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## **RSB Standard for certification of biofuels based on end-of-life-products, by-products and residues**

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## Introduction

*End-of-life-products* are a specific type of feedstock generated at the end of the life of products that were not primarily produced and intended for the production of biofuel or biomaterial. In this way they have reached the end of their intended supply chain, as they have been consumed, used, are spoiled etc. These end-of-life materials are thus intended to be disposed of and would potentially create environmental and social impacts. *End-of-life-products* include *Municipal Solid Waste (MSW)*, *Used Cooking Oil (UCO)* and *Wastewater*.

*By-products and residues* are secondary products derived from agricultural, forestry, food or industrial production and processing chains, among others. These products are not purposefully generated for their potential use as biofuel feedstock. These *by-products and residues* can be discarded or disposed of, but they can also be sold to specific markets (e.g. animal fats are often sold to the oleo-chemical industry), in order to increase the revenue of the production process.

The main benefit of using *end-of-life-products, by-products and residues* as biofuel feedstock is to reduce the pressure on lands and resources compared to feedstocks (e.g. agricultural crops) that are purposefully grown to produce biofuels. In addition, using *by-products and residues* to produce biofuels increases the overall system efficiency (e.g. water, energy) by reducing processes and costs related to treatment and disposal. However, this standard does not intend to systematically divert end-of-life products, by-products and residues towards biomaterial production if other recycling, re-use or disposal options with a higher energy-efficiency or social/environmental benefits exist.

This standard describes how biofuels supply chains may use *End-of-life products, by-products and residues* as a feedstock, and how it impacts on RSB certification.

It is important to note that *Biofuels* that include non-biogenic material are not recognized by the European Union under the Renewable Energy Directive (2009/28/EC). In addition, EU Member States may set additional requirements regarding the origin of certain feedstock.

## Main changes from the previous version (RSB-STD-01-020 version 1.6 and RSB-POL-01-001 version 1.0)

- a. This standard is the result of a merging of RSB Policy for certification of biofuels based on end-of-life-products and wastewater (RSB-POL-01-001) and RSB Standard for certification of biofuels based on by-products and residues (RSB-STD-01-020).
- b. The added section C highlights the fact that EU Member States may set additional requirements regarding the origin of certain feedstock (e.g. Used Cooking Oil). RSB will provide specific guidance to participating operators for each Member State. Flowcharts in annexes are updated accordingly. It also states that in case of contradiction between this standard and regulation, the latter shall prevail.
- c. The term “main product” is replaced by “primary product”, which is the official term in use in the European Union. The definition of primary product is based on the EU definition.
- d. Minor language revisions for consistency and updated table of contents, numbering and other references.

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## **A. Intent of this standard**

The intent of this standard is to ensure that the use of *end-of-life-products, by-products and residues* for biofuel production be appropriately addressed within the *RSB certification systems*, by ensuring that negative environmental, social and economic impacts related to their use are minimized and that the requirements upon *participating operators* are appropriate.

## **B. Scope of this standard**

This standard and the *RSB standards* mentioned in this document apply to any operation and operator using *end-of-life-products, by-products and residues* from agriculture, forestry, livestock, fishery or industrial production and/or processing and/or any product generated from the processing, transformation or treatment of *end-of-life-products, by-products and residues* for the purpose of producing biofuel.

## **C. Additional Requirements in the EU context**

As stated in the *Communication from the Commission on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels (2010/C 160/02)*, the Renewable Energy Directive (2009/28/EC) does not define *waste and residues*. EU Member States are given the autonomy to define which feedstock is eligible as *waste and residue* and the national regime under which such feedstock may benefit of the double counting rules. In certain case, this standard sets requirements that go beyond regulation or legislation. Should this standard contradict local, national or regional legislation, the latter shall prevail.

Additional requirements from Member States related to the origin of feedstock (e.g. Used Cooking Oil) will be flagged to participating operators through specific guidance issued by RSB.

## **D. Status and effective date**

The Version 1.6 of this *RSB Standard for certification of biofuels based on end-of-life-products, by-products and residues* shall be effective on 23 November, 2013.

## **E. Note on use of this standard**

All aspects of this standard are considered to be normative, including the intent, scope, effective date, note on the use of this standard, references, terms and definitions, and requirements, unless otherwise stated. Users implementing this standard shall ensure that the intent of this standard is met. To ensure that the intent of this standard is met, users shall implement all of the requirements specified in this standard, and all additional measures necessary to achieve the intent of this standard.

## **F. RSB List of documents and corresponding reference codes**

The list of relevant documents [is](#) available in Annex I.

## **G. Terms and definitions**

For the purposes of this standard, the terms and definitions given in *RSB-DOC-01-001, RSB Use of Terms* and *RSB-DOC-10-002 RSB Glossary of Terms* shall apply. Additional specific definitions are included in the following sections.

## H. Requirements for End-of-Life Products

### H. 1. Municipal Solid Waste (MSW)

#### H. 1. 1. Definitions

##### H. 1. 1. 1. *Municipal Solid Waste*

Based on the definition provided by the United Nations Organization<sup>1</sup>, the following definition applies for this standard:

*Municipal Solid Waste* is defined as municipal waste, collected by or on behalf of municipalities, by public or private enterprises.

The *biogenic fraction* of *Municipal Solid Waste* is called *Biodegradable Municipal Waste (BMW)*.

For the purpose of this standard, *Municipal Solid Waste* includes:

- Waste originating from households and waste that is similar in nature and composition, originating from commerce and trade, small businesses, office buildings and institutions. In general the following components contribute to Municipal Solid Waste: Paper; food scraps; yard trimmings; plastics; metals; rubber, leather, and textiles; wood; and glass.
- Waste from selected municipal services, e.g., waste from park and garden maintenance, waste from street cleaning services (street sweepings, the content of litter containers, market cleansing waste), if managed as waste.
- Construction and demolition waste (concrete, wood (from buildings), asphalt (from roads and roofing shingles), gypsum (the main component of drywall), metals, bricks, glass, plastics, salvaged building components (doors, windows, and plumbing fixtures), and trees, stumps, earth, and rock from clearing sites.)

For the purpose of this standard, *Municipal Solid Waste* excludes:

- Waste from sewage network and treatment
- Industrial waste
- Special waste requiring separate disposal by law
- Hazardous waste requiring separate disposal by law

##### H. 1. 1. 2. *Biofuel*

For the purpose of this standard, any fuel derived from *Municipal Solid Waste* that:

- (a) has a *Biogenic Carbon Content*, based on random sampling done at least once every year, of greater than 50% of the total carbon content, by mass; and
- (b) is sorted and pre-processed at a facility that has removed all but trace quantities of any *Recyclable Material*, hazardous material, infectious material or pollutants.

is considered a *Biofuel*.

*Biofuels* based on *Biodegradable Municipal Waste (BMW)* are recognized by the

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<sup>1</sup> <http://unstats.un.org/unsd/environment/wastetreatment.htm>

European Union under the Renewable Energy Directive (2009 /28/EC).

*Biofuels* based on *Municipal Solid Waste* are not recognized by the European Union under the Renewable Energy Directive (2009 /28/EC).

H. 1. 1. 3. *Collection Point*

For the purpose of this standard, the *Collection Point* is defined as the latest step in the value chain where *Municipal Solid Waste* or *Biodegradable Municipal Waste* is aggregated before being processed/transformed/treated for the purpose of producing biofuel.

H. 1. 1. 4. *Biofuel Producer*

Any *Participating Operator* processing *Municipal Solid Waste* and any intermediary or final *RSB compliant product* generated out of the processing, transformation or treatment of *Municipal Solid Waste* after the *Collection Point* to produce *biofuel* is considered a *Biofuel Producer*, as per the scope described in the *RSB Principles & Criteria* (RSB-STD-01-001).

H. 1. 1. 5. *Biogenic Fraction*

The *Biogenic Fraction* of MSW is constituted by materials derived from renewable biomass resources, including but not limited to crop residues, food residues, wood residues, grasses, and aquatic plants. The *Biogenic Fraction* of MSW does not include materials derived from petrochemical resources (e.g. plastics).

H. 1. 1. 6. *Biogenic Carbon Content*

The *Biogenic Carbon Content* is the amount of carbon in a product derived from the *Biogenic Fraction* relative to the total amount of carbon in the entire product.

H. 1. 1. 7. *Recyclable Material*

*Recyclable Material* is constituted by every type of glass, paper, metal, plastics, textiles and electronics for which recycling chains exist in the country of operation. Materials derived from biomass, which can be composted, are not considered *recyclable*.

**H. 1. 2. Procedures**

H. 1. 2. 1. *Sustainability Requirements*

- With the exception of Principle 3, Principle 6 and Principle 8, the *RSB Principles & Criteria* (RSB-STD-01-001) and related documents (i.e. guidelines, glossary, guidance and indicators) apply to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of *Municipal Solid Waste* after the *Collection Point* onward.
- Principle 3 (Greenhouse Gas calculation) applies to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of *Municipal Solid Waste* starting with the transportation of MSW from the *Collection Point* to the next step in the value chain.
- Principles 6 and 8 do not apply.

H. 1. 2. 2. *Chain-of-Custody Requirements*

The following standards apply to *Municipal Solid Waste* and to any intermediary or final *RSB compliant product* generated out of the processing, transformation or

treatment of *Municipal Solid Waste* for the purpose of producing *Biofuel*, after the *Collection Point* onward:

- RSB Generic chain of custody standard (RSB-STD-20-001)
- RSB “Identity of product preserved” chain of custody standard (RSB-STD-20-002)
- RSB “Segregation of product” chain of custody standard (RSB-STD-20-003)
- RSB “Mass balance of product” chain of custody standard (RSB-STD-20-004)
- RSB “Content ratio accounting of product” chain of custody standard (RSB-STD-20-005)

#### H. 1. 2. 3. *Communication and claims*

Whenever MSW is used to produce a *Biofuel*, the *RSB Standard on communication and claims* (RSB-STD-50-001) applies to any intermediary or final *RSB compliant product* generated from the processing of *Municipal Solid Waste*, after the *Collection Point* onward.

#### H. 1. 2. 4. *Other applicable standards*

The following standards apply to *Municipal Solid Waste* and to any intermediary or final *RSB compliant product* generated out of the processing of *Municipal Solid Waste*, starting at the *Collection Point*:

- *RSB List of Documents* (RSB-DOC-10-001)
- *RSB Glossary of Terms* (RSB-DOC-10-002)
- *RSB Standard for risk management* (RSB-STD-60-001)
- *RSB Standard for participating operators* (RSB-STD-30-001)

#### H. 1. 3. **Guidance**

It is not necessary for households, commerce and to any other operators generating *Municipal Solid Waste* to demonstrate compliance with the *RSB standards*. Compliance with the *RSB standards* must be demonstrated (through a 3<sup>rd</sup>-party audit process) after the *Collection Point*.

Examples of *Collection Point* include, but are not limited to:

- A private or a municipal landfill
- A Mechanical Biological Treatment (MBT) plant where recyclable and organic elements (BMW), wastewater and refuses are separated from bulk MSW.
- A warehouse or equivalent site where MSW or BMW is aggregated, either formally by or on behalf of municipal authorities or informally by trash and refuse collectors, retailers or wholesalers.

Several techniques exist to measure the *Biogenic Carbon Content* of a product. One of the most widely used is the measurement of Carbon 14, which can be performed in public facilities or by some private laboratories, using the protocols described in norms ASTM 6866 or CEN 15440.

However, the operator may use other techniques to measure the *Biogenic Carbon Content* or use the information published by a third party on the composition of the bulk *Municipal Solid Waste* used. The *Biogenic Carbon Content* may be measured in the *Municipal Solid Waste* or later in the production process (e.g. in the *Biofuel* produced).

A flowchart of the applicability of the RSB system to *Municipal Solid Waste* is available in Annex II.

## H. 2. Used Cooking Oil

### H. 2. 1. Definitions

#### H. 2. 1. 1. *Used Cooking Oil*

*Used Cooking Oil (UCO)* encompasses any type of vegetable and animal oils and fats used for cooking purposes and collected from food processing activities, including but not limited to restaurants, food manufacturers, and industrial deep fryers, etc.

#### H. 2. 1. 2. *Collection Point*

For the purpose of this standard, the *Collection Point* is defined as the latest step in the value chain where *Used Cooking Oil* is stored/aggregated before being processed/transformed/treated for the purpose of producing biofuel.

#### H. 2. 1. 3. *Biofuel Producer*

Any *Participating Operator* processing *Used Cooking Oil* and any intermediary or final *RSB compliant product* generated out of the processing, transformation or treatment of *Used Cooking Oil* after the *Collection Point* to produce a *Biofuel* is considered a *Biofuel Producer*, as per the scope described in the *RSB Principles & Criteria* (RSB-STD-01-001).

### H. 2. 2. Procedures

#### H. 2. 2. 1. *Sustainability Requirements*

- With the exception of Principle 3, Principle 6 and Principle 8, the *RSB Principles & Criteria* (RSB-STD-01-001) and related documents (i.e. guidelines, glossary, guidance and indicators) apply to any intermediary or final *RSB compliant product* generated out of the processing, transformation or treatment of *Used Cooking Oil* after the *Collection Point* onward.
- Principle 3 (Greenhouse Gas calculation) applies to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of *Used Cooking Oil* starting at the transportation of UCO from the *Collection Point* to the next step in the value chain.
- Principles 6 and 8 do not apply (see also Guidance).

#### H. 2. 2. 2. *Chain-of-Custody Requirements*

- The following standards apply to *Used Cooking Oil* and to any intermediary or final *RSB compliant product* generated out of the processing, transformation or treatment of *Used Cooking Oil* after of the *Collection Point* onward:
  - RSB Generic chain of custody standard (RSB-STD-20-001)
  - RSB "Identity of product preserved" chain of custody standard (RSB-STD-20-002)
  - RSB "Segregation of product" chain of custody standard (RSB-STD-20-003)
  - RSB "Mass balance of product" chain of custody standard (RSB-STD-20-004)
  - RSB "Content ratio accounting of product" chain of custody standard (RSB-STD-20-005)



#### H. 2. 2. 3. *Communication and claims*

The *RSB Standard on communication and claims* (RSB-STD-50-001) applies to any intermediary or final *RSB compliant product* generated out of the processing of *Used Cooking Oil* after the *Collection Point* onward.

#### H. 2. 2. 4. *Other applicable standards*

The following standards apply to *Used Cooking Oil* and to any intermediary or final *RSB compliant product* generated out of the processing of *Used Cooking Oil* after of the *Collection Point* onward:

- *RSB List of Documents* (RSB-DOC-10-001)
- *RSB Glossary of Terms* (RSB-DOC-10-002)
- *RSB Standard for risk management* (RSB-STD-60-001)
- *RSB Standard for participating operators* (RSB-STD-30-001)

#### H. 2. 3. **Guidance**

It is not necessary for food processors such as catering premises, restaurants, industrial fryers or for any other operators generating *Used Cooking Oil* to demonstrate compliance with the *RSB Standards*. Compliance with the *RSB standards* must be demonstrated (through a 3<sup>rd</sup>-party audit process) after the *Collection Point* onward.

Examples of *Collection Point* include, but are not limited to:

- A storage facility where a rendering/trading company aggregates UCO before selling it to a *biofuel producer*.
- A storage facility where trash and refuse collectors aggregate UCO.

The collection of UCO is followed by pre-treatment (cleaning, filtering, etc.).

If any of these steps is undertaken by an operator that does not ultimately produce biofuels, this operator is considered a *Feedstock Processor*. However, if these steps are undertaken by the same operator that ultimately produces biofuel, this operator is considered a *Biofuel Producer*.

A flowchart of the applicability of the RSB system to *Used Cooking Oil* is available in Annex III.

#### H. 3. **Wastewater**

##### H. 3. 1. **Definitions**

###### H. 3. 1. 1. *Wastewater*

For the purpose of this standard, *Wastewater* includes *Domestic wastewater* and *Industrial wastewater*. Definitions H.3.1.1, H.3.1.2 and H.3.1.4 are those provided by the European Union (91/271/ECC)<sup>2</sup>.

###### H. 3. 1. 2. *Domestic wastewater*

*Domestic wastewater* means *Wastewater* from residential settlements and services, which originates predominantly from the human metabolism and from household activities.

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<sup>2</sup> Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31991L0271:EN:HTML>

#### H. 3. 1. 3. *Industrial wastewater*

*Industrial wastewater* means any *Wastewater* which is discharged from premises used for carrying on any trade or industry, other than *Domestic wastewater* and run-off rain water, and which does not contain any co-product, by-product or residue with market value.

#### H. 3. 1. 4. *Sludge*

*Sludge* means residual sludge, whether treated or untreated, from *Wastewater* treatment plants

#### H. 3. 1. 5. *Biofuel Producer*

Any *Participating Operators* processing *Wastewater* and any intermediary or final *RSB compliant product* generated out of the processing, transformation or treatment of *Wastewater* to produce a *Biofuel* is considered a *Biofuel Producer*, as per the scope described in the *RSB Principles & Criteria* (RSB-STD-01-001).

### H. 3. 2. **Procedures**

#### H. 3. 2. 1. *Sustainability Requirements*

- The *RSB Principles & Criteria* (RSB-STD-01-001) and related documents (i.e. guidelines, glossary, guidance and indicators) apply to *Wastewater* from the processing, transformation or treatment of *Wastewater* for the purpose of producing biofuels onward.
- Principles 6 and 8 do not apply (see also Guidance H.3.3)

#### H. 3. 2. 2. *Chain-of-Custody Requirements*

The following standards apply to *Wastewater* from the processing, transformation or treatment of *Wastewater* for the purpose of producing biofuels onward:

- RSB Generic chain of custody standard (RSB-STD-20-001)
- RSB “Identity of product preserved” chain of custody standard (RSB-STD-20-002)
- RSB “Segregation of product” chain of custody standard (RSB-STD-20-003)
- RSB “Mass balance of product” chain of custody standard (RSB-STD-20-004)
- RSB “Content ratio accounting of product” chain of custody standard (RSB-STD-20-005)

#### H. 3. 2. 3. *Communication and claims*

The *RSB Standard on communication and claims* (RSB-STD-50-001) applies to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of *Wastewater* for the purpose of producing biofuels.

#### H. 3. 2. 4. *Other applicable standards*

The following standards apply to *Wastewater* and/or to any product generated from the processing, transformation or treatment of *Wastewater* for the purpose of producing biofuels:

- *RSB List of Documents* (RSB-DOC-10-001)
- *RSB Glossary of Terms* (RSB-DOC-10-002)

- *RSB Standard for risk management* (RSB-STD-60-001)
- *RSB Standard for participating operators* (RSB-STD-30-001)

### H. 3. 3. Guidance

It is not necessary for households, commerce or for any other operators generating Wastewater to demonstrate compliance with the *RSB standards*. Compliance with the *RSB standards* must be demonstrated (through a 3<sup>rd</sup>-party audit process) as soon as *Wastewater* and/or any product generated from the processing, transformation or treatment of *Wastewater* start being treated or processed for the purpose of producing biofuels.

Examples of *Wastewater* and product generated from the processing, transformation or treatment of *Wastewater* for the purpose of producing biofuels include, but are not limited to:

- Starchy *Wastewater*, e.g., from grain milling operations
- Effluents from industrial premises, which do not contain any co-product, by-product or residue with market value (e.g. Palm Fatty Acid Distillates)
- Primary or secondary *Sludge* collected out of a *Wastewater* treatment plant
- Greases or fats collected out of a *Wastewater* treatment plant

A flowchart of the applicability of the RSB system to *Wastewater* is available in Annex IV.

## I. Requirements for By-products and residues

### I. 1. Definitions

#### I. 1. 1. *By-products and residues*

*By-products and residues* are secondary products from agriculture/forestry/livestock/meat/poultry/fish/food production and processing, as well as certain industrial processes. Eligible by-products and residues for the purpose of this standard are defined in Section I.2.

#### I. 1. 2. *Primary Product(s)*

The primary product(s) result(s) from an agriculture/forestry/livestock/meat/poultry/fish/food production and processing as well as certain industrial processes, the primary aim of which is the production of this item<sup>3</sup>.

#### I. 1. 3. *Animal Fats, Oils (tallow, lard, poultry fat) and other animal processing by-products*

Animal fats (e.g. tallow, poultry fat, lard) are secondary products derived from livestock (e.g. cattle, swine, sheep) and poultry (e.g. chicken, turkey, goose) processing. These are usually collected out of the slaughtering and/or rendering processes. These fats can be used to produce biofuels. Other by-products from animal processing are e.g. bone meal or offal.

#### I. 1. 4. *Fish residues*

*Fish residues* are secondary products derived from the aquaculture, fishing and processing of fish. Oil can be extracted from the *fish residues* and it can be used to produce biodiesel among other uses.

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<sup>3</sup> Definition is based on the "Communication from the Commission to the Council and the European Parliament on the Interpretative Communication on waste and by-products", p. 3 (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0059:FIN:EN:PDF>), 21.2.2007.

## I. 2. Applicability

### I. 2. 1. A by-product or a residue qualifies under this RSB standard if:

- It is listed in the positive list (Table 1) in section I.2.2; or
- In the case of *animal fats, oils and other animal processing by-products*, it follows the requirements in section I.2.3; or
- In the case of *fish residues*, it follows the requirements in section I.2.4; or
- In the case of Palm Fatty Acid Distillates (PFADs) and palm stearin, it follows the requirements in section I.2.5; or
- In the case of Forestry Harvesting Residues, it follows the requirements in section I.2.6; or
- It is determined as such by the RSB through the Economic Value Ratio (EVR) approach upon request by a participating operator. The EVR approach is described in Annex VI.

In case the *residue or by-product* qualifies under this RSB standard, the operator shall follow the procedures specified in section I.3.

### I. 2. 2. Positive list of by-products and residues

**Table 1: Positive list of by-products and residues**

Origin (by-products and residues derived from)	Feedstock
Agriculture	<i>Harvesting residues:</i> Straw, husks, cobs, leaves and stems (insofar as they meet Criterion 8.a of the RSB Principles & Criteria – See section I.3).
	<i>By-products and residues used in the EU market:</i> Participating Operators shall demonstrate that harvesting residues: <ol style="list-style-type: none"> <li>1) comply with RSB Criteria 3a (GHG) and 7a, minimum requirements #5 and #6 (no-go areas and no-conversion areas); or</li> <li>2) Are certified by any EU-recognized scheme.</li> </ol> See section I.4.3 for additional guidance.
Forestry	<i>Harvesting residues:</i> See Section I.2.6
	<i>Processing residues:</i> Sawdust, shavings, bark, tall oil, tall oil pitch, and brown liquor (from pulp, cellulose & paper industry).
Animal excrement and run-offs from farms	Liquid manure
	Manure and manure streams (e.g. biomethane)
	Silage effluent and similar run-offs from farms with animal husbandry
Animal fats, oils and other animal processing by-products	See section I.2.3.
Fish residues	See section I.2.4.
Residues from industrial processes (of biogenic origin)	Fatty acids from distillation (volatiles, bottoms, deodorized fraction and other fractions), with the exception of Palm Fatty Acid Distillates and palm stearin (see section I.2.5).

	Fatty alcohols from light ends, distillation residues or ester residues.
	Recovered fats and oils from pipeline flushing or fat trap/residues. Inedible oil from corn ethanol production Fats oils and grease (FOG) separated from wastewater treatment; or FOG diverted upstream of wastewater collection (see also Section H.3 of this standard).
	Vegetable acid oils from physical refining, chemical neutralization or other residues. Lipids from food wastes.
Crude glycerin	Crude glycerin from waste animal fats
	Crude glycerin from waste oils

I. 2. 3. *Animal Fats, Oils and other animal processing by-products*

*Participating Operators* shall demonstrate that *animal fats, oils and other animal processing by-products* used as a feedstock to produce biofuels are produced in slaughterhouses and/or rendering units for which a regulation exists and is locally enforced, with regards to:

- Environmental impacts, in particular waste management practices, and
- Animal welfare

*(See guidance on existing regulations)*

Whenever *animal fats, oils and other animal processing by-products* used as a feedstock to produce biofuels are produced in slaughterhouses and/or rendering units, for which no regulation exists or the existing regulation is not locally enforced, *Participating Operators* shall demonstrate that environmental impacts, in particular waste management practices, are addressed through voluntary certification of their operations.

I. 2. 4. *Fish Residues*

Only *Fish residues*, which are not suitable for human or animal consumption (food and feed) qualify under this standard.

I. 2. 5. *Palm Fatty Acid Distillates and Palm Stearin*

Palm Fatty Acid Distillates and palm stearin only qualify under this standard if the residues derive from palm oil that is certified by SAN<sup>4</sup> (only non EU market), RSB or RSPO<sup>5</sup> (EU market and non EU market).

I. 2. 6. *Forestry Harvesting Residues*

Forestry harvesting residues, such as logging residues (tops and limbs), only qualify under this standard if:

- They do not include whole trees or products derived from whole tree processing, such as chips or pellets
- The residues derive from forests/wood that is certified by the Forest Stewardship Council (FSC<sup>6</sup>) or any verification/certification scheme with equivalent sustainability requirements as approved by the RSB.

<sup>4</sup> Sustainable Agriculture Network (SAN): <http://sanstandards.org>

<sup>5</sup> Roundtable on Sustainable Palm Oil (RSPO): [www.rspo.org](http://www.rspo.org)

- They meet Criterion 8.a of the RSB P&C (see section I.3). Eligible forestry residues.

*By-products and residues used in the EU market:*

In addition to the above, Participating Operators shall demonstrate that harvesting residues :

- 1) comply with RSB Criteria 3a (GHG) and 7a, minimum requirements #5 and #6 (no-go areas and no-conversion areas); or
- 2) Are certified by any EU-recognized scheme.

See section I.4.2 for additional guidance.

### **I. 3. Procedures**

#### **I. 3. 1. Participating Operators**

Any *Participating Operator* processing, transforming or treating *by-products and residues* as a feedstock for the specific purpose of producing biofuel, a component of a biofuel or a component of a biofuel blend is considered a *Biofuel Producer*, as per the scope described in the *RSB Principles & Criteria* (RSB-STD-01-001).

#### **I. 3. 2. Sustainability Requirements**

- The *RSB Principles & Criteria* (RSB-STD-01-001) and related documents do not apply to the generation of *by-products or residues* (upstream from the *biofuel producer* processing the *by-products or residues*), with the following exceptions:
  - o GHG emissions resulting from the transportation of the *by-products or residues* to the processing unit do fall within the GHG calculation requirements and a GHG default value for the upstream production of forestry residues and *animal fats, oils and other animal processing by-products* will be given (see below).
  - o The operator shall demonstrate that the use of *by-products or residues* for feedstock production, including lignocellulosic material, does not occur at the expense of long-term soil stability and organic matter content (Criterion 8a. of the Principles & Criteria<sup>7</sup>).
- With the exception of Principle 6, Principle 8 and Principle 12, the *RSB Principles & Criteria* (RSB-STD-01-001) and related documents (i.e. guidelines, glossary, guidance and indicators) apply to any *RSB compliant product* generated from the processing, transformation or treatment of *by-products and residues as a feedstock* for the specific purpose of producing biofuel (see Annex V).
- Principle 3 (Greenhouse Gas calculation) applies to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of the *by-product or residue*. Operators shall calculate the GHG emissions for the chain of production of the biofuel from the transport towards processing of the *by-product or residue* onward (no GHG emissions are allocated to the upstream production of the *by-product or residue*, with an

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<sup>6</sup> <http://www.fsc.org>

<sup>7</sup> Third minimum requirement of Criterion 8.a.1 of the RSB Principles & Criteria: "The use of agrarian and forestry residual products for feedstock production, including lignocellulosic material, shall not be at the expense of long-term soil stability and organic matter content."

exception for forestry residues, *animal fats, oils and other animal processing by-products*).

- For forestry residues, operators shall calculate the GHG emissions for the entire chain of production of the biofuel, including: upstream production of the *by-product or residue* (including GHG emissions from land-use change, forest management and harvesting), transport to the processing of *by-product or residue* to produce biofuel, biofuel production, biofuel blending and storage, and all transport steps through the lifecycle. GHG emissions shall be calculated using the RSB GHG Calculation Methodology (RSB-STD-01-003-01). Operators shall use the default values included in the EU Renewable Energy Directive (Annex V, Section E. Page 58)<sup>8</sup>.
  - For *animal fats, oils and other animal processing by-products*, operators shall calculate the GHG emissions for the entire chain of production of the biofuel, including: upstream production of the *by-product or residue* (including GHG emissions from animal raising (incl. direct land use change for pasture clearing) and slaughtering, and all transport steps), transport to the processing of *by-product or residue* to produce biofuel, biofuel production, biofuel blending and storage, and all transport steps through the lifecycle. GHG emissions shall be calculated using the RSB GHG Calculation Methodology (RSB-STD-01-003-01). Operators may use RSB-default GHG values for the upstream process (see Annex VII).
- All the standards and documents related to the *RSB Principles & Criteria* (RSB-STD-01-001) apply to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of *by-products and residues as a feedstock* for the specific purpose of producing biofuel, namely:
- RSB-IND-01-001 Indicators of Compliance for RSB Principles & Criteria
  - RSB-STD-01-003-01 RSB GHG Calculation Methodology
  - RSB-STD-01-003-02 RSB Fossil Fuel Baseline Calculation Methodology
  - RSB-GUI-01-000 RSB Guidance on Principles & Criteria
  - RSB-GUI-01-002-01 Impact Assessment Guidelines
  - RSB-GUI-01-002-02 Screening Guidelines
  - RSB-GUI-01-002-03 ESIA Guidelines
  - RSB-GUI-01-002-04 RESA Guidelines
  - RSB-GUI-01-002-05 ESMP Guidelines
  - RSB-GUI-01-005-01 Social Impact Assessment Guidelines
  - RSB-GUI-01-007-01 Conservation Impact Assessment Guidelines
  - RSB-GUI-01-009-01 Water Assessment Guidelines
  - RSB-DOC-01-001 Use of Terms for the RSB Principles & Criteria (Glossary)

### I. 3. 3. Chain-of-Custody Requirements

- The following standards apply to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of *by-products and residues as a feedstock* for the specific purpose of producing biofuel:
- RSB Generic chain of custody standard (RSB-STD-20-001)
  - RSB "Identity of product preserved" chain of custody standard (RSB-

<sup>8</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>

STD-20-002)

- RSB “Segregation of product” chain of custody standard (RSB-STD-20-003)
- RSB “Mass balance of product” chain of custody standard (RSB-STD-20-004)
- RSB “Content ratio accounting of product” chain of custody standard (RSB-STD-20-005)

I. 3. 4. *Communication and claims*

The *RSB Standard on communication and claims* (RSB-STD-50-001) applies to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of *by-products and residues as a feedstock* for the specific purpose of producing biofuel.

I. 3. 5. *Other applicable standards*

The following standards apply to any intermediary or final *RSB compliant product* generated from the processing, transformation or treatment of *by-products and residues as a feedstock* for the specific purpose of producing biofuel:

- *RSB List of Documents* (RSB-DOC-10-001)
- *RSB Glossary of Terms* (RSB-DOC-10-002)
- *RSB Standard for risk management* (RSB-STD-60-001)
- *RSB Standard for participating operators* (RSB-STD-30-001)

I. 4. **Guidance**

I. 4. 1. *Positive List of by-products and residues*

The first point in the chain of custody to be physically audited and to receive certification is the first operator who processes, transforms or treats the *by-products and residues* from the positive list as a feedstock for the specific purpose of producing biofuel (i.e. *biofuel producer*). For all *by-products and residues*, GHG emissions from the transport of the *by-products and residues* to the biofuel production facility must be included in the GHG calculation. The *Biofuel Producer* using *by-products and residues*, as well as all operators downstream of this point, shall calculate the greenhouse gas (GHG) emissions generated by her/his operations. In addition, the GHG emissions of forestry products and animal fats shall be included in the calculation whenever relevant.

The *by-products and residues* in the positive list will be reviewed and updated periodically.

Upon request by an economic operator, the RSB Secretariat may determine additional products qualifying as *by-products or residues*. The economic value ratio (EVR) method is used, based on the data provided by the operator, as explained in Annex VI.

I. 4. 2. *Forestry Harvesting Residues*

Residues, such as tops and limbs, are generated during forest operations and logging. Forestry residues do not include whole trees (including products such as chips or pellets that are produced from whole tree processing). These residues can be used as biomass for heating or bioethanol. As deforestation and unsustainably managed forests are potentially serious environmental issues, biofuel operators using forestry harvesting residues must source from operations which are certified by FSC or any other verification/certification system with equivalent sustainability requirements.



I. 4. 3. *EU Compatibility of Agriculture Residues*

The European Union has set specific rules for the sustainability characteristics of wastes and residues. According to Article 17, paragraph 1 of the EU Renewable Energy Directive (2009/28/EC), biofuels and bioliquids produced from agricultural, aquaculture, fisheries and forestry residues must meet the EU land use and greenhouse gas criteria. This definition encompasses all residues that are directly generated out of such processes, but does not include residues and by-products from feedstock processing and other downstream industrial activities. Residues and by-products from feedstock processing and other downstream industrial activities must meet the EU greenhouse gas criteria only.

Therefore, within the EU, for those products which the RSB considers a waste or residue, which are directly derived from agricultural, aquaculture, fisheries and forestry materials, compliance to the EU-specific criteria in the RSB standards must be demonstrated in addition to RSB specific requirements. Specific RSB reference: Criteria 3a (EU GHG requirement) and Criteria 7a, minimum requirements 5 and 6 (EU land-use criteria) from the EU RED version of the RSB Principles & Criteria (RSB-STD-11-001-01-001). Compliance may be checked as part of a direct RSB audit to the relevant EU-requirements in the RSB standards, or by using materials derived from a biomass source certified by any EU-approved certification scheme.

I. 4. 4. *Animal Fats, Oils and other animal processing by-products*

Important impacts may occur across the supply chain before *animal fats* are being processed into biofuels. This standard addresses the impacts related to the processing of *animal fats, oils and other animal processing by-products* in biofuel production plants.

The impacts related to the production of *animal fats, oils and other animal processing by-products* in slaughterhouses and rendering units shall primarily be covered by the existing regulation in the country/region. The *Participating Operator* using *animal fats, oils and other animal processing by-products* as a feedstock to produce biofuels shall demonstrate that *animal fats, oils and other animal processing by-products* come from a country/region where a regulation exists and is locally enforced on environmental impacts of slaughterhouses and rendering units and on animal welfare. Examples of regulations include:

- United States of America:
  - o Federal Meat Inspection Act (1906)
  - o Code of Federal Regulations on Animals and Animal Products (9 CFR 313)
  - o Humane Methods of Livestock Slaughter Act (7 USC, 1901 - 1907)
  - o Clean Water Act (1972, 1977) and Water Quality Act (1987)
  - o EPA Factsheet (Final Rule) for wastewater discharge standard EPA 821-F-04-004
  
- European Union
  - o Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control)
  - o Directive 93/119/EC on the protection of animals at the time of slaughter or killing
  - o Council Directive 98/58/EC on the protection of animals kept for farming purposes
  - o Regulation (EC) No 178/2002 laying down the general principles and

- requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety
- Directive 2002/99/EC laying down the animal health rules governing the production, processing, distribution and introduction of products of animal origin for human consumption, 16 December 2002
- Canada
  - Meat Inspection Act (R.S.C., 1985, c. 25 (1st Supp.))
  - Meat and Poultry Products Plant Liquid Effluent Regulations (C.R.C., c. 818)

Auditors evaluate on a case-by-case basis if regional/national regulations on environmental impacts of slaughterhouses and rendering units and on animal welfare exist and are enforced in the region(s) from which the animal fats used by a *participating operator* originate (See Section I.2.3), e.g. demonstrated implementation.

If the *animal fat or oil* is derived from slaughterhouses and/or rendering sites in a country or state where no regulation exists or is locally enforced, then the operator is allowed to demonstrate to the auditor that equivalent are obtained through the voluntary certification of the slaughterhouses and/or rendering units (e.g. ISO 14000, Eco-Management and Audit Scheme, etc.).

The first point in the chain of custody to be physically audited and to receive certification is the first operator who processes, transforms or treats the *animal fats* as a feedstock for the specific purpose of producing biofuel (i.e. *biofuel producer*). No physical verification or audit by an auditor is required for the activities upstream from this point, such as cattle ranching, slaughtering and rendering.

However, the GHG emissions corresponding to the upstream production of the *animal fats, oils and other animal processing by-products* (including GHG emissions from animal raising (incl. land use change) and slaughtering, and all transport steps) and the transport from the point where *animal fats and oils* are generated (e.g. the rendering unit) to the facility in which *animal fats and oils* are processed to produce biofuels have to be included in the lifecycle GHG emissions calculation performed by the biofuel producer. Operators can use RSB-listed default GHG values for the upstream production (see Annex VII), or calculate such emission following the RSB GHG Calculation Methodology (RSB-STD-01-003-01), provided they address GHG emissions from animal raising (incl. deforestation for pasture clearance) and slaughtering, and all transport steps involved. Lifecycle GHG emissions including biofuel production and all downstream steps must be calculated following the RSB GHG Calculation Methodology (RSB-STD-01-003-01).

#### I. 4. 5. *Fish Residues*

Fish residues refer to the residues that are generated in the processing plant or fish factory and not in the fishing vessel. The first point in the chain of custody to be physically audited and to receive certification is the first operator who processes, transforms or treats the *fish residues* as a feedstock for the specific purpose of producing biofuel (i.e. *biofuel producer*).

As the depletion of fish resources and the impacts of by-catches are serious environmental issues, only *fish residues*, which are not suitable for human and animal consumption (food and feed) shall be used for RSB Certification.

I. 4. 6. *Palm Fatty Acid Distillates and Palm Stearin*

Palm Fatty Acid Distillates (PFADs) are obtained through the refining of Crude Palm Oil (CPO) and can be used to produce biodiesel.

Palm stearin is obtained through the fractionation of Refined Bleached and Deodorized (RBD) Palm Oil and can be used to produce biodiesel.

Operators using PFAD or palm stearin shall ensure that the CPO or RBD Palm Oil used in the process comes from plantations that are certified by the RSB, the Roundtable on Sustainable Palm Oil (RSPO) or the Sustainable Agriculture Network (SAN). However, it should be noted that SAN is not recognised by the European Commission as proof of compliance with the sustainability criteria included in the Renewable Energy Directive (2009/28/EC)..

## **ANNEX I – List of documents and corresponding reference codes**

The following documents are available on the RSB website: <http://www.rsb.org>

- RSB-STD-01-001 RSB Principles & Criteria
- RSB-IND-01-001 Indicators of Compliance for RSB Principles & Criteria
- RSB-STD-01-003-01 RSB GHG Calculation Methodology
- RSB-STD-01-003-02 RSB Fossil Fuel Baseline Calculation Methodology
- RSB-GUI-01-000 RSB Guidance on Principles & Criteria
- RSB-GUI-01-002-01 Impact Assessment Guidelines
- RSB-GUI-01-002-02 Screening Guidelines
- RSB-GUI-01-002-03 ESIA Guidelines
- RSB-GUI-01-002-04 RESA Guidelines
- RSB-GUI-01-002-05 ESMP Guidelines
- RSB-GUI-01-005-01 Social Impact Assessment Guidelines
- RSB-GUI-01-005-02 RSB Rural and Social Development Guidelines
- RSB-GUI-01-006-01 Food Security Assessment Guidelines
- RSB-GUI-01-006-02 RSB Household Survey Questionnaire
- RSB-GUI-01-007-01 Conservation Impact Assessment Guidelines
- RSB-GUI-01-008-01 Soil Impact Assessment Guidelines
- RSB-GUI-01-009-01 Water Assessment Guidelines
- RSB-GUI-01-009-02 RSB Guidelines on Water Rights and Social Impacts
- RSB-GUI-01-012-01 Land Rights Guidelines
- RSB-DOC-01-001 Use of Terms for the RSB Principles & Criteria (Glossary)
- RSB-DOC-10-001 RSB List of Documents
- RSB-DOC-10-002 RSB Glossary of Terms
- RSB-STD-20-001 RSB Generic chain of custody standard
- RSB-STD-20-002 RSB “Identity of product preserved” chain of custody standard
- RSB-STD-20-003 RSB “Segregation of product” chain of custody standard
- RSB-STD-20-004 RSB “Mass balance of product” chain of custody standard

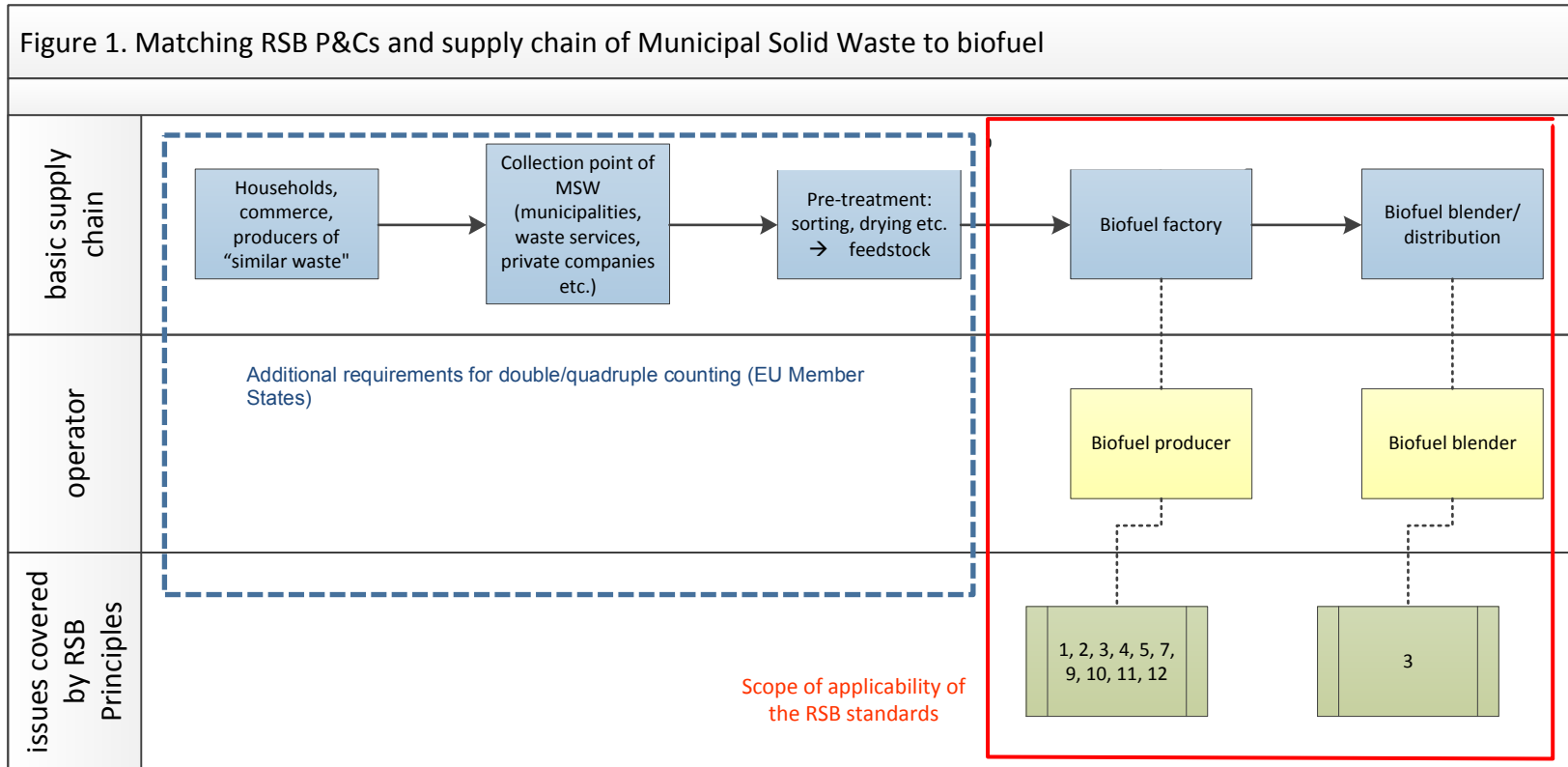
RSB-STD-20-005 RSB “Content ratio accounting of product” chain of custody standard

RSB-STD-30-001 RSB Standard for participating operators

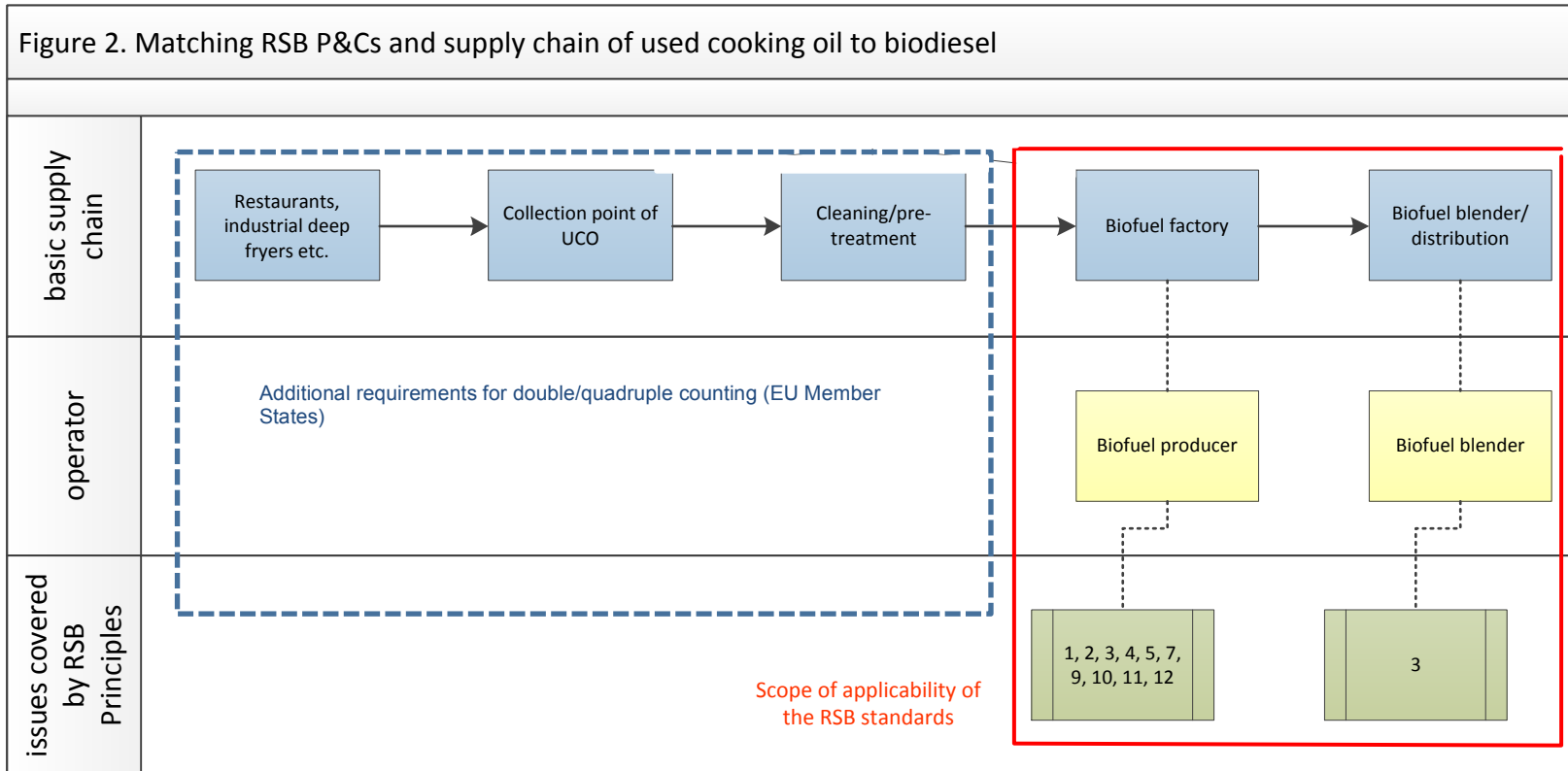
RSB-STD-50-001 RSB Standard on communication and claims

RSB-STD-60-001 RSB Standard for risk management

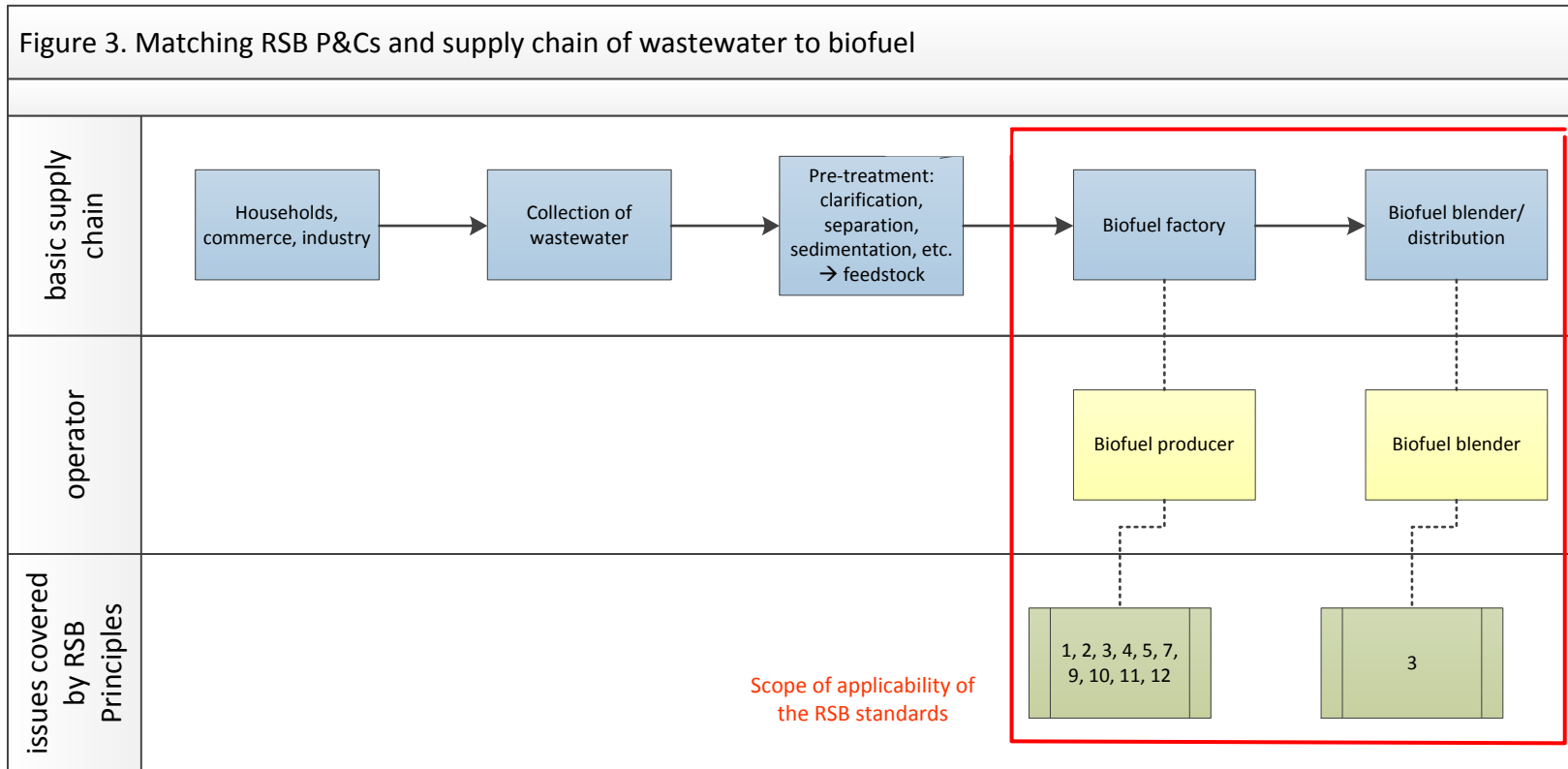
## ANNEX II – Applicability of the RSB system to Municipal Solid Waste



### ANNEX III – Applicability of the RSB system to Used Cooking Oil

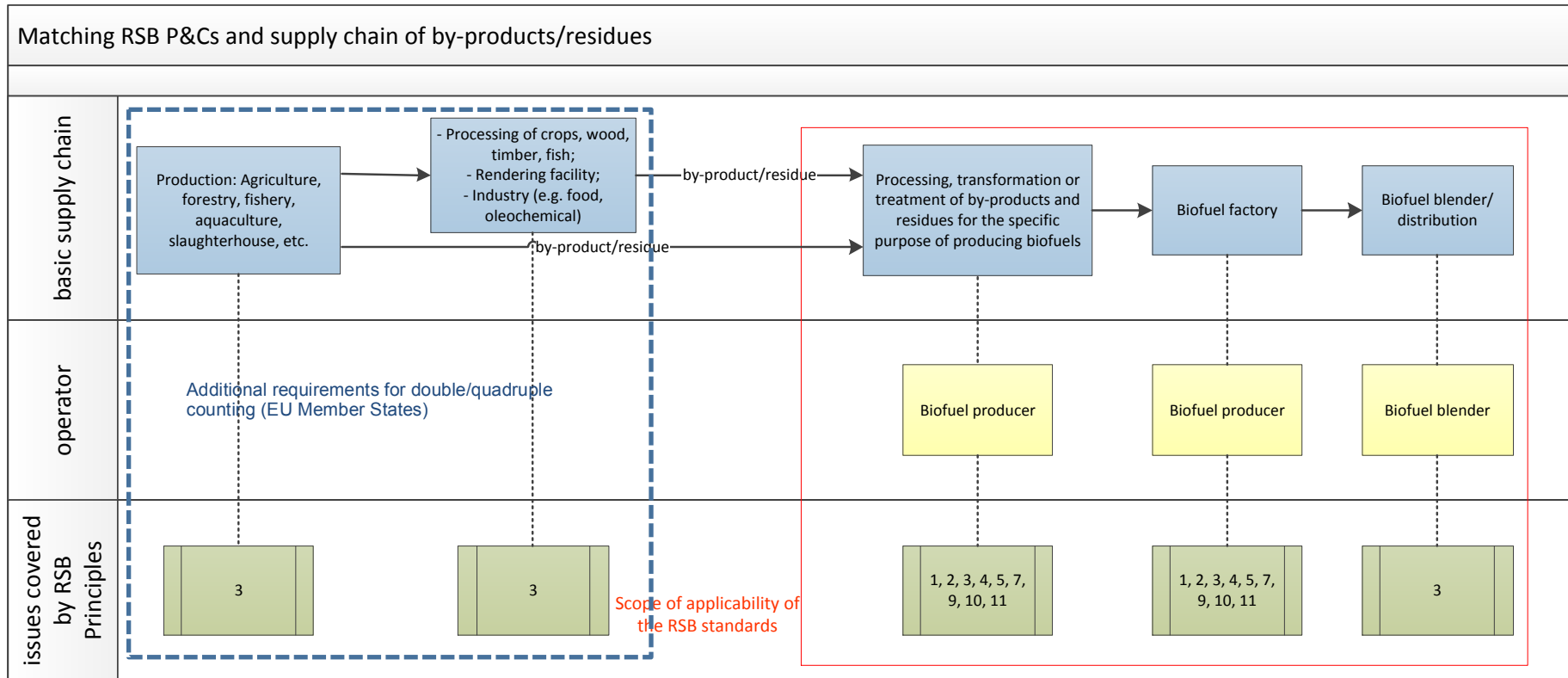


### ANNEX IV – Applicability of the RSB system to Wastewater





## ANNEX V – Applicability of the RSB system to By-products and Residues



## Annex VI: Determination of Economic Value Ratio for Determination of Residues and By-products

Upon request of operators, the RSB will evaluate if additional feedstocks could be considered eligible under this standard. The RSB will determine whether a product qualifies as a by-product or residue under this standard through the Economic Value Ratio (EVR). Operators are required to provide the data needed to perform the calculation of the EVR.

A *by-product or residue* qualifies under the EVR method of this standard if it meets the following applicability requirements:

- (1) It is a secondary product that is derived from an agriculture/forestry/livestock/meat/poultry/fish/food/industrial supply chain AND
- (2) It has an economic value ratio of  $\leq 5\%$  with respect to the *primary product* (see below for the calculation of the economic value ratio).

The *economic value ratio* of *by-products* and *residues* are calculated as the relative value of the *by-product or residue* compared to the *primary product(s)*, co-products and other by-products generated from the same production process. The market value of a given *by-product or residue* and the *primary product* (as listed on a stock exchange), is used in combination with the quantity used for biofuel relative to how much of that same product is used for other purposes. This indicates the economic influence between biofuel production and feedstock production. The value U should be sought at the national/regional level or for each supplier of the by-product, whichever is the highest. Wherever possible, market value data shall be obtained from the same stock exchange and for the same calculation period. The calculation shall be performed as follows:

$$\text{economic value ratio} = \left( \frac{M_1}{M_2 + M_3 + \dots + M_n} \right) \times F_1 \times U_1$$

Where:

$M_1$  = Market value of the by-product/residue (in USD<sup>9</sup>/metric ton)

$M_2, M_3, \dots, M_n$  = Market value of other product(s), incl. primary product, co-products and other by-products (in USD<sup>10</sup>/metric ton)

$F_1$  = Fraction of the by-product on primary product, co-products and other byproducts out of the original raw material (in % by mass or volume)

$U_1$  = Fraction of the by-product utilized for biofuel production on other non-biofuel usages (in % by mass or volume)

$n$  = total number of products, incl. primary product, co-products and by-products out of the original raw material.

Example:

The crop X produces 1 primary product (A) and 2 co-products (B)(C). For each ton of crop, 580kg of (A), 300kg of (B) and 100kg of (C) are obtained. Their respective market values are USD 15/MT, USD 8/MT and USD 2/MT. Out of the second by-product (C), 60% is sold to a feed producer and 40% to a biofuel producer.

The EVR is calculated as:

$$\text{economic value ratio} = \left( \frac{2}{15 + 8} \right) \times \left( \frac{100}{580 + 300} \right) \times 0.4 = 0.00395$$

The EVR is therefore of 0.39%. This by-product qualifies under this standard.

<sup>9</sup> Or applicable currency. The same currency must be used consistently in all calculations.

<sup>10</sup> Or applicable currency. The same currency must be used consistently in all calculations.

## **Annex VII: RSB Default GHG Values for upstream production of animal oils and other animal processing by-products**

The RSB Default GHG Values are currently undergoing a peer review and will soon be published. In the meantime, participating operators shall perform the GHG calculation for upstream production of animal oils and other animal processing by-products through the methodology and tool of their choice.