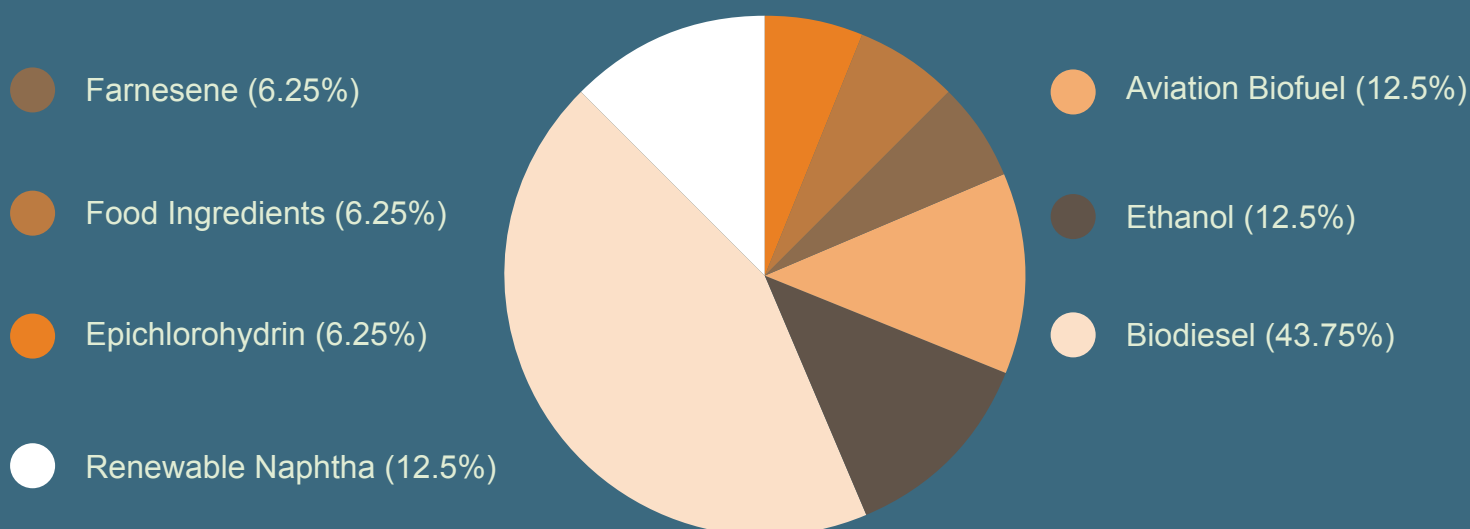
Reduction in
Agricultural Land Use

**THROUGH PRODUCTION
FROM WASTE & RESIDUES**



DIVERSITY OF PRODUCT TYPES

The diverse feedstocks in the RSB certification system in 2018 were used to produce a variety of products to be used across industry sectors – from aviation to road transport, food and chemicals.



GROWTH OF THE RSB STANDARD

The RSB M&E System measures certified operators, operational sites included in the scope of certification and countries of operation.

Since the last outcome report, the RSB saw a drop in the number of operators, farms and industrial sites and trade offices covered by the certification system due to the termination of some certificates during 2018. This is indicative of two trends:

- The need for greater market access for producers.
- The maturing alternative aviation fuel market requires fewer pilot plants (and associated certificates) but is reporting much higher volumes in certified and operational plants.

Outcome Report	Operators	Industrial Sites & Trade Offices	Farms	Countries
October 2014	17	23	166	14
December 2016	20	49	472	18
December 2017	23	58	464	19
December 2018	18	44	291	20

Overall Uptake of the Standard

While there has been a drop in the number of operators and associated sites covered by an RSB certificate, much of this drop can be attributed to tough economic conditions and lack of market access. However, these operators have already proven their ability to comply with the RSB's stringent environmental, social and management requirements and in many cases will apply for re-certification upon receiving demand from the market.

Since 2012, RSB has issued 35 certifications in 23 countries for 16 different feedstocks and 8 different products.

GHG Emissions

IN 2018, RSB-CERTIFIED OPERATORS PRODUCED

273,224
metric tons of biofuels

In 2017 this figure was
212,790 metric tons

All operators fully comply with the RSB Principle 3 on Greenhouse Gas emissions, meaning the produced amount of RSB-certified biofuels

CORRESPONDS TO AN EMISSIONS REDUCTION OF

477,152
metric tons of CO₂eq

In 2017 this figure was
406,365 metric tons of CO₂eq

A NOTE ON CALCULATIONS:

We calculate the reduction in GHG emissions by using the average emission rate of CO₂eq that would be released by fossil fuel-based transportation activities.



The GHG emissions avoided through fuel produced by RSB-certified operators in 2018 correspond to the emissions of almost 1880 flights between London & Tokyo – up from 1500 in 2017!

1 kg of jetfuel releases 3,15 kg of CO₂eq – a London-Tokyo trip consumes 80 metric tons of fuel and releases 254 metric tons of CO₂eq (Source: ICAO Carbon Emissions Calculator)

Since RSB's beginning (2012)

TOTAL EMISSIONS OF

1,615,813
metric tons of CO₂eq
were prevented



The GHG emissions avoided through fuel produced by RSB-certified operators since 2012 corresponds to the emissions released by a large container ship travelling 1.8 million km – the length of 45 trips around the equator!

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>)

Environmental and Social Aspects



18,100
hectares of land
is protected by RSB
certification

18,100 hectares of cultivated land is protected by RSB certification, an increase from 2017's 14,165 hectares.*

*A note on calculations: In previous years the number has indicated the total area of the farmland within the operation (including non-farmed areas). This calculation is now based only upon cultivated lands where the RSB Principles have been implemented.

On this land, responsible and sustainable practices as per the RSB's **Principles & Criteria** are implemented, for example:

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



5680
workers
are covered by
RSB certification

5680 workers are covered by RSB certification, an increase from 2017's 5339 workers.

RSB certification ensures workers are protected by our requirements on 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 mechanism for workers*

NON-CONFORMITIES

A non-conformity can be raised during an RSB assessment when the auditors find 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 three and twelve months in which to reach compliance.

By requiring that all non-conformities must be closed by certified operators in the defined timeframes, this means 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 2018 found that non-conformities raised during RSB audits against the RSB Principles & Criteria indicated that:

- 53% of the non-conformities refer to **Environmental requirements** (GHG reduction, conservation, soil, water and air)
- 20% of the non-conformities refer to **Social requirements** (labour and human rights, rural development, food security and land rights)
- 6% of the non-conformities refer to **Legal requirements** (legality)

The remaining 21% of non-conformities refer to RSB's requirement for Planning, Monitoring & Continuous Improvement under Principle 2.

These percentages of non-conformities remain much the same as in 2017 and indicate the key areas where RSB is having a tangible impact in ensuring improvement.



A HOLISTIC MANAGEMENT APPROACH

RSB is committed to achieving positive impacts across the entire bio-based and advanced materials supply chain. By supporting operators and auditors with tools and guidance to identify risks and non-conformities, RSB is helping to deliver measurable improvements in sustainability.

RSB Principle 2 requires that: “Sustainable operations are planned, implemented, and continuously improved through an open, transparent, and consultative impact assessment and management process and an economic viability analysis”.

RSB observed that 21% of the total NCs were related to the Principle 2. By supporting operators to continuously measure and improve their sustainability performance, through our unique sustainability management system that helps operators to achieve and maintain their certifications, RSB is able to ensure a measurably positive impact for our operators – and to reduce risks for brands, investors and the rest of the value chain.

This management system ensures that operators:

- Undertake an impact assessment process to assess their social and environmental impacts and risks and ensure sustainability through the development of effective and efficient implementation, mitigation, monitoring and evaluation plans
- Implement good practices for stakeholder engagement and consultation
- Implement and maintain a transparent and easily accessible grievance mechanism for directly affected local communities
- Make adequate resources available to ensure compliance with the RSB Standard

The RSB is the only standard for bio-based and advanced products that guarantees that sustainability in industrial facilities is covered – meaning that RSB auditors also verify the compliance with the RSB Principles & Criteria of industrial units.

With the growing uptake of waste-based production (where primary production may not require sustainability certification), this is particularly important as RSB ensures working conditions, health & safety and air quality – as well as greenhouse gas emission reductions – are assured in the industrial setting.

DID YOU KNOW?

Non-conformities at industrial sites in 2018:

- 28% Principle 2 (Planning, Monitoring and Continuous Improvement)
- 16% Principle 3 (GHG)
- 20% Principle 4 (Human & Labour Rights)
- 12% Principle 10 (Air Quality)

By supporting industrial sites to resolve issues related to these RSB Principles and encouraging industry to improve sustainability using the framework of the RSB Standards, a tangible improvement is assured.

EVOLUTION OF THE RSB STANDARD

RSB is committed to maintaining its position as the most innovative standard for operators looking to demonstrate their commitment to credible sustainability.

Importantly, continuous improvement extends to RSB's own standards which are evolving to best reflect the needs of operators around the world and in many different contexts.

At the end of 2018, RSB's member community approved the RSB Standard for Advanced Products. It provides a set of sustainability requirements and criteria for the RSB certification of non-energy products (including textiles, packaging, pharmaceuticals, cosmetics and plastics). For the first time, products from recycled carbon and non-biogenic waste will be able to carry real and credible sustainability claims. It joins the RSB Standard for Advanced Fuels, approved in 2017, in reflecting the evolving boundaries of the circular and bio-based economies.



IMPACT BEYOND CERTIFICATION

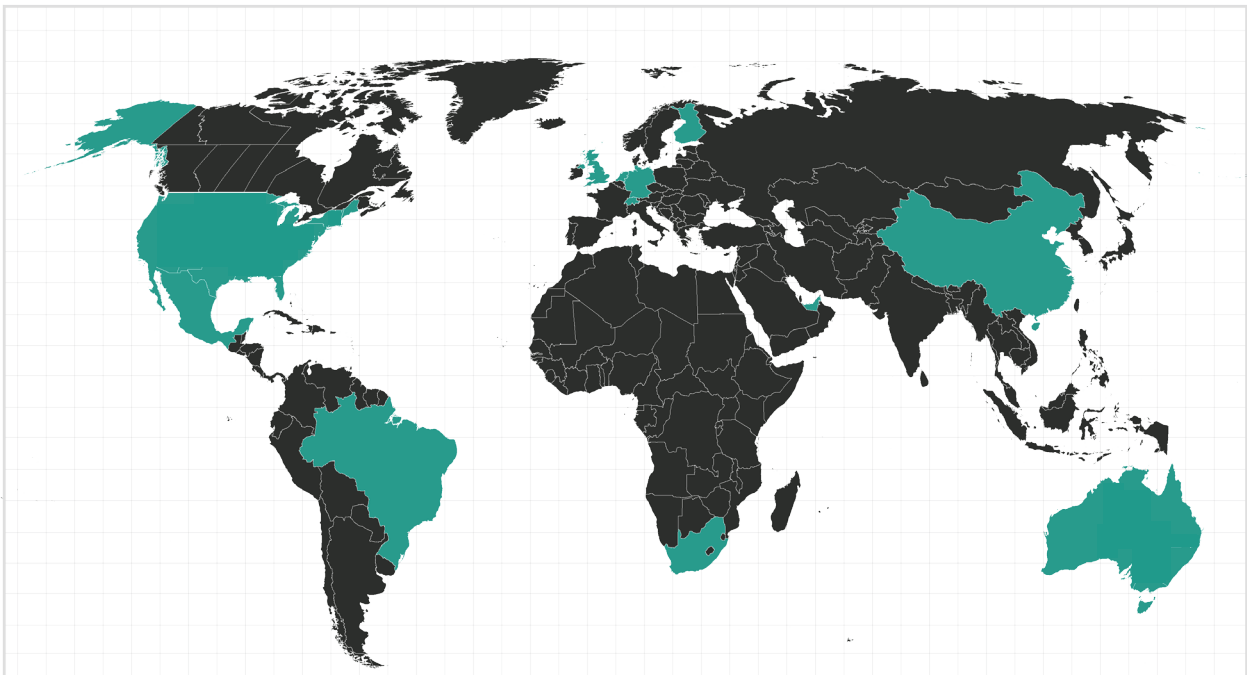
Amplifying the impact of the RSB Standard by assisting partners to prepare for certification and implementing certain aspects of the best practice described in the standard, RSB has had tangible impact in a range of areas.

Through **RSB advisory services** we have assisted 18 organisations, representing 5 sectors, in 12 countries to improve their practices on the ground. Some of these projects will lead to RSB certification while others, like the development of RSB indicators in various regions, remove barriers for other operators.

Ultimately, we hope to see many of these organisations reach compliance with the RSB Standard and achieve certification.

Companies	Governments	Partners
Growing and embedding real sustainability in operations	Integrating sustainability into legislative approaches	Developing platforms for stakeholders from across industry, civil society and government to work together

● Locations of RSB Advisory Services Projects



CONCLUSIONS

Through the continuous monitoring and evaluation of our work, RSB is able to identify areas for improvement and key trends that support us as we shape both our best-in-class standard and many other activities that are helping to drive a sustainable economy.

Our system's continued growth in terms of fuel produced is a strong reflection of our close relationship with the aviation industry. We are pleased to see more and more aviation partners looking for sustainable fuel sources in response to consumer and regulatory demand. Ensuring that RSB continues to be the partner of choice for the industry, we have worked very closely with ICAO's Alternative Fuels Task Force in developing the CORSIA measures and ensuring that RSB remains fully aligned with these regulations. Beyond our technical work, we continue to engage the sector through our members, marketing and presence at key events.

Beyond aviation, the market access for alternative fuels and products is relatively young and remains a challenge for producers around the world. RSB takes a proactive approach and is working with many different sectors and partners to support the growth of a global advanced bioeconomy. Lessons learned and experiences gained in the aviation sector are informing rapid progression in other industries – something that RSB's roundtable model facilitates.

Our new Standard for Advanced Products aims to unlock opportunities and solutions for non-energy producers – including packaging, chemicals, plastics, textiles and more – to demonstrate the real positive impacts of their products: climate change mitigation, sustainable production and fossil resource savings.

The continued growth of waste and residue-based feedstocks will have a particular impact at industrial sites and ensuring that sustainability – not just traceability – is managed according to best practice is of key importance as issues of water management, air quality and human & labour rights are likely to become a focus. This is reflected in RSB's approach to the use of production residues and end-of-life materials.

By providing a practical and credible approach to sustainability, the RSB system supports operators to use the certification process as a mechanism for resolving any social and environmental challenges in their operation – as evidenced through the resolution of non-conformities.

RSB continues to provide truly holistic support to an advancing bioeconomy. Our expanding scope of services beyond certification ensures that we are creating real impact around the world by supporting the continuous improvement of social and environmental practices. With a firm footprint of services delivered on every continent, RSB is able to build best practice on the ground through certification, policy support, advice, sustainable supply chain development, market engagement and communications, partnerships and much more.

CONTACT DETAILS

Questions about RSB and the work we are doing in the sustainable bioeconomy?
Reach out to us to learn more!

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The Roundtable on Sustainable Biomaterials (RSB) is a global, multi-stakeholder independent organisation that drives the development of a new world bioeconomy through sustainability solutions, certification, innovation and collaborative partnerships.

It provides tools and solutions that mitigates business risk, contributes to achieving the UN's Sustainable Development Goals and has the world's most trusted, peer-reviewed, global certification standard for sustainable biomaterials, biofuels and biomass production.

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Contact Us

If you have comments or questions, please feel free to contact us.
We appreciate your feedback as well as suggestions for improvement.

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