



Netherlands Enterprise Agency

Guidance Chain of Custody

sustainability criteria for solid biomass for energy applications

Commissioned by the ministry of Economic Affairs and Climate Policy

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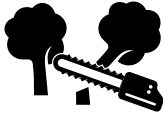
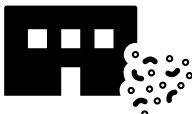

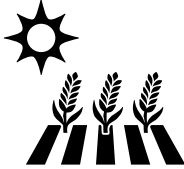

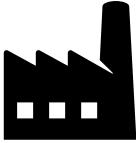






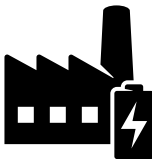

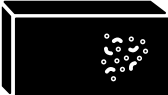
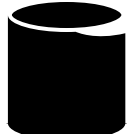
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1. Definitions and symbols

The definitions used in this guidance are based on the definitions from the sustainability requirements that are included in the Regulation on the conformity assessment of solid biomass for energy applications.

1.1 Symbols

	Forest Management Unit (FMU)		First Collecting Point (FCP)
	Harvesting and cutting		Agriculture
	Shredding		Factory
	Round wood transport		Secondary residual flow
	Pellet factory		Tertiary residual flow
	Pellet transport		Mass balance
	Energy producer		Forestry subcontracting
	Biomass consignment in mass balance		Mass balance calculation

2. Introduction

As part of the sustainability criteria included in the regulations for the ‘Conformity assessment of solid biomass for energy application’, which entered into force in 2018, requirements are to be put in place for the management and traceability of biomass in the supply chain: the Chain of Custody (CoC). These requirements (P12–P13) in the regulations are to ensure that sustainability information on the biomass in the supply chain is passed on. This information is required for the provision of subsidies for biomass used in installations that need to demonstrate sustainability compliance under the Sustainable Energy Production Incentive Scheme (SDE+). The purpose of the SDE+ Scheme is to stimulate the development of sustainable energy production in the Netherlands.

Mass balance is a key part of the Chain of Custody. The mass balance ensures that the quantities of biomass and the corresponding sustainability information are no greater at the end of the Chain of Custody than they are at the beginning. There are many different certification schemes for the Chain of Custody and for keeping the mass balance. This guidance aims to provide a clear explanation of how the Chain of Custody for solid biomass, and the mass balance in particular, should be applied. The target audience of this guidance includes companies, public authorities and other parties that deal with the regulations for the conformity assessment of solid biomass for energy applications.

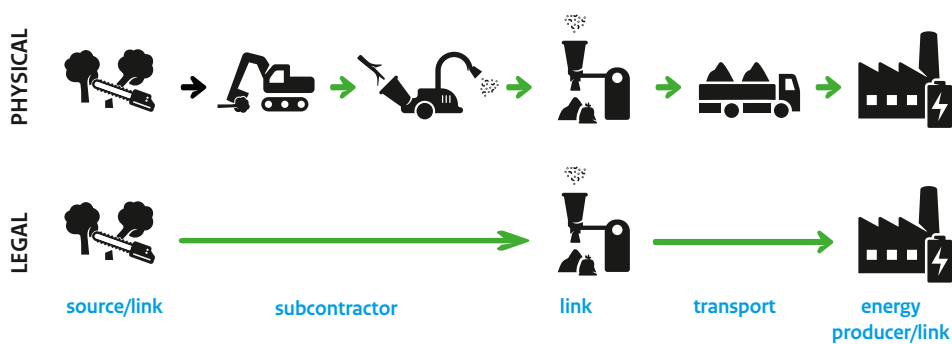
This guidance is accumulative in nature, meaning that the basic information provided in earlier chapters will be elaborated further in later chapters. First and foremost, the Chain of Custody for solid biomass will be outlined in more detail. This outline will be followed by a closer look at the sustainability information, after which the guidance will focus on the mass balance and the relationship with existing certification schemes. Finally, the guidance will also identify a number of risks within the Chain of Custody.

3. Chain of Custody

A Chain of Custody is characterised by a continuous and controlled supply chain of organisations, where the biomass and the corresponding information is passed on from the source to the end-user.

The organisations that are part of the Chain of Custody are referred to as “links” and are the *legal owners* of the biomass. This fact means that transport companies or subcontractors, for example, are not formally part of the Chain of Custody. The number of physical links in the chain can therefore be larger than the number of legal owners (see Figure 1). In this document, when term 'link' is used, it always refers to a legal owner. Which organisation should be regarded as the first link in the chain depends on the biomass category (see Chapter 3.1).

Figure 1 Links in a typical (legal) Chain of Custody for solid biomass



The sustainability information on the biomass is passed on from link to link during the transaction of the biomass. This process usually takes place by supplying written documentation for the transaction; however, digital information transfer can also be used. The sustainability information must be demonstrably linked to the biomass delivered, which is done on the basis of registration at the links in the chain (see Chapter 4.4). Chapter 4.2 outlines which sustainability information in the supply chain should be passed on for the energy producer to be eligible for SDE+ subsidy for the biomass that it has used. It is vital that the required sustainability information on the solid biomass is complete and that is transferred along the supply chain and reaches the energy producer in the correct manner. In order to be granted SDE+ subsidy for the biomass that the energy producer has used in its installation, it must be able to report on the sustainability characteristics of the biomass used.

3.1 Categories of solid biomass

The sustainability requirements distinguish between five categories of solid biomass, depending on the source and type of the biomass. The biomass category determines the sustainability requirements that the biomass must meet. In addition, it is vital to know which economic operator is the first link in the Chain of Custody, given that this party will be the first to have to collect sustainability information on the biomass. Please note: The first link in the Chain of Custody is the party that is charged with collecting information on the sustainability of the biomass first.

Category	Source of sustainability information	First link in the Chain of Custody	
1	Woody biomass from Forest Management Units	Forest Management Unit (FMU)	Forest manager
2	Woody biomass from small Forest Management Units (FMU <500 hectares)	Forest Management Unit or defined supply area of which the forest management is a part	Forest Management Enterprise or biomass producer
3	Residues from nature and landscape management	Predefined collection area	First Collecting Point (FCP)
4	Agricultural residues	Predefined collection area	First Collecting Point (FCP)
5	Biogenic residues and waste flows	Company that generates the residual product	First Collecting Point (FCP)

3.1.1 Category 1: Woody biomass from Forest Management Units

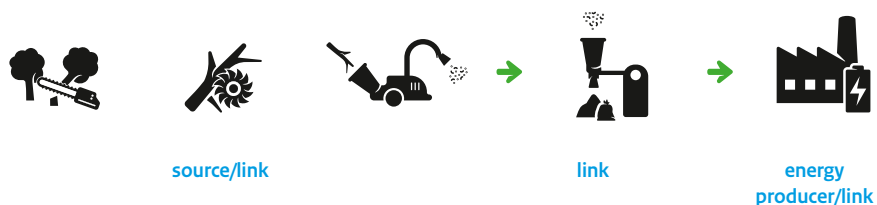
The biomass in this category comes from forests in which a single Forest Management Enterprise conducts forest management responsibilities in a uniform fashion. This area may concern one parcel of woodland; however, it may also pertain to multiple parcels of forest that are managed as a whole.

The Chain of Custody for category 1 always starts at the Forest Management Unit itself, with the first link being the organisation that trades the biomass first, as that organisation is the initial legal owner. In practice, the first link need not necessarily be the owner of the forest, but it may also be the organisation that conducts the harvesting on behalf of the owner. This party is the first legal owner of the biomass at the time of the trees being harvested. See figure 2 for an example of these links in a chain.

The biomass in this category may consist of logs, tops, branches and other primary residues from forests. Primary residual flows are residues that are released at the source.

Example: If a Forest Management Enterprise wishes to supply wood as biomass for co-firing and co-gasification, the sustainability information must be based on the level of the Forest Management Unit itself. Please note: there is a temporary exception for small Forest Management Units (<500 hectares); see category 2.

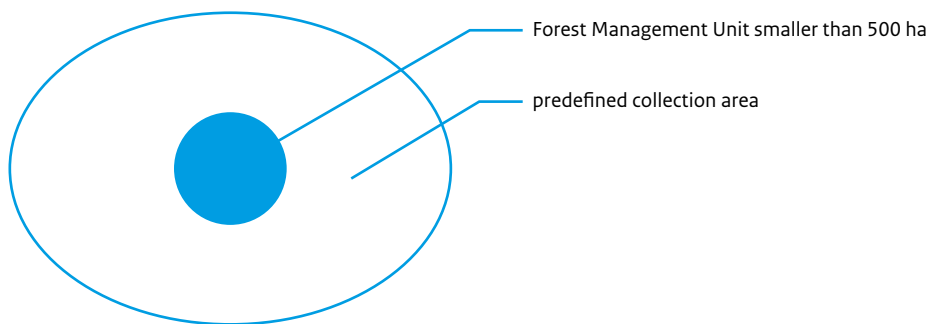
Figure 2 First link in Chain of Custody biomass category 1



3.1.2 Category 2: Woody biomass from small Forest Management Units (FMU <500 ha)

The biomass in this category comes from forests that are smaller than 500 hectares, consisting of a Forest Management Unit or situated within a predefined larger collection area or other area. In the first case, it implies a chain as described for category 1 in the previous paragraph. In the latter case, the assessment of the sustainability requirements may be based on information for a larger area than the Forest Management Unit itself (this process is referred to as the risk-based approach). The boundaries of that collection area or other area must be clearly defined. For more information on this approach, see chapter 8 of the Verification protocol.

Figure 3 Forest management unit <500 ha within predefined collection area



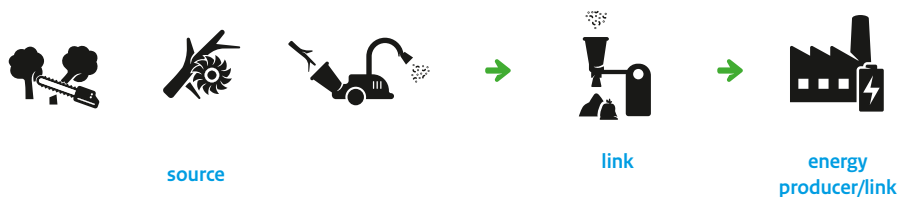
Please note: This situation is a temporary provision that is to be phased out in the years to come. Following the phasing out of this provision, the sustainability information must be determined at the level of the Forest Management Unit. For the timeline of phasing out, please see §2.4 of the Verification Protocol for Sustainable Solid Biomass.

The biomass in this category may consist of logs, tops, branches and other primary residues from forests. Primary residual flows are residues that are released at the source.

If the sustainability information on the biomass comes from a single Forest Management Unit (smaller than 500 hectares), the Chain of Custody begins at this FMU (please also see Figure 2: First link in Chain of Custody biomass category 1). Should the sustainability information corresponding to the biomass be based on a larger area surrounding the FMU, the Chain of Custody starts at the economic operator who has received the biomass directly from the Forest Management Unit.

Example: If Forest Management Enterprise A with a woodland estate (<500 hectares) wishes to supply wood as biomass for co-firing and co-gasification to economic operator B, the sustainability information for the wood may be based on a larger area than the estate alone. That area should be clearly defined (e.g. provincial or national). In this case, economic operator B would be the first link in the Chain of Custody.

Figure 4 First link in Chain of Custody biomass category 2



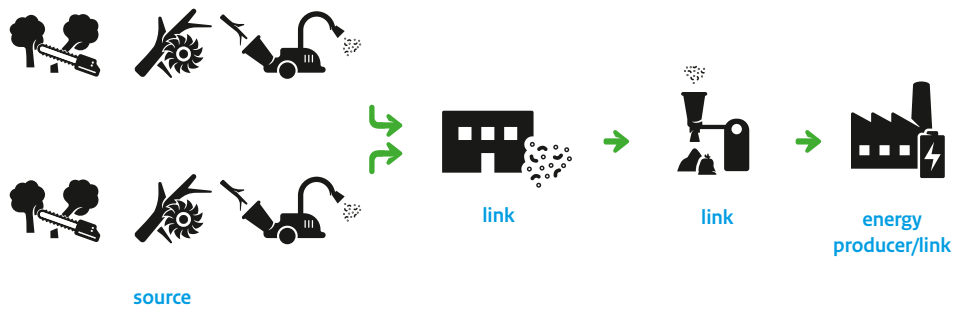
3.1.3 Category 3: Residues from nature and landscape management

This category comprises biomass that is produced during the management of urban and rural green spaces or nature areas *other than forests*, e.g. cuttings. The biomass comes from activities that are aimed at the preservation, restoration or enhancement of specific natural, recreational or aesthetic functions. It also includes biomass residues produced during routine maintenance of public green spaces and parks.

Compliance with sustainability requirements may be assessed using the information of a predefined (larger) collection area (similar to Figure 3). In this category, the Chain of Custody begins at the First Collection Point. This link is the party that is the first to collect the biomass directly from the source. See figure 5.

Example: Cuttings and biomass residue are produced during routine maintenance activities by municipal landscaping company A. If economic operator B were to collect these cuttings in order to supply that biomass eventually to other economic operators C for co-firing and co-gasification, economic operator B would be the first link in the Chain of Custody.

Figure 5 First link in Chain of Custody biomass category 3



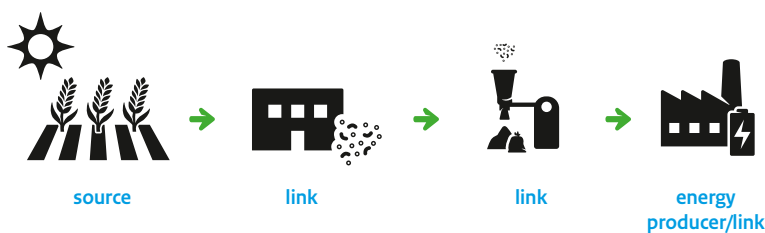
3.1.4 Category 4: Agricultural residues

Biomass consisting of residues obtained directly from agricultural business, e.g. straw or other residues remaining on the land after harvesting wheat or corn.

The sustainability information for the biomass is assessed at the level of a (larger) predefined collection area. In this category, the Chain of Custody begins at the First Collection Point. This party would be the economic operator collecting the biomass after it has been produced as a residue of a certain production process. See figure 6.

Example: When agricultural company A harvests wheat the stems are left on the land. This is collected as straw by economic operator B who then delivers it at the energy plant for energy production. In this example company A is the first collection point and therefore the first link in the chain of custody.

Figure 6 First link in Chain of Custody biomass category 4



3.1.5 Category 5: Biogenic residues and waste flows

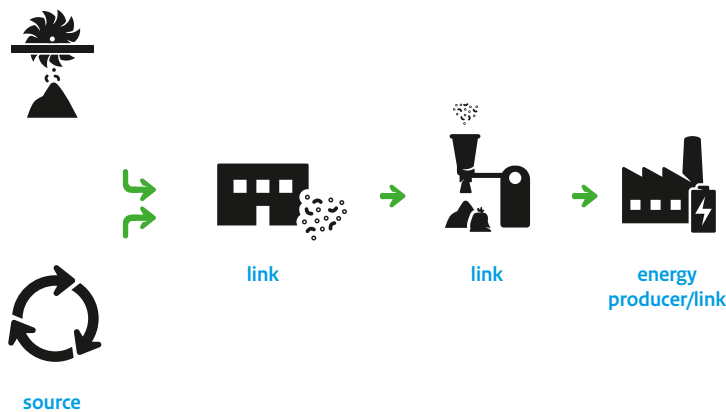
This category refers to biomass that consists of the residual flows from production processes (secondary residual flow) or from recycling (tertiary residual flow).

Please note: Biomass in category 5 cannot be obtained directly from a forest or another direct source. It is always a residual stream from a processing sector or biomass after it is used for different purposes (e.g. scrap wood).

The sustainability information for the biomass must be determined at the level of the company where the residual flow is produced. In this category, the Chain of Custody begins at the First Collection Point, which is the economic operator that collects the residual flow, following its production at a company or through a process.

Example: Joinery A processes round wood into door and window frames, for example. The process releases shavings and sawdust. If this residue is collected by economic operator B (not the joinery), who subsequently supplies it to economic operator C as biomass for co-firing and gasification, economic operator B is the first link in the Chain of Custody.

Figure 7 First link in Chain of Custody biomass category 5



3.2 Types of biomass

The sustainability criteria distinguish between two types of biomass.

- Sustainable biomass: Biomass that meets the requirements of all applicable sustainability criteria.
- Controlled biomass: Biomass category 1 or 2 (woody, from forest) that meets criteria 1.1, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 5.1, 7.1 and 7.3.

Please note: For controlled biomass, the first link in the Chain of Custody is always the biomass producer. This fact means that the biomass producer is the first to collect information on the sustainability of the biomass.

Please note: These biomass types are important given that the SDE+ Subsidy Scheme allows no more than 30% of the biomass to be subsidised to consist of controlled biomass. This scheme only applies to biomass of categories 1 and 2. In other words, the amount of category 1 and 2 biomass that is registered by the energy producer to be subsidised may consist of controlled biomass for no more than 30%, with the remaining 70% consisting of sustainable biomass (category 1 or 2).

3.3 Demonstrating compliance with sustainability criteria

In order to be granted subsidy under the SDE+ Scheme, the energy producer must demonstrate conformity to the sustainability criteria. An independent verifier is charged with assessing this aspect. If the verifier is able to confirm that the sustainability criteria have been met, a conformity year statement can be issued. The information that is required to determine whether the sustainability criteria have been met comes from previous links in the supply chain. These links in the supply chain have two options, namely certification and verification.

3.3.1 Certification

Economic operators may choose to become certified for an existing certification scheme. Certification schemes for Sustainable Forest Management often have two types of certificates, namely a certificate for the source (Forest Management) and a certificate for the Chain of Custody (CoC).

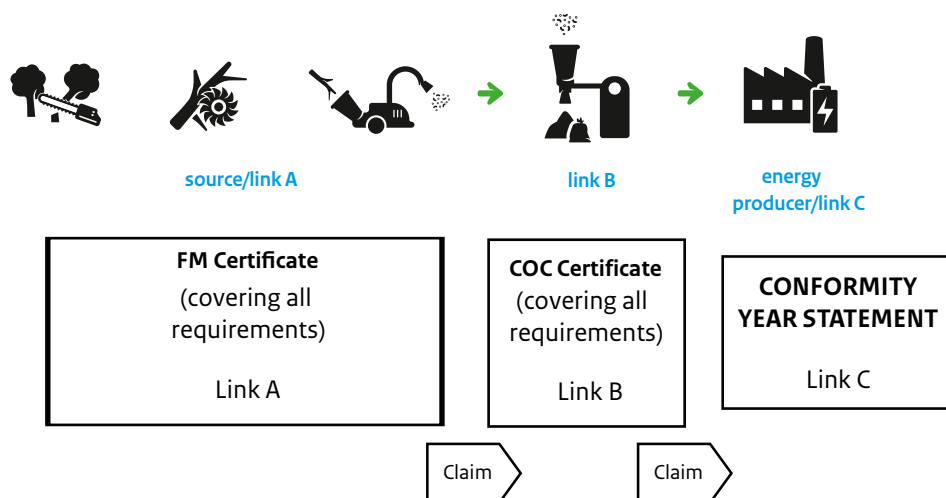
If an economic operator wishes to make use of the fact that their supplier is certified, they will have to submit proof that the supplier was in possession of a valid certificate at the time of the delivery (to be verified via the database above). Forest Management Units have a so-called “Forest Management” certificate, while other links in the chain have a Chain of Custody certificate. The latter is a certificate that guarantees a continuous and controlled supply chain. Independent auditors of the relevant scheme will also verify whether the links in the supply chain comply with the requirements of the scheme.

If a certified economic operator supplies biomass, a claim (see Chapter 6.2) will be supplied with the supply and sales documentation alongside the biomass. This claim will provide information on the sustainability of the biomass to a certain extent. Unfortunately, it might occur that not all information required for the SDE+ subsidy is automatically delivered by all the certification schemes in the chain. Additional verification of the links in the chain is required in such cases (also see Chapter 3.3.3 and 3.3.4).

3.3.2 Recognition of third-party claims by certification schemes

This procedure leads to the claims that are issued by a certain certification scheme being recognised as an admissible claim within the other certification scheme. As a result, the certification may switch between certification schemes within a Chain of Custody. According to this principle of mutual recognition, it is irrelevant whether other claims were made at an earlier stage in the chain. Nevertheless, it should be noted that the mutual recognition of certification schemes does not necessarily result in recognition for application with regard to the sustainability criteria. Since, part of these criteria is that information on used claims is available throughout the chain. By doing so, it can be verified that sustainability is demonstrated with nothing but approved schemes.

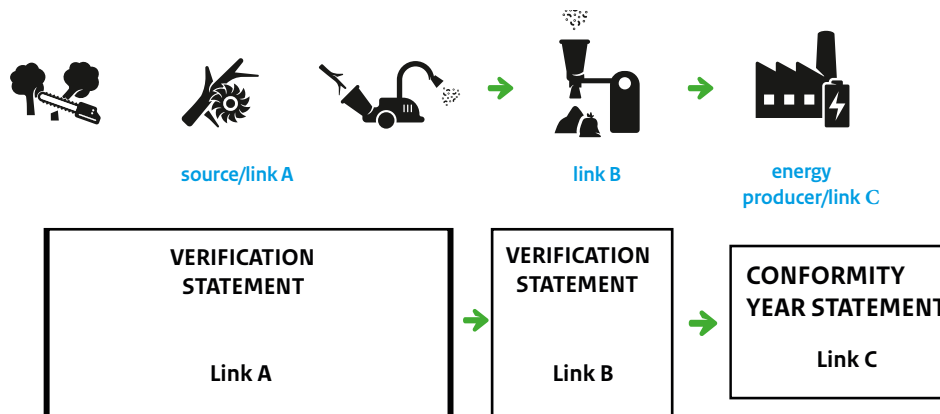
Figure 8 Certified Chain of Custody by fully approved certification scheme



3.3.3 Verification

If a link in the Chain of Custody does not have certification or uses a certificate that has not been approved for all sustainability criteria, it must make use of verification. This verification is carried out by an independent third party in accordance with the *Verification Protocol for Sustainable Solid Biomass*. After an independent verifier has confirmed that the applicable sustainability criteria have been met, a verification statement will be issued for the relevant consignment.

Figure 9 Verified Chain of Custody



Regional risk-based approach

For biomass in category 2, there is also the option of working on the basis of a risk-based approach. This process means that the pellet manufacturer rather than the Forest Management Enterprise, for example, is responsible for determining on the basis of a risk assessment whether there is a low risk of non-compliance with the sustainability criteria by its suppliers. In case of verification, the approach as described in *The Verification Protocol for Sustainable Solid Biomass* is used to assess whether the correct method has been applied for that purpose. When a certification scheme is approved for this approach, it can also be applied.

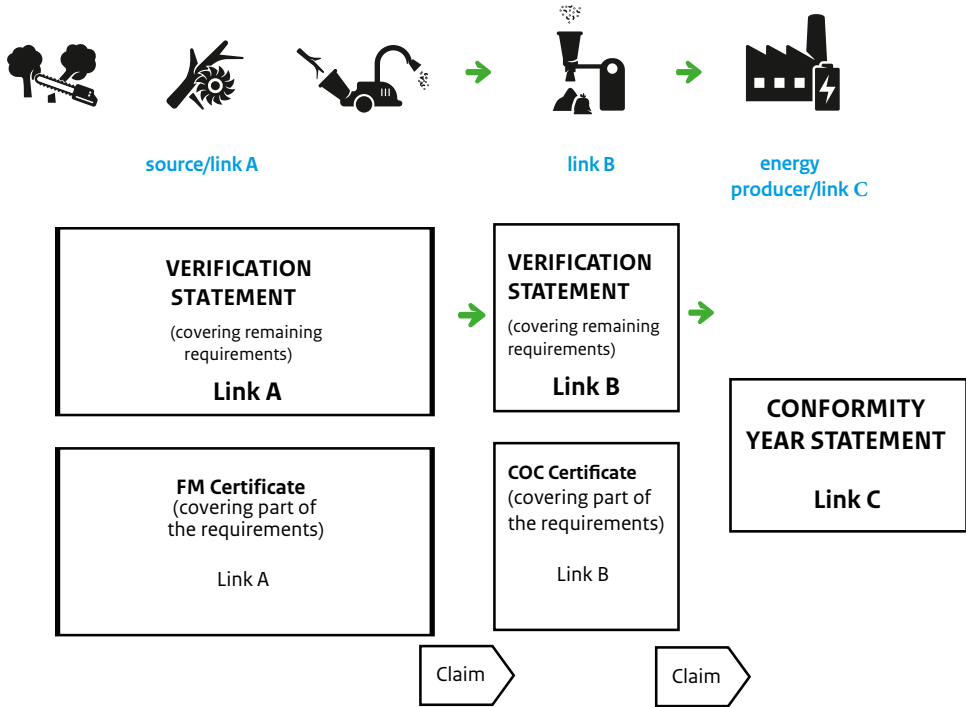
3.3.4 Interplay of certification and verification

Certain certified links in the Chain of Custody may also be required to have verification carried out in addition to being certified. This situation may be the case if:

- The certified link wishes to supply a non-certified physical consignment of biomass as sustainable or controlled to the next link. In such a case, the certification does not have any value for the specific consignment of biomass. Sustainability has to be demonstrated by a different method.
- The physically delivered biomass has been certified using a certification scheme that is only approved for part of the requirements.

In such cases, all subsequent links must conduct a verification for CoC criteria of the consignments, in addition to their audit of the certification scheme. To this end, the verification statement and the claim from the certification scheme must always be linked to the relevant consignment of biomass.

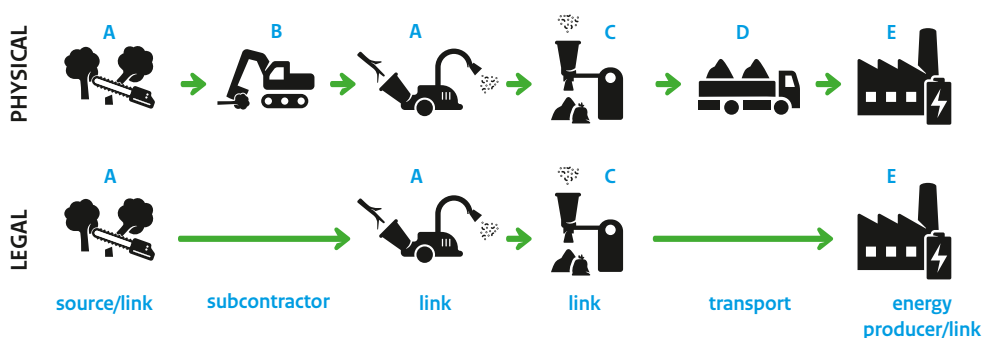
Figure 10 Certified and verified Chain of Custody



3.4 Transport and subcontracting

As outlined above, it is only legal owners of the biomass that are part of the Chain of Custody. In practice, biomass is often transported, stored or trans-shipped by companies through subcontracting. Here, the biomass does not physically or legally follow the Chain of Custody, but it is traded to the next link in the chain via a third party.

Figure 11 Physical flow versus legal flow (Chain of Custody) of solid biomass



Example: A Forest Management Enterprise (A) has the forest maintained by a subcontractor (B), who only carries out the work. The biomass produced is sold by the forest manager itself (A) to a pellet factory (C). The factory hires a transport company (D) to transport the pellets to the energy producer (E); however, the pellet manufacturer (C) sells the pellets directly to the energy producer (E). In this example, the Forest Management Enterprise (A), the pellet manufacturer (C) and the energy producer (E) are the legal owners of the biomass and are therefore links in the Chain of Custody.

In the case of transport and subcontracting, the responsibility for passing on the sustainability information corresponding to the physical biomass consignment always rests with the principal, authorising link in the Chain of Custody. That link will need to ensure that the correct sustainability information is passed on to the next link. The amount of the consignment (even if it is conducted via a transport company or subcontractor) on the mass balances must be identical to the physical amount that is being traded. By checking the delivery and sales documentation, the correct sustainability information and amounts are registered and recorded (increase and decrease) administratively.

4. Sustainability information

4.1 Need for information

The ultimate purpose of a Chain of Custody is to pass on information along the supply chain in a controlled manner. Which information is crucial and must be passed on is ultimately decided by the need for information of the final link in the Chain of Custody. In the case of the SDE+ Scheme, the energy producer requires information on the sustainability of the biomass in order to be granted subsidy for energy production from certain categories of biomass. Moreover, the intermediate links in the Chain of Custody require certain information for certification and/or verification purposes. The above situation results in two types of information, namely information that is passed on and information that is not passed on.

Type of information	Purpose
Information to be passed on (from one link to another)	Demonstration that the biomass complies with the sustainability criteria
Information not to be passed on (limited to registration at individual links)	Certification and verification objectives of individual links in the Chain of Custody

4.2 Information provision

When biomass is traded by links in the Chain of Custody, sustainability information on a physical consignment of biomass must be added by way of documentation (note that these documents may also be digital). This information should at least list the following:

- Biomass category (one of 1 to 5);
Note: at the end of the chain there has to be certainty about which category of biomass is used. Especially, with regard to forestry biomass, since this type can fall under two different categories (1 or 2). For more information, see Guidance on the classification of biomass on RVO.nl;
- Application of the risk-based approach (yes/no) in relation to the phasing out of this option (see Chapter 3.1.2);
- Biomass type (sustainable or controlled);
- Country of origin for the biomass;
- Data in order to calculate the greenhouse gas emissions of the supplied biomass.
Please note: This calculation is conducted on the basis of BioGrace II (please see the annexes to the Verification Protocol for Sustainable Solid Biomass)
- Claim in relation to the certification scheme (if applicable);
- Verification statement issued by a conformity assessment body that is recognised by the Minister of Economic Affairs and Climate Policy (if applicable).

PLEASE NOTE: As §2.6 of the Verification Protocol for Sustainable Solid Biomass stipulates precisely which information must be passed on, this article shall take precedence.

4.3 Registration of information

For certification and/or verification purposes, it is vital to have information that allows the relevant party to assess conformity with the sustainability criteria. The following information is minimally required in addition to the information outlined in Chapter 4.2.

For the first link in the chain:

- data on the source of the biomass that indicate whether the biomass is sustainable or controlled (claims from certification schemes may be used in this instance*);
- the regional risk assessment and outcomes (if applicable and only for category 2 biomass and controlled biomass);
- for category 5 biomass; data that demonstrate that secondary and tertiary residual flows are involved**.

For all links in the chain:

- Names and addresses of suppliers and recipients;
- If the previous link uses certification, a demonstrably verified CoC certificate from the previous link*;
- If the previous link uses verification, a verification statement issued by a conformity assessment body that is recognised by the Minister of Economic Affairs and Climate Policy (if applicable).
- If the link itself does not use certification, a demonstrably valid certificate***;
- If the link itself uses verification, a verification statement issued by a conformity assessment body that is recognised by the Minister of Economic Affairs and Climate Policy (if applicable).
- Relevant delivery documentation (such as weighbridge tickets, delivery notes, and so on) stating the physically delivered amounts of incoming and outgoing biomass;
- Mass balance calculations, including data with which to link the mutations on the mass balance to the physical and administrative consignments;
- Description of proven processes that ensure that the CoC requirements are adequately implemented.

** Note: The Minister of Economic Affairs and Climate Policy ultimately determines to what extent certification schemes conform to the required sustainability (and CoC) criteria.*

*** Note: If an EP wishes to make use of the option to use more than 15% residues under the exception provided by the General Implementing Regulations for biorefinery residues (NTA 8003:2017 code 595), the sustainability of the biomass that is entered as input at the refinery must be demonstrated in accordance with section 2.6.4. of the Verification Protocol.*

**** Note: The Decree on the conformity assessment of solid biomass for energy applications includes a strict definition of an approved certification scheme. This is regarded as a fixed set of certification scheme documents (hereinafter referred to as a certification scheme version) on which the approval decision is based and which has been included in the approval decision to the certification scheme holders. All decisions, including the approved certification scheme versions, are available on the RVO.nl website and have been published in the Government Gazette. Other certification scheme versions, which, for example, include a document with a revised document version, have not been formally assessed and approved and, as such, cannot be used by economic operators in the biomass chain to demonstrate the sustainability of solid biomass for the SDE grant. This applies to every document included in the approval decision. This means that any modified document will result in a new certification scheme version.*

4.4 Linking of information to consignments

The foregoing information should be linked to the consignments that are registered in the mass balance, in which physical consignments with the same sustainability information are allowed to be placed together on one account (also see Chapter 5.4). This process means that the sustainability information will serve to identify the relevant account.

Please note: A helpful example would be an ordinary bank account, which is linked to information about the account holder, their address, the account number, and so on. Sustainability information characterises an account on the mass balance in the same way. The registrations of the physical consignments on the mass balance can be regarded as the transactions on an ordinary bank account.

An example of linked sustainability information on an account may be as follows.

- Biomass category: 2;
- risk-based approach: yes;
- type of biomass: sustainable;
- country of origin: USA;
- GHG emissions*: raw material = forestry residue, transport = 2,000 km;
- verification statement: AAA-V00001-2017.

In addition, the following information is logged per account:

- starting balance for mass balance period (if this period is less than one year);
- balance (difference between incoming and outgoing quantities per period).

The following data is recorded on the account per physical consignment:

- mass balance period(s) in which the physical consignment is added or deducted;
- names of supplier and recipient;
- delivery documentation for reference;
- invoice number;
- incoming certification claim**;
- incoming verification statement**;
- incoming biomass amount;
- outgoing certification claim**;
- outgoing verification statement**;
- outgoing biomass amount.

* There are four ways to provide GHG information; see §7.5 of the Verification Protocol for Sustainable Solid Biomass.

** If applicable.

5. Mass Balance

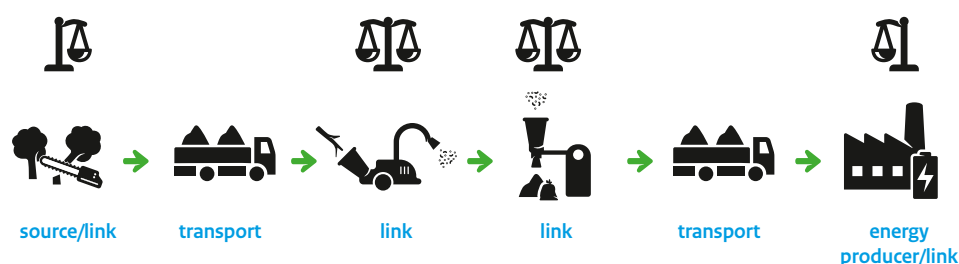
5.1 Mass balance requirement

The mass balance method is a system at a company that enables the registration of incoming and outgoing consignments which conform with the requirements of the mass balance system. A mass balance is drawn up in order to gain insight into the balance between incoming and outgoing quantities of sustainable and controlled biomass. In addition, a mass balance is needed for the mixing and splitting of a physical quantity of biomass.

5.2 Mass balance in the Chain of Custody

Every link in the CoC must draw up a mass balance. The source (even if it is also a link) and the energy producer occupy a unique position, as they only have to deal with a “halved” mass balance, since the source has no incoming biomass (which is generated by nature) and the energy producer has no outgoing biomass. Nevertheless, both have to keep a record of the outgoing (source) and incoming (energy producer) consignments respectively, which must meet the requirements of the regulations for the conformity assessment of solid biomass for energy applications.

Figure 12 Mass balance in the Chain of Custody



Please note: Some energy producers will also have a trading company in addition to their energy production company. These trading companies are regarded as full links in the chain and must keep record of a complete mass balance.

5.3 Consignments on the mass balance

The mass balance registers the quantities of biomass that are added in positive credit alongside the corresponding sustainability information. This sustainability information must be linked to the quantity on the mass balance. The quantity of biomass with the same sustainability information is called a “consignment”. However, one administrative consignment may refer to multiple physical consignments.

5.4 Mass balance method

How the mass balance works is essentially similar to an administrative record or balance of the incoming and outgoing quantities, in which the incoming quantities with the same characteristics can be administratively merged into one or more outgoing consignments on the balance.

5.4.1 Adding and deducting credit

When incoming biomass is added (credited) on the mass balance, credit is created. If multiple physical consignments of biomass with different sustainability information are added, this process results in the creation of multiple “accounts” with credit on the mass balance.

Please note: *The traits of a consignment are determined by the sustainability information that is provided alongside the biomass. This situation means that when sustainability information for multiple biomass consignments differs for each consignment, these consignments must be recorded as separate “accounts” on the mass balance.*

Outgoing biomass is deducted as credit if biomass is delivered to the next link in the CoC.

Please note: *A negative mass balance is never allowed. In other words, there is no overdraft option.*

Figure 13 Example of adding and deducting credit

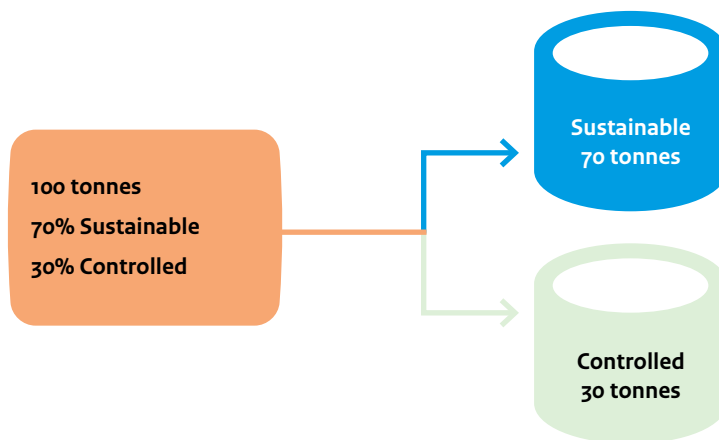


Account	Period	Opening	Incoming	Outgoing	Balance
Sustainability Cat. 1	A	0 tonnes	100 tonnes	0 tonnes	+100 tonnes
Sustainability Cat. 2	A	0 tonnes	50 tonnes	50 tonnes	0 tonnes

5.4.2 Splitting (physical) consignments

Within existing certification schemes, it is also possible to receive both sustainable and controlled biomass in one physical consignment. In this case, the other sustainability information will be the same for the entire physical consignment, except the type of biomass (sustainable and controlled). These two types of biomass must be kept separate on the mass balance. As such, the consignment is split into two parts that each are added to another account (with the same sustainability information).

Figure 14 Example of splitting a consignment



5.4.3 Mixing consignments

Multiple physical deliveries may be received within a mass balance period. In such cases, the amount of biomass delivered may be credited to the account with identical sustainability information. Subsequently, the accounts can be provided to the next links in the CoC through multiple physical consignments.

Figure 15 Example of mixing and splitting consignments with the same sustainability information (country of origin USA)

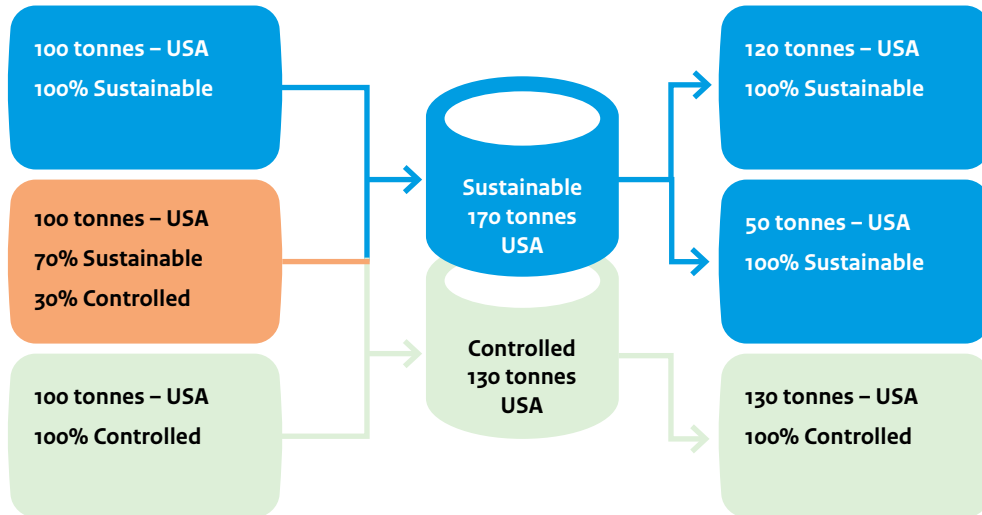
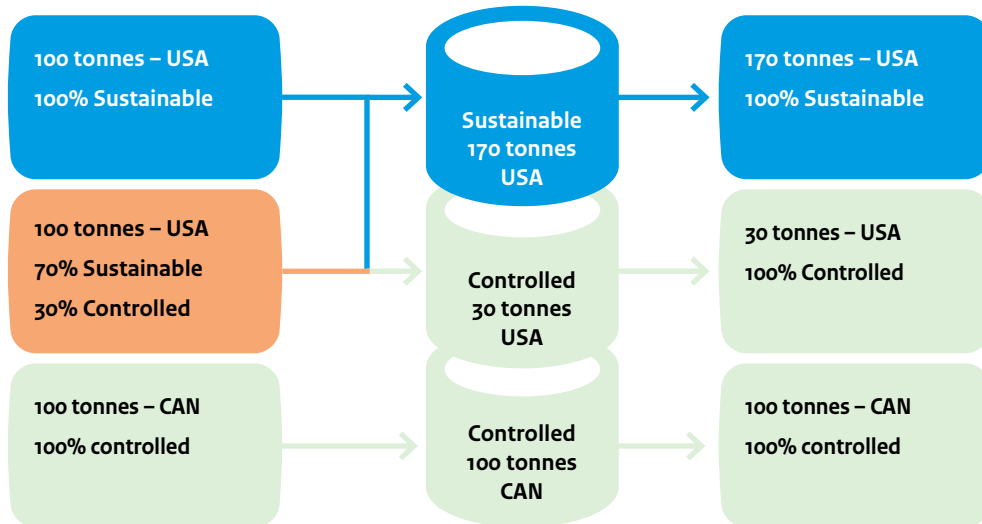


Figure 16 Example of mixing and splitting consignments with different sustainability information (country of origin USA/CAN)



5.4.4 Balance period and credit transfer

The mass balance may relate to a period of no more than 12 months. If a positive balance (credit) remains on this mass balance of 12 months, that surplus may be transferred as credit to the following period of 12 months. The same “account” may be opened in the following mass balance period and the remaining balance is transferred from the previous period. Credit can only be retained for a maximum of 12 months. Accrued credit older than 12 months will expire and cannot be transferred to the next mass balance period. In other words, a consignment can be kept as credit for a maximum of 24 months on the mass balance: 12 months in the first period and 12 months as transferred credit in the next period.

Figure 17 Example of credit transfer after the end of balance period



Account	Period	Opening	Incoming	Outgoing	Balance
Sustainable USA	A	0 tonnes	100 tonnes	0 tonnes	+100 tonnes
	B	100 tonnes	70 tonnes	170 tonnes	0 tonnes
Controlled CAN	A	0 tonnes	100 tonnes	100 tonnes	0 tonnes
	B	0 tonnes	30 tonnes	30 tonnes	0 tonnes

5.4.5 Physical mixing of biomass types

The sustainability criteria place no limitations on the physical mixing of sustainable biomass with controlled biomass. However, the consignments and their corresponding information must be kept separate on the mass balance.

Please note: The credit on the “accounts” is separate from the physical biomass, meaning that all biomass may be mixed physically within a link.

5.4.6 Units

Upon registration of the amounts on the mass balance, the calculations must use units that allow both incoming and outgoing amounts to be compared with one another. This requirement means that the same unit will generally be used to log incoming and outgoing biomass. The following units are widely used in the wood and pellet industry.

- bulk volume : volume of the batch including the air in between;
- weight by volume : weight of the batch divided by the bulk volume;
- wet weight : weight including the fluids in the batch;
- dry weight : weight of the dry goods (without fluid).

5.4.7 Conversion

At the processing, storage and transport of raw materials for solid biomass suitable for application by the energy producer, there may be conversion between the incoming and outgoing amounts. This process may occur due to the woody biomass, for example, losing moisture. Such conversion is expressed in a factor that indicates the relationship between the incoming and outgoing amounts. The conversion factors should be included in the calculation of the outgoing amounts on the mass balance.

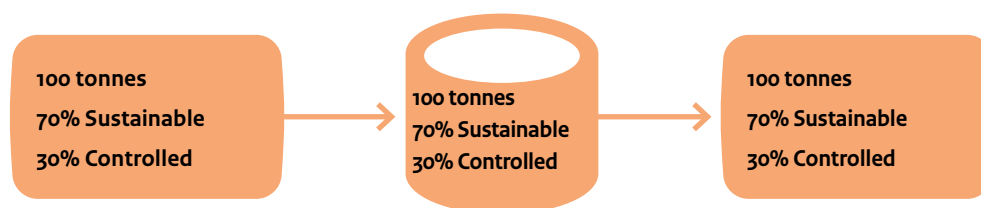
Please note: The wood industry often works with a “moisture content based on dry weight”, while the biomass/energy sector works with a “moisture content based on wet weight.” A calculation example: a batch of wood has a wet weight of 1,000 kilogrammes with a dry weight of 800 kilogrammes, the total amount of fluid being 200 kilogrammes.

- Moisture content based on wet weight: $(\frac{200}{1000}) * 100 = 20\%$
- Moisture content based on dry weight: $(\frac{200}{800}) * 100 = 25\%$

5.5 Links with 1:1 incoming and outgoing physical consignments

Links in the CoC that provide 1:1 incoming and outgoing physical biomass to the next link are able to use a mass balance period that is limited to the relevant incoming and outgoing physical consignment. In this instance, splitting the consignment into types of biomass is unnecessary, as the sustainability information will remain traceable.

Figure 18 Example of mass balance period limited to one physical consignment



5.6 30%-rule for energy producer

The energy producer is the final link in the CoC and is the party who is potentially able to obtain subsidy for energy generation from biomass under the SDE+ Subsidy Scheme. These energy producers are free to choose which consignment they submit for subsidy. Only 30% of the biomass from the energy producer (submitted for subsidy) may consist of controlled biomass for categories 1 and 2. Any remaining biomass must consist of sustainable biomass. The mass balance of the energy producer is drawn up per calendar year and covers a period of 12 months.

Figure 19 Example of 30%-rule for “mass balance” at energy producer



Account	Period	Incoming
Sustainable USA	Quarter 1	10 tonnes
Sustainable USA	Quarter 2	40 tonnes
Sustainable CAN	Quarter 3	20 tonnes
Sustainable CAN	Quarter 4	50 tonnes
Sustainable	Year total	120 tonnes (71%)
Controlled USA	Quarter 1	20 tonnes
Controlled CAN	Quarter 2	10 tonnes
Controlled CAN	Quarter 3	10 tonnes
Controlled CAN	Quarter 4	10 tonnes
Controlled	Year total	50 tonnes (29%)

6. Relationship with existing certification schemes

6.1 Overview of existing certification schemes most commonly used

Sustainability criteria for the application of solid biomass for energy applications are closely related to the existing certification schemes for sustainable wood, among other things. The best-known certification scheme are the Forest Stewardship Council® (FSC®) and the Programme for the Endorsement of Forest Certification Scheme (PEFC). In addition, there are certification schemes that focus primarily on sustainable biomass for energy applications, such as the Sustainable Biomass Program (SBP), Green Gold Label (GGL) and Better Biomass (previously NTA 8080/8081). Economic operators may only use certification schemes that are approved by the Minister of Economic Affairs and Climate Policy for the SDE+ Subsidy. The Minister of Economic Affairs and Climate Policy may request the advice of the independent Advisory Committee on the Sustainability of Biomass for Energy Applications (ADBE) for the approval of certification schemes, who shall assess to what extent the existing certification schemes conform with the sustainability criteria.

6.2 Categories of biomass in existing certification schemes

The certification schemes listed above often indicate a “claim” for products, which indicates the types of materials of which the product is made. These materials are subdivided into categories of materials. It is not always possible to synthesize such a subdivision with the subdivision that is used by energy producers for reporting in context of the SDE+ subsidy or for determining the biomass category in conformity to the sustainability criteria. Guidance on how to cope with the different category subdivisions, is described in the Guidance on the classification of biomass and can be found on RVO.nl

6.3 Types of biomass in existing certification schemes

In addition to deducing the biomass category from the claim, the biomass types can also be ascertained. In this regard, it is vital to take into account that the certification schemes work with so-called “control systems”. These systems work as a mass balance which makes it possible to physically mix materials, with the outgoing amounts being equal to the incoming amounts (taking into account a conversion factor; see also Chapter 5.4.5). The Guidance on the classification of biomass provides more information on the identification of the biomass types from the claims of the certification schemes.

7. Risks within the Chain of Custody

The Chain of Custody is a difficult concept and it is open to many different forms of interpretation. These different interpretations may lead to risks that result in a non-reliable Chain of Custody or to the loss of crucial sustainability information. This chapter will outline a number of risks that have been identified. Economic operators and Conformity Assessment Bodies are responsible for assessing and minimising these and any other risks (not outlined here) where necessary.

7.1 Physical consignments to foreign economic operators

In the case of physical consignments to foreign recipients, there is a bigger risk that the same amount of biomass is delivered twice on paper (read: subsidised twice = fraud). This risk arises when physical consignments to foreign entities are not included in the mass balance. For that reason, the links in the CoC should ensure that all physical consignments to recipients in the Netherlands and abroad are registered one and the same mass balance.

7.2 Mass balance for mutually recognised certification schemes

If a link is certified for multiple mutually recognised certification schemes, there is a risk that the amounts of physically delivered biomass are duplicated. A possible solution to this issue is to keep a single mass balance, on which physical consignments are kept separate per certification scheme and an obligation to be able to submit massbalances at the annual audit, in case a company has multiple certificates.

7.3 Circumventing sustainability criteria by “creating” residues

There are significantly fewer sustainability requirements for categories 3 and 5 than there are for categories 1 and 2. Categories 3 and 5 relate to waste flows and residues, where it is sometimes difficult to tell from the biomass itself whether it came from a primary, secondary or tertiary residual flow. Category 5 only relates to secondary and tertiary residuals flows, which is why it is vital that the information on the origin of the biomass at the first link in the chain is reliable.

7.3.1 Sawdust

A striking example of the risk mentioned above is sawdust. Looking at the sawdust itself, it is impossible to tell whether it has come from primary, secondary or tertiary residual flows. Wood from tree branches and tops shredded into sawdust (primary residual flow) is not visibly different from sawdust derived by sawing logs into round wood or shredded waste wood (secondary and tertiary residual flows, respectively). For this reason, it must be made clear whether the sawdust came from primary or secondary/tertiary residual flows at the first link in the CoC.

Category	Residual flow
Category 1, 2, 3, 4	Primary
Category 5	Secondary, tertiary

To gain insight into the correct category of the sawdust, it is vital to know what the original source of the biomass is, in combination with the activity and the purpose that creates the residual flow. A few examples are given below.

Category 1: sawdust produced by shredding wood (e.g. wood from branches and tree tops) and deriving from Forest Management Units;

Category 5: sawdust produced by sawing logs into round wood in a sawmill

For a number of existing certification schemes, the claim can partially or fully be used to ascertain under what category the supplied biomass comes. If a claim is inconclusive, or if there is no certification, the verification at the first link in the chain will have to provide certainty as to whether the designated category was correct.

7.4 Transport and subcontracting

When biomass is traded between two links in the CoC via transport or subcontracting, there is a risk that the sustainability information could be lost or that incorrect amounts are provided. This situation is particularly the case if a subcontractor is charged with carrying out a production process during which the biomass undergoes a transformation in size, volume or physical composition, as it is possible that the sustainability information and amounts are difficult to link to the consignments. In all cases involving transport and subcontracting, the principal link is responsible for providing the correct sustainability information and amounts of the physical consignments to the next link in the Chain of Custody. If a principal link identifies risks in working with subcontractors, an effective risk mitigation measure would be to carry out prior and regular audits of these subcontractors.

7.5 Fraudulent and false claims

At existing certification schemes, the links in the supply chain are checked and inspected by independent auditors. These auditors verify whether the outgoing amounts can be traced to incoming amounts on the basis of the corresponding information. The assessment in general is limited to the mass balance of the link itself, without any verification of the consignment as to the outgoing amounts of one link in relation to the incoming amounts of another link. In other words, there are no checks to verify whether the amounts of the transactions between links match up with one another. Practices came to light in the past of materials being unlawfully listed as certified, entering the supply chain by way of double-entry bookkeeping which is not reviewed by the auditor. As such, the original material is not certified. These false claims are a form of fraud.

8. Sources

- Besluit en Regeling Conformiteitsbeoordeling duurzaamheid vaste biomassa voor energie toepassingen
- Verificatieprotocol vaste biomassa voor energietoepassingen
- FSC Chain of Custody standaard FSC-STD-40-004 V3-0 EN
- PEFC Chain of Custody standaard PEFC ST 2002:2013 2015-12-07
- Houtpellets als brandstof - Handreikingen voor het borgen van de kwaliteit - Eerste editie, mei 2015
- Several sources from, internet websites <https://sbp-cert.org/>, <https://ic.fsc.org>, <https://www.pefc.org/>

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When interpretation or translations lead to discussions, the following documents are leading: the “Besluit en de Regeling conformiteitsbeoordeling duurzaamheid vaste biomassa voor energietoepassingen”, and the “Verificatieprotocol duurzaamheid vaste biomassa voor energietoepassingen”.

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