Oiconomy Standard, version 2.04

Standard for the life cycle sustainability assessment of products. The goal of this standard is to provide a normalized way of assessment and communication of (un)sustainability. In this standard, (un)sustainability is expressed in a virtual monetary unit, the "ESCU" (Eco Social Cost Unit). The ESCU score of a product represents the hidden costs, or "externalities", related to a product, the costs required to avoid any of the damage that the product causes during its entire lifecycle. The actors in the supply chain receive ESCU's from their suppliers, calculate their own contribution according to the instructions of this standard, and transfer the aggregated ESCU's to the next actor in the supply chain. All actors are challenged to calculate their own specific ("foreground") ESCU's that they add to the product. Without verifiable foreground ESCU's, carefully pre-determined default ("background") ESCU's are allocated. At the end of the supply chain a fully foreground ESCU score, represents the extra costs (without margins) for the fully sustainable version of the product. The ESCU also provides a normalized means of transfer of (un)sustainability data through the supply chain, enabling all supply chain actors to build on each other's data.

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The sections 1 – 10 consist of explanatory content. The actual criteria of this standard are described in the sections 11 and 12.

1. Introduction.

The economy is based on the mechanisms of the free market and especially the law of supply and demand. Product's prices and costs of use and disposal are supposed to represent all costs arising in the complete life cycle of the product. However, the free market fails where costs are not or insufficiently included in the price of products. Hidden product costs ("externalities") exist where costs or damage exists which are not paid by their cause and especially as:

- The costs of social irresponsibility and the consequent poverty, inequality and poor health-, living- or working conditions (People).
- The costs of damage to the environment and climate and the depletion of resources endangering the future well-being of mankind (Planet).
- Costs of harm imposed on the society, caused by irresponsible financial behavior, criminal activities or corruption (Prosperity).
- Product related costs paid by the community.

Without these hidden costs, current prices of products do not represent their true costs, with the result that damaging and unsustainable production is favored over sustainable production.

This standard provides a normalized method to collect all relevant data on (un)sustainability, to objectively weigh these data according to the costs that should have been spent on **damage-preventative measures** and express the result in a monetary unit, the **Eco Social Cost Unit (ESCU)**.

This standard includes a method to verifiably transfer these sustainability data through the supply chain by means of the ESCU, enabling a specific (or "foreground") assessment of specific products and their specific supply chains.

All ESCU scores are the product of a quantitative- and a price factor. The measurement of the magnitude or quantitative factor for each aspect (Q_{Aspect}) is standardized by the criteria of this standard. The price factor (P_{Aspect}) represents the preventative costs for the aspect. Default values for these are presented in the "Oiconomy Foundation database" (O.F. database) and represent the marginal preventative costs, the highest costs of all major preventative measures that are necessary to globally reach the standard or target that has been set for the relevant aspect. Applicants shall use these default values unless they can demonstrate foreground values.
One of the main purposes of this standard is that supply chain actors gradually investigate their own product specific price factors and grow to a situation of presenting ESCU's, which are equal to the real extra costs for the sustainable version of the specific product (but without margins)**.**

ESCU's are transferred through the supply chain, aggregated with the supplier obtained ESCU's, this way safeguarding confidential data.

This "Oiconomy system" is designed to be self-learning. Where the default price factors are initially scientifically determined for the fundamental aspect categories and a series of subcategories, supply chain actors may provide data for more specific subcategories, this way demonstrating their foreground (usually lower) ESCU's and updating the system for all. Suppliers of sustainability improving technology or methodologies may this way demonstrate their contributions.

2. Scope

This standard enables determination and effective communication of the (un)sustainability of any product. The product may be a consumption product, a utensil, a personal service or an impersonal service.

It is possible to assess a complete organization instead of a product. Such organization-assessment can be executed in either of two ways: 1. Assessment and addition of all organization's products and 2: Assessment of all upstream supply chains, organization's activities and for end-producers, all product-use and -end of life aspects. However, **note** that if company assessment is the scope, no ESCU's can be transferred for individual products.

The entire product lifecycle is assessed, from cradle to grave (or cradle). A great variation of aspects (ecological, social and economic, including all product-relevant aspects of the 17 United Nations' Sustainable Development Goals) is considered in order to provide a balanced and comprehensive assessment of product sustainability.

This standard requires transparency of 10 categories of ESCU's, relevant to sustainability, prescribes the method of determination and communication and requires the organization to execute a full assessment in order to enable external stakeholders to make their own value choices between the aspects and make their own composite indicator. This standard applies no weighting of aspects other than by preventative costs. This standard makes no requirements to any specific aspects of sustainability, but only presents a standardized way of calculation of the (un)sustainability of a product.

This standard is applicable to any product or service, of which the supplier wishes to measure and communicate its sustainability in a standardized, trustworthy and comparable way, independent on the level of sustainability of the organization or product.

This standard aims to provide a measure for all possible types of aspects, presented in one comprehensive monetary ESCU score and 10 aspect-category scores, but based on aggregation of a matrix of aspect specific scores which can also be presented separately. This standard aims to achieve transparency while protecting competition sensitive data by only transferring category-ESCU's which are aggregates of several aspects supply chain actors.

3. Aspects and Categories.

This standard tries to be as objective as possible. The use of preventative costs instead of a damage related indicator enables objective weighting and aggregation of the different aspects by their preventative costs. However, like any standard, for this standard some choices had to be made, such as included aspects and the positions it takes on each aspect. The positions taken by this standard on most discussed or controversial aspects are described in appendix 13.1.

This standard categorizes all eco-social-economic aspects included in the 17 UN sustainable development goals (SDG's), categorized in the following 10 categories:

A. Pollution of air, water or soil (including climate).
B. Depletion of scarce resources.
C. Land Occupation.
D. Biodiversity, nature and land degradation.
E. Waste and disposal.
F. Economic responsibility.
G. Public health risks.
H. Labor conditions, (incl. child labor and occupational health risks).
I. Corruption and conflict.
J. Various social responsibilities.

Various categories are subcategorized and composed of several aspects. The calculation of the (un)sustainability based on these aspect categories is described in the sections 12.4, 12.5 and 12.6.

4. Relation to other standards.

The biggest difference of this standard with other standards is that this standard requires little else than that the responsible organization transparently, honestly and verifiably determines and communicates the (un)sustainability related to the entire lifecycle of a product, exactly following the criteria of this standard. This standard therefore replaces no other standard, is applicable to all types of products and has no specific requirements on the condition of any aspect of sustainability.

This standard is no quality mark for ecology or human rights or of any other kind, but aims to make all aspects of sustainability measurable and transparent. Because this standard aims to present a comprehensive overview of the sustainability of a product, it may be less detailed on individual aspects of sustainability than specific standards on the relevant aspect. However, for some criteria this standard uses certificates of various more specific and detailed standards.

In this standard, accredited quality certificates are used as means of evidence and on some aspects an organization can only reach the best (lowest ESCU's) score with a certain certificate. Therefore, to earn the best scores, an organization or its products may need several certificates. Because most organizations are specialized, the number of required certificates will usually be limited. In various sections this standard requires verifiable tests by accredited testing institutions.

5. Abbreviations, terms and definitions.

- **Added value:** Last-year financial turnover – last-year purchased value (before interest and tax).
- **Background data:** Generic data on the type of product, used if specific (foreground) data are lacking.
- **Bulk gasses:** Gasses and fine dust, globally emitted in large quantities, that are only harmful to the health of men or environment in larger quantities.
- **CB:** Certification Body.
- **Certification:** Certification to this standard, unless otherwise indicated in the text.
- **CIF:** Cost, Insurance and Freight is sellers responsibility
- **Consumer:** Buyer of the end product. The buyer may be a private person or an organization.
- **Consumer products:** Products in their final packaging or sold in bulk, intended for the consumer or for organizations. Products sold to organizations that are worked into other products, are not considered consumer products.
- **Consumption parts:** Parts, to the consumption of which the use of a utensil leads, including all parts that need to be replaced within the product life of the utensil.
- **Consumption item**: Product intended for one-time use or that is gradually consumed (e.g. a tube of toothpaste).
- **Degreeday**: Degree's in ^{o}C x days (e.g. 25 days at 20 ^{o}C = 500 degreedays).
- **Demonstrate:** Show, with solid evidence, to an auditor/verifier of an certification or accreditation body, accredited for the relevant activity.
- **Downstream supply chain:** Direct customers and further down to the end of product-life.
- **End-producer:** Depends on the situation:
    - If the end product is marketed under a brand name, traceable for the user, the owner of the brand name.
    - If there is no brand name, traceable for the user, the organization that makes the decision for the end-product to be produced (usually the company that markets the product), excluding retail organizations without own production facilities.
- **End-product**: The product, as it is presented to the consumer or user.
- **Energy carrier**: A material containing energy that can be gained.
- **ESCU: Eco Social Cost Unit** = The (un)sustainability score allocated by this standard.
- **Impersonal service**: A service that is delivered to large groups of customers.

- **Fair minimum wage**: Gross income, as presented in (Croes & Vermeulen, 2016b)
- **Fair inequality**: Gross income-differences within the organization, higher than the maximum ratio presented in (Croes & Vermeulen, 2016a).
- **FOB**: Free on Borad. The seller takes care that the goods are on board. Freight costs and insurance are the responsibility of the purchaser.
- **Foreground data**. Data on the specific product.
- **Gasses**: Includes fine dust (although in various sections fine dust is also mentioned separately).
- **Km**. = kilometer; **Kg.** = kilogram; **Kj.** = Kilojoule; **Kwh.** = Kilowatt hour
- **LCI:** Life cycle inventory: an inventory of inputs and outputs in the supply chain.
- **Low developed supplier (LDS):** A not-certified supplier, without a clear management structure, without the knowledge to understand this standard, without relevant contacts reaching beyond its direct activities, or heavily instructed by the organization. (e.g. private person or family, a workshop, a farmer, a small cooperative).
- **Non tangible energy products**: Electricity, heat and cooling.
- **Normal use**: See section 11.2
- **O.F.:** Oiconomy Foundation, the standard owner.
- **O.F. Database**: The database with default values for the price factors.
- **Organization:** Any body that produces, organizes or trades something and is paid for its product or service with money or a returned good or service.
- **Origin:** Any step in the supply chain where both the purchased value ratio and the purchased weight ratio is below 20%, but for agricultural- and mining chemicals, see section 11.4.3.
- **Origin resource, origin commodity, or origin material:** Resource produced at origin (usually mining, agriculture forestry, fishing or chemistry).
- **O.S.:** Oiconomy Standard.
- **Personal service:** A service that is delivered to one single or a specific small group of customers.
- **Personnel:** All persons working for the organization for more than 30 days per year, either as employee or contracted.
- **POP:** Persistent organic pollutant.
- **Primary resource:** An origin material or a material directly derived from an origin material, traded and used as a commodity. (e.g. iron ore is an origin material and primary resource; iron is a primary resource).
- **Producing supplier**: A supplier executing core changes in the supplied item, not being packaging, transport, trade, a textual change, or a superficial change hardly changing the core function of the item.
- **Product:** Is to be understood in the widest possible sense, including services and energy.
- **Purchased value:** The value of the purchased materials and items, as purchased, including non-deductible taxes for the purchaser and trade margins.
- **Purchased value ratio:** Purchased value divided by product turnover.
- **Purchased weight ratio:** Purchased dry weight divided by product dry weight.
- **Regulated product:** A product or product group, for which specific regulation exists in the countries of use.
- **Quality:** Delivery of a product according to customer's expectations and without negative consequences for his/her well-being.
- **Quantity**: Unless otherwise stated, the yearly amount in kg., measured over the past year.
- **Raw material:** A material that is worked into a product or an essential component of a composite material.
- **Related to the product:** If an organization produces only one product, all its activities are related to the product. If an organization produces several products, all facilities, equipment, materials, people and activities that are used for the product, disregarding the importance or quantity of that use.

- **Remuneration:** The sum of the value of all gross payments of money or goods to an employee, including the value of payments which can only be made real in the future, all calculated by their last full year's average value.
- **Risk DNA:** Genetically modified DNA without solid and published and peer-reviewed evidence of its safety for people and that this DNA, set loose in nature, may supersede or damage other organisms, or without effective control by an international body of supervision, or may endanger available DNA variety of the species.
- **SCID:** Supply Chain Impact Diagram.
- **SCID list:** Inventory of items to be included in the SCID and in upstream supplier assessment.
- **SHD:** Social Hotspot Database
- **Sustainability:** The responsibility to act meeting the needs of the present without compromising the ability of future generations to meet their own needs (United Nations World Commission on Environment and Development, 1987). This standard includes both environmental, social and economic aspects in sustainability, but limits itself to the aspects listed in section 3.12.
- **T.C.R.'s**: Tasks, Competences and Responsibilities
- **Default ESCU score:** ESCU determined by O.F., by applicants, or by others, approved by O.F.
- **Unsustainability:** The lack of responsibility to meet the needs of the present or the needs of future generations.
- **Upstream supply chain:** The chain of first, second and further tier-suppliers, back to origin.
- **Utensil**: A product that can be used several times at similar quality level.
- **Waste:** The sum of all solid, liquid and gaseous materials that during the production or use and at the end of the lifecycle of the product end up somewhere in the environment or are incinerated.
- **Worker:** An employed person, a worker employed by a subcontractor or a self-employed worker without an own company.
- **Year:** Used in calculations may be a calendar year, a fiscal year or a year to date, provided that the chosen system is maintained.

6. Goals of this standard.

1. **Transparency.**
   Clear, open, uniform, complete and honest reporting and communication.
2. **Fair and Objective Assessment.**
   To enable consumers, entrepreneurs and governments to make their purchases based on a fair consideration of all sustainability aspects and therefore contribute to a sustainable economy.
3. **Communication.**
   To simplify sustainability measurement for businesses by means of a normalized way of measurement and communication of sustainability data in the supply chain.
4. **Consciousness.**
   To accomplish that organizations increasingly become conscious of the damage their products may cause, of all involved aspects of sustainability and social responsibility, and of the costs to prevent damage.
5. **Preventative thinking.**
   To continuously confront organizations with the need of preventative thinking.
6. **Responsible Economy.**
   The final goal is to change the focus of global competition on sustainability and create a sustainable economy, based on the free market, but based on real prices without externalities.
7. **Gradual development to total sustainability.**
   Achieve sustainability in every action of mankind without destabilizing shock-effects, rebound and backfiring effects.

7. Principles of this standard.

7.1 Risk and Sustainability assessment.

The organization makes a self-assessment of the (un)sustainability and the risks related to a product's life cycle from origin to end-of-life stage of the product.

7.2 Eco Social Cost Units.

Every product or service is allocated a score for each of 10 different sustainability categories, and one total score, all expressed in **ESCU's** (**= Eco Social Cost Units).** The score on every sustainability aspect contributes to the category- and total ESCU scores according to the additional preventative costs which are required to produce a product with zero damage on any aspect. The practitioner will always collect a category matrix of ESCU's from the suppliers, determine and add the own contribution and transfer this aggregate to the next supply chain actor until the user/consumer.

7.3 Aspect-categories.

All types of impact are categorized in 10 aspect-categories. If a product has impact in different aspect categories, ESCU's will be allocated in different categories. However, if the organization can demonstrate a case of double counting, for instance, if one preventative measure is effective on the specific case in more than one category, by means of a concrete and costs calculated plan of improvement, the score may be corrected by taking the highest only.

7.4 Supply chain and traceability.

Sustainability cannot be demonstrated without knowledge and communication about the supply chain. The method of calculation of this standard requires organizations to investigate backwards (upstream) in the supply chain by requiring ESCU's from suppliers.

The method also requires end-producers to investigate the potential unsustainability related to the product forwards (downstream) in the supply chain (Limited to end-producers only).
The (un)sustainability at any stage in the supply chain is transferred to the next stage by the ESCU's in the same way as costs are transferred by a normal price in a monetary unit. The category ESCU-scores and the aggregated comprehensive ESCU score shall be transferred through the supply chain separately. Every actor in the supply chain shall have traceability one step forwards and one step backwards, but the exchanged ESCU's represent the aggregated data of the complete upstream supply chain.

7.5 Systematic approach.

This standard systematically leads the practitioner to determine the preventative hidden costs of the life cycle of his product: the purchased products, all stages and types of transport, his own gate-to-gate operation, the product-use phase, the disposal and of his positive contributions (negative ESCU's) (Use phase and disposal only for end-producers). It also systematically leads the applicant along all 10 aspect categories and the sustainability aspects in each category.

7.6 Standards per sector.

Where necessary, a sector-specific version of this standard may be written. Sector organizations for groups of companies that are relatively simple and of similar nature may even write their own standards or code of practice and submit these for approval with an accreditation body. However, all these standard must answer to the umbrella Oiconomy Standard, the sector-standard must be approved by the O.F., and the participating organizations may not produce products other than the products covered by the sector standard.

7.7 ESCU scores and marginal preventative costs.

All supply chain actors are challenged to investigate and calculate their own ("Foreground") product-specific costs of prevention, exactly as they would calculate their economic costs for a product, investment or process. However, because many companies will need considerable time to calculate these for all aspects, default values ("Background ESCU's") are provided by the O.F. database.

The default ESCU scores represent marginal preventative costs. They are determined by the most expensive of preventative measures that need to be deployed to globally reach the relevant target and therefore, on average, will be higher than product specific costs.

When enough product scores are available, the O.F. intends to present averages for product categories, which averages may be used to determine the relative ESCU score indicating the sustainability performance of the product compared to other products in the category.

Note that both product scores and averages may be location dependent (for instance due to differences in transport distances and methods of collective disposal methodologies).

7.8 Measurability en verifiability.

All criteria of this standard require the measurement of the quantity of an aspect (Q_{Aspect}) which is multiplied with a price for that aspect (P_{Aspect}), for which a default value is available in the **[O.F. Database]**, based on the marginal preventative costs for the relevant (sub)category. For an organization or a product not all aspects may be relevant, mostly depending of the country of the activities. The organization is challenged to determine foreground costs of prevention, but only if it can demonstrate these with solid and verifiable evidence.
[O.F.-04 Country Statements] contains a list indicating the relevance of some aspects per country. These statements may be used without any further evidence.

Where concrete data are hard to get, this standard takes the level of governance on the relevant sustainability aspect as verifiable criterion for the determination of ESCU's, measuring the compliance with common management system criteria.

7.9 Self-learning database.

The **[O.F. Database]** contains the price component (P_{Aspect}) of the ESCU's to be allocated, to be multiplied with the quantitative component (Q_{Aspect}), determined according to the criteria of this standards. P_{Aspect} is determined by the marginal preventative costs per impact category. Initially default values for P_{Aspect} are predetermined by science and shall be used if no different value can be demonstrated. Because both market and science will continuously develop and provide new data, which are fed into the system (anonymously), the database becomes self-learning. Because self-determined data include internal benefits and default data don't, companies must be prepared to confidentially share their calculations with the Oiconomy Foundation for adaptation of the default values.

7.10 Oiconomy Assessment Tool

The **[Oiconomy Assessment Tool]** provides a practical questionnaire for the assessments. It includes all criteria in this standard and makes the necessary calculations. A full assessment can be made by entering all requested data into the tool. However, this standard remains leading, which means that any doubts about the meaning or intention of a question, this standard needs to be consulted.

8. Oiconomy Foundation.

An organization (preliminarily called "The Oiconomy Foundation" (O.F.) will serve as standard owner and provides:

1. Scientific guidance and consultation of stakeholders.

2. Support of partitioners.
3. Maintenance and further development of this standard, database, assessment tool and certification/verification requirements.
4. Visibility and transparency on the internet of the sustainability of certified products, averages best- and worst case scores.
5. Automated alarming of strongly aberrant ESCU scores, in support of the auditors.
6. Clearly published information on typical types of unsustainability related to product categories.
7. Training of practitioners and auditors and tuning between certification bodies and auditors.
8. Development of tools for the consumers/users or retailers to facilitate product comparison and the sustainability of their purchases.

9. Verification.

The goal of verification is to verify the trustworthiness and transparency of the calculations and the information concerning the sustainability of the product. In addition, certification and transfer of aggregated ESCU's make traceability of the complete supply chain unnecessary.

Verification methods are under development, which will probably be risk a based certification, a type of certification based on impact risk such as hotspot databases. In such system, frequency, scope and costs of verifications depend on risks. Risks depend on the country/region of activities, sector, size and complexity of the product and the organization, other certificates, history of reliability and transparency.
The criteria will be described in the Oiconomy Certification/ Verification Requirements.

10. Presentation and communication in the market place

This standard leads to one comprehensive ESCU score, which is the aggregation of category scores and in addition to 10 category scores, which are all transferred through the supply chain.
Presentation of logo and scores in the market may be developed. Preliminarily this will be left to the market. Criteria will be described for the presentational use the ESCU in the Oiconomy Certification/ Verification Requirements.

11. Requirements for organizations with certified products.

11.1 The organization and its products.

All requirements apply to the products of the legal entity, but additionally some data are required of sister- and mother companies or their products.

Products of an organization that is part of another organization cannot be certified if the mother organization is not included in the conception of the criteria and in the verification.

11.2 The product and its normal use.

The organization that is the **end-producer** or a producer of a product with one major function that is practiced by more than 80% of the users, shall define and disclose what is the function and what is "normal use" of the product, including the intended methods of disposal. If a product has significantly different categories of use, different categories of "normal use" may be defined, provided that it can be demonstrated that the relevant category of use is communicated to the downstream supply chain. The organization shall also investigate practices of use in the market (in each country of use) and determine most common uses and methods of disposal. Deviations of its definition of normal use from average use shall be justified. The organization shall determine, in practice, the expected product life at normal use (not necessarily equal to the warranty period). For the product life a maximum of 100 years may be taken. For this definition, the organization shall

investigate the product life of similar products in the market. Reasons for differences between the definition of the products' expected life and practice of similar products shall be based on substantial and demonstrable product- or market differences.
For services, including the use of tangible products defined as service-product (e.g. "an hour of light"), no definition of the product life time is required.

If the definition of the product and its normal use involves the risk of disputes on the responsibility for sustainability aspects of the product (e.g. disposal), these responsibilities shall be agreed upon with all involved parties, and the definition of normal use based on the agreement.

11.3 Organization schedule.

The organization shall publish on the internet a transparent organization schedule of the complete network of organizations which it is part of, including trusts and foundations, describing all product categories and locations that the relevant organizations are active in. In addition, the organization shall keep a list with all shareholders owning 5% of the shares or more.
If the organization is owned by the state, the requirements of this paragraph apply from the biggest juridical unit down that is owned by the state. The language(s) of the schedules must be easily understood by consumers/customers in all countries of use of the product.

11.4 SCID and cutting off point.

11.4.1 Contribution ratios.

This section determines which purchased materials or services shall be included in the assessment. The organization shall demonstrate, based on last full year's data:

- The %G2G (percentage Gate to Gate Contribution) = the percentage added value (before tax, profit and interest, but including depreciations) to the product.
- The %SC (percentage Supplier Contribution) to the value of the product (100% of product's value (before tax, profit and interest, but including depreciations) - %G2G).

11.4.2 Inventory of purchased materials and services.

This standard requires determination of the own "gate to gate" ESCU's by the organization itself, following section 12.4 and aggregate these with the obtained upstream supplier ESCU's for each category. This section determines which suppliers need to be included. If materials or services are used for several products, organization's own financial allocation methods shall be used for allocation of quantities to the product.
A list shall be demonstrated, consisting of:

- All **major** purchased materials (each >1% of total purchased value, required for the product) are listed (Intended are the quantities required for one year of production), including their purchased dry weight % (of total purchased dry weight) and their purchased value % (of total purchased value). Such purchased materials may be ingredients/components of the product, processing aids, packaging materials, cleaning materials, analytical materials, water, energy carriers (e.g. coal, gas, gasoline), administrative or any other materials. For items that are shared with other products or for general purposes, divide quantities in the following sequence of preference:
- 1. According to organization's own cost allocation methods.
- 2. The actual proportion of the purchased value used for the product.
- 3. Proportionally to the different product's turnovers.

It shall be demonstrable that every effort was exerted to follow this sequence of preference.
For moisture containing materials the value of the wet quantity, as purchased, is taken, multiplied by a factor [1- AM], where AM is the yearly average % of moisture. If delivered CIF, insurances and transport are added below, If FOB, these should be included in supplier's ESCU's.

- Added to the list shall be any categories of yearly purchased non-tangible services, related to the product, with higher individual financial contribution than 1% to the purchased value (financial products (e.g. interest), consults, transport, IT services, insurances, cleaning, transport, research, engineering, rented and leased materials, disposal services, retailing (see section 12.3.7), and other services). Not included shall be labor by owners, employees and externally hired workers for standard operations. Services related to several products or the complete company, are divided proportionally to the involved services' turnovers. However, if different importance for a specific part of the involved products can be objectively demonstrated, purchased services may be allocated proportionally to their importance. Incidental hired labor for activities that do not belong to the standard operations shall be included.
- The obtained list shall be sorted by purchased value. Starting from the highest purchased value down, keep all (major) materials until at least 80% of the total purchased value. The percentage of the item that brings the total purchased value to over 80% shall be included. (e.g. for a coffee product, if coffee beans account for 90% of the total purchased value, 90% is the volume to be included, instead of 80%). Groups of similar materials or services, such as various types or origins of coffee beans, shall be combined in their contributing percentage. The remaining (minor) materials with lower single purchased values than 1%, are removed from the list. Excepted from removal are materials or services occurring in the list **[O.F.-11 High impact Materials and Activities].** Note that the use of some high impact materials itself (e.g. pesticides) will be included in section 12 anyway, but inclusion in the SCID requires that also the suppliers of these shall be requested to provide ESCU's.
  Attention: If the scope of the assessment is the complete organization instead of a singular product, the following may occur: a quantity of a variety of one purchased component, which at product assessment would be included in the 80% purchased value, may be excluded at organization-assessment. Actually, complete minor products may be excluded because of this criterion, which is acceptable for this standard, but no product-ESCU's can be transferred through the supply chain based on organization wide-assessment, until the whole organization proves zero ESCU's.
- The obtained list is the "**SCID list**" for supplied materials and services that shall be included in the assessment, listing for each item:
  a. The item and identification number.
  b. The "purchased value ratio": the value of the total of purchased materials/services divided by the product turnover (average over 5 years), before interest and tax.
  c. The "purchased weight ratio": the dry weight of the purchased materials used for the product, divided by the dry weight of the product. (Note, that the ratio may be zero and that the total purchased weight may be higher than the product weight).

Attention: This SCID list only determines for which purchased items, ESCU's shall be collected from suppliers, including water, energy and energy carriers. If energy or water related items do not occur on SCID list, this does not mean that they do not need assessment in the following sections of this standard. Water and energy use always require ESCU calculation (section 12.4). The data, obtained from supplier of water and energy need may be used for the gate to gate calculations, but not double counted.

11.4.3 **SCID** (Supply Chain Impact Diagram)**.**

The organization shall be able to demonstrate a diagram of the supply chain including every item on the SCID list, back to certified suppliers.
This diagram shall describe in generic terms for all items on the SCID list:

- All upstream steps in the supply chain, their major function(s) and involved country/industry sector combinations. End-producers shall also include the downstream steps in the supply chain of the phases of use and end-of-life, based on the define "normal use".

- The ESCU's for 10 aspect-categories, obtained from the direct suppliers, possibly completed with self-determined

The cutting-off point for the upstream assessment (origin) is at that stages in the supply chain where both supplier contribution (%SC) and purchased weight ratio are lower than 20%. Because of differences in what actors in the industry sector may outsource, the following extra rules apply:

1. Outsourced processes under maintained ownership or responsibility of the unfinished product are considered part of organization's gate to gate activities considering the calculation of the %SC.
2. Executors of the outsourced activities are suppliers that need to provide ESCU's, disregarding the value of %SC, because their ESCU's belong to organization's gate to gate activities.
3. Because even at farm- and mine level, often the weight- or %SC ratio is higher than 20%, the following extra rules apply:

   Agricultural supply chains for fertilizers and pesticides, shall be assessed back to the producing suppliers of the single nutrients or chemicals if the %SC for these exceeds 1%. Producers of these are considered "origin" for agricultural application of the chemical. However, for other applications, they are considered normal supply chain actors. For mining supply chains, the same applies for chemicals used for the mining process. (note that pesticides and various mining chemicals are high impact materials occurring on the list O.F.-11., needing to be assessed in all cases anyway).

   If several suppliers or supply chains are involved for one material, all supply chains shall be described. This diagram is called the "**SCID**" (**S**upply **C**hain **I**mpact **D**iagram).

11.4.4 Outgoing materials

The organization shall demonstrate a procedure and bookkeeping of all solid and liquid outgoing materials related to the product, including product, wastewater and waste and including time and reason of existence, and time and destination of leaving the organization. This list of materials shall be categorized by type of material.

11.5 Governance level.

Organizations with a turnover employing 50 or more full time people (including temporary and outsourced workers), or with larger turnover than € 7 million, shall measure its sustainability governance level using the **[O.F.-23 Governance Level Scoring Model]**. Organizations with a verified general organization governance level score > 0,7, or in possession of a certificate approved for this purpose in **[O.F.-19 Approved Standards]**, may contribute to the creation of new subcategories, database and formation of collectives (see sector 12.2.11).

11.6 Communication.

The organization shall not use any public communication contradicting the calculated ESCU´s.
If a specific industry sector carries a special responsibility for any aspect of sustainability, the ESCU scores on that specific aspect shall be communicated in the market together with any other communication on sustainability. (E.g. the economic responsibility for financial products or food safety responsibility for foods). **[O.F.-24 Special Responsibilities]** lists these special responsibilities.

12. Criteria for ESCU calculations.

12.1 Definition and types of products

For a general definition for "product" see section 5: abbreviations, terms and definitions.
The ESCU score of a product may depend on the location of sales. Especially transport-ESCU's may differ considerably. Therefore, if the ESCU score of one and the same product differs more than

5% depending on the location of sales, the organization shall define products in different countries, and even regions, as separate products.

This standard distinguishes the following types of products:

- **Consumption items**: Tangible products, of which the essential part can only be used one time.
- **Utensils**: Tangible products which can be used several times at similar quality level.
- **Personal services**: Products which are not tangible, provide a solution for a specific customer and are delivered to a relatively small number of customers.
- **Impersonal services**: Products that are not tangible and of which equal versions are delivered to large quantities of customers.
- **Capital Goods (utensils)**: products that are used for the production of other products.
- **Non tangible energy products**: E.g. Electricity, heat and cold, light, sound, information.

For each product, ESCU's are allocated for the following five life cycle contributions:

1. **Supplies**: The ESCU´s of all previous steps in the supply chain.
2. **Organization's Gate to Gate contribution:** The ESCU's for all steps belonging to organizations' own responsibility, including transport and waste.
3. **Use or Consumption**: The ESCU's caused by the shared responsibility for the damage that exists at the user's end during the use of the product.
4. **End of Life**: The ESCU's that are the result of the waste and its handling that exists at the end of the life cycle of the product.
5. **Bonus ESCU's**: The negative (or bonus-) ESCU's that are allocated due to a defined series of activities beneficial for the environment and/or social or economic conditions.

12.2 General rules.

12.2.1 Sum and subtotals of ESCU's.

By following the sections of this standard, the **[O.F.-23 ESCU Matrix]**, as shown in the **[O.F. database]**, is created. The calculations for the 5 life cycle contributions listed in section 12.1 result in the 5 life cycle subtotals for ESCU's: **[ESCU-purchase], [ESCU-operation], [ESCU-use], [ESCU-end of life] and [ESCU-bonus].** The sum of these 5 values makes **[ESCU-product]**, the final product score. The calculations for the 10 aspect-categories result in the 10 category-subtotals for ESCU's: **[Total-Pollution], [Total-Depletion], [Total-Land], [Total-Biodiversity], [Total-Waste], [Total-Public Health and Safety Risks], [Total-Economic], [Total-Labor], [Total-Corruption], [Total-Various Social].**
Both aggregating the 5 life cycle subtotals, and aggregating the category-subtotals result into the **[ESCU- Product]**, the total for the product.
All Totals shall be documented and yearly updated demonstrable for verification. **[ESCU- Product]** and the category-subtotals shall be communicated, through the supply chain.

12.2.2 Default (Background)- and Organization-Specific (Foreground) Price Factors

For every aspect an ESCU allocation is determined by multiplication of a quantity factor (Q_{Aspect}) and a price factor (P_{Aspect}). The quantity factor is obtained by following the criteria of this standard. The default price factor represents the globally marginal preventative costs for the relative impact category (not the same as the categories used in this standard) and is listed in the **[O.F. database]**. The default value shall be used if no more product-specific foreground value can be demonstrated. The organization is challenged to use its own more product-specific value by demonstration of a detailed cost/investment calculation for the measures, the expected reduction and the expected remaining quantity of the aspect. If the expected prevention is below 100%, for the remaining quantity the O.F. default P_{Aspect} shall be used.
Foreground values must be based on, and feasible for, reduction of the organization's own specific

impact and may not be based on compensation by activities elsewhere, unless specified in the relevant criteria. (compensation is covered in section 12.7: Bonus ESCU's).

Industry is challenged to contribute to the creation and updating of O.F. default price factors in one of the following ways:

- Updating of O.F. default price factors by providing new information on preventative costs.
- Providing O.F. default price factors for more specific impact categories e.g. by aspect, industry sector, product group, conditions, processes or other aspects.

New values for O.F. default price factors shall answer to the following criteria:

- The method described in (Croes & Vermeulen, 2015)*[1] shall be followed.
- O.F. default price factors shall be generically applicable for a large number of products. No price factors may be introduced for the purpose of one or few products or organizations.
- Data and methods shall be verified by O.F. or an accreditation body.
- Provided data on preventative costs need to be assessed on if the measures provide a potential solution of at least 5% of global impact and if they change the marginal preventative costs for the impact category. However, a new subcategory may be created, e.g. for the industry sector, limiting the 5% requirement to the impact within that industry sector.

12.2.3 Actual or last-year based calculations.

Where possible and for all criteria, ESCU calculations must be actual per kg. product or per piece. (For non-tangible energy products the unit of Kj. or Kwh., or Km. or other universally applied unit shall be used). Only if an actual calculation is not possible or very complex, for instance because at the moment of production the destination is yet unknown or if a blend is continuously changing, last year's average ESCU score on the relevant aspect may be used. For applying this method, the following extra criteria apply.

- Where products for different countries or groups of countries have different packaging or if for any reason a different product number is used, or if the product undergoes an extra treatment in the country of destination, an actual calculation of ESCU´s to the product shall be applied.
- For all products that are not destined for the consumer, or are not packed in their final packaging, an actual allocation of ESCU´s to the product shall be applied.
- Importers that do not make changes to the product and are not involved in the design of the product (with exception of textual communication advise), are considered (equal to retailers) suppliers to the end-producers and shall provide the end-producers with the ESCU's for their operations.

12.2.4 Responsibility.

The primary responsibility for the end-product is at the end-producer as the finally responsible organization for the design, choice of raw materials and suppliers, production methods and the purpose of use of the product. In complex customer-supplier relationships, both parties should agree together about the data responsibility. Examples of such situations are lease contracts where use and ownership are separated, supply of a service (e.g. light) under ownership of equipment and meat company owned livestock, raised and kept by a farmer. Another complex situation is the retailer of other than own brands. Such retailer, although in reality a the customer, is considered a supplier of a service to the end-producer (see section 12.3.7), who shall require the ESCU's for retailing from the retailer.

The suppliers of components of a product (upstream supply chain actors) are responsible for the complete and correct information regarding the sustainability of their products and may take over the responsibility for the actual disposal from the end-producer, providing this responsibility transfer is covered by contract and the made-responsible party accounts for the ESCU's. (For instance the

supplier of car batteries may take responsibility for the disposal and recycling of the batteries). However, such transfer of responsibility is not allowed in order to cause an exclusion in the SCID (see section 11.4). Upstream suppliers also share responsibility regarding the disposal and recycling of their products. The end-producer remains responsible for the information required by this standard. Upstream suppliers may also take over responsibility of data-transfer and present their product as end-product if end-producers mainly follow their instructions and the product is traceable to that supplier by the user. A typical example is the installation at consumers by small installers of equipment with a brand name, that is traceable by the user. Advantages to a supplier in such case may be the ability to self-present ESCU's to the user.

12.2.5 Units of calculation and transfer.

The calculation method of this standard includes transfer of ESCU´s for every step in the supply chain to the next, from extraction to end-product, in the same way as costs are transferred and finally end up in the price of the end-product.
The ESCU contribution of tangible materials is directly allocated per kg. or per piece.
The ESCU contribution of non-tangible energy products is allocated per kj. or kwh.
The ESCU contribution of transport is allocated per km.
The ESCU contribution of other intangible products is allocated per the most commonly used unit.
For all primary- and bulk resources the ESCU´s are allocated per kg's.
The ESCU's for utensils that do not cause impact as result of their use (see section 12.5) are allocated per piece. The ESCU's for utensils with impact as result of their use are allocated in the most commonly used unit considering their function (e.g. km. or hour of use).
If for a product category, sales per unit of weight is common practice, the ESCU´s shall be allocated per kg. for all products in the product category.
If the weight of a product changes between production and customer or between steps in the supply chain, for instance by evaporation, the ex-factory weight counts.
If sales per unit of weight is no common practice, ESCU´s are allocated in the for the product category most usual unit, mostly per piece.
If within an organization materials which were purchased per unit of weight, are worked into a product that is sold per piece, the ESCU´s shall be converted per piece in the ratio of the used weights of the different materials. The same type of rules shall be applied to other changes of units.
ESCU's for services are allocated per most commonly used unit in the trade of the product category (e.g. per hour).

The last stage of all calculations is always the conversion to ESCU scores per kg., per piece, per km., or to the industry-common unit for the product (depending on the way of presentation).

12.2.6 Allocation of ESCU's for services.

The ESCU contribution of services, such as financial products or IT services, is calculated as an allocation of the total ESCU´s per year to an in the industry sector common unit, but also common for the next actors in the supply chain. Actual values from the complete last year shall be used.

12.2.7 New or changed products.

For new products actual values shall be used. For substantially changed products or production methods, actual values shall be used as soon as more than 50% of the products in the market has been replaced by the new version.

12.2.8 Allocation of direct and indirect ESCU's in case of more than one product, and division of ESCU's for supplies that are split in parts for different products.

If an organization sells more than one product, all directly to the product belonging ESCU's shall be allocated directly to the product, e.g. auxiliary and processing materials, personnel, administrative materials.
The allocations of indirect ESCU´s for items that that cannot be allocated directly, shall be executed in the same ratio as financial costs of the relevant material or activity are allocated in the organization. If no financial allocation procedure is used, the ESCU's are divided over the relevant products proportionally to their yearly financial turnovers.
If a purchased material is split in several materials that are used for different products, either by the organization itself, or by another organization (outsourced), the supplier-obtained ESCU's for the material are divided to the different applications proportionally to the financial turnovers of the sold materials or the product of the turnover and the material's weight fraction of the products where they were processed in.

12.2.9 Burden of proof.

If an organization cannot demonstrate that the product has no impact on a sustainability aspect, that commonly or incidentally occurs in the sector/country combination, it must be assumed that it does have the impact and default values for both quantity- and price-factor shall be allocated.

12.2.10 Frequency of updating of information.

ESCU´s for a product can be updated on a yearly base only, unless new or substantially changed products are concerned. The information on the packaging shall describe the moment of production but may be one year behind (for reasons of finishing packaging stock only).

12.2.11 Industry-sector cooperation and collectives.

Where this standard requires analysis by an accredited certification body (CB), cooperating organizations within an industry sector may execute such analysis and share the data together. However, for the benefit of such cooperation, the CB shall be notified about the exact relevant circumstances and process conditions which the analysis is based on and each organization sharing the data shall demonstrate that the product meets these circumstances and process conditions.

If a collective of organizations can demonstrate that on a certain criterion of this standard, considering a product that all members of the collective sell, there is very little difference in the sourcing of raw materials and the used processes, it may take the responsibility to determine a "default ESCU score" on the relevant aspect valid for all group members. This can be done for individual aspect categories, but also for the total ESCU value. Participants of such collective may not produce or sell products not covered by the collective certificate, unless they can demonstrate a bookkeeping for the shared product information completely separate from other products with no chance of affected ESCU allocations.

12.2.12 Use of the O.F. database.

The most recent version of the O.F. database shall be used as it is presented on the website: http://oiconomy.sites.uu.nl/.

12.2.13 Double counting exemptions.

By this standard, the applicant is guided along all different aspects, for all of which ESCU's are allocated equal to the marginal preventative costs of the relative aspect category. Where one measure can prevent impact in different categories, a case of double counting exists (e.g. the use of mineral oil for energy gets ESCU's for GHG emission and for depletion of resources and in some cases also for safety or labor conditions).
If the organization can demonstrate a measure that prevents impact in more than one category, only the highest of all ESCU allocations that can be prevented by this measure, is allocated. Evidence for

such double prevention may be provided by a scientific publication, or by a tested and elaborated calculation by the organization itself (e.g. for an investment proposal).

12.2.14 Spatial exemptions.

The impact of an aspect may depend on the location. If it can be demonstrated that, out of clear location dependent reasons, an impact, assumed by this standard, is totally absent, no ESCU allocation is required.

12.2.15 Foreground price factors information sharing.

This standard uses the **[O.F. Database]**, also copied to the **[Oiconomy Assessment Tool]** providing default price factors based on the marginal preventative costs per impact category.
For most (but not all) criteria, this standard challenges the organization to demonstrate product's own specific "cost-distance to sustainability". The following criteria apply for the use of a case specific (or "foreground") price factor:

1. Cost calculation methods, used for new price factors, may not differ from standard operational methods (e.g. concerning allocations, interest and depreciation).
2. Internal benefits may be included in the calculations, contrary to the default values which exclude internal benefits.
3. Depreciations of capital investments shall be based on realistic expectations of the product life of used equipment, transport means and buildings, even if these differ from companies' calculation methods.
4. Mitigating on one aspect, considered shall be the potential changes to other aspects. Preliminarily only significant effects on other aspects shall be considered.
5. The calculations must be based on realistic measures and investments, technically feasible to be practiced by the company. However, financial unfeasibility is no reason to exclude calculation.
6. The calculations shall be based on the assumption that the sales volume of the product will not change because of the changes.
7. The data may be verified by the certification body and customers may ask "make it true".
8. Data that have validity for the product or industry sector shall be shared with the O.F., which can use these data to continuously improve the data in the database (anonymized), and the organization shall provide specific information on O.F. request, considering research on marginal preventative costs and to recalculate costs excluding internal benefits.

Demonstrated shall be what level of impact mitigation can be achieved. The ESCU allocation shall be calculated as the sum of ESCU's obtained from the costs of the proposed measures for the impact reduced quantity. For the remainder, see below in section 12.2.16.

12.2.16 Foreground data based on incomplete impact mitigation

Often, an impact cannot be 100% prevented. A realistic estimate shall be made of the impact mitigation quantity and the quantity remaining after engagement of the preventative measures.

If the quantitative factor has been determined and a foreground price factor is used for an incomplete abatement, a certain impact remains. In that case the foreground price factor shall be used for the abated quantity and for the remainder the background value from the O.F. database.

12.2.17 Grouping of products.

Organizations often produce series of very similar products. If similarity on sustainability aspects can be demonstrated, ESCU calculations may be made for groups of products with one product (group) name and -number. The exact composition of such group shall be notified with the CB.

12.3 Supplier's contribution.

12.3.1 Gradual institution and non-certified suppliers.

In an operational Oiconomy system, ESCU's and information will be transferred from the direct suppliers and organizations hardly need to investigate upstream supply chains themselves. Preliminarily however, most purchased products will not have been certified and the analysis of the unsustainability of purchased materials is initiated in stages:

1. Generally, the contribution to sustainability aspects by purchased materials will obey to the rule that a small number of materials accounts for the major quantity of impact. The SCID procedure, explained in section 11.4, limits the analysis to the 80% most relevant upstream supply chains.
2. For materials and services purchased from not-certified suppliers, as far upstream as possible for the specific involved items, their suppliers and required data must be investigated. At any not-origin tier in the supply chain where no further specific upstream data can be found, a conventional LCI must be made to determine the most probable used materials, their quantities, involved countries and data. In addition, all possible internal data, literature and analysis of the most known materials shall be used as starting point for ESCU calculations. Input-output databases and the hotspot database shall be used to find **the worst case supply chains, although limited to the 80% most probable involved locations as appears from these IO databases**. Any aberration from the worst case shall be demonstrated by solid proof. **The intention of the Oiconomy system however remains to self-calculate, aggregate and transfer foreground data through the supply chain and everything shall be done to find and convince supply chains to join this system.**
3. Other rules for obtaining ESCU scores for not certified purchased materials are described in section 12.3.4.

12.3.2 Documentation of supplies and ESCU's.

Obtained from suppliers and maintained shall be the following data, as summarized in the **[O.F.-ESCU Matrix]** in the **[O.F.-Database]:**

[Purchase-Pollution], [Purchase-Depletion], [Purchase-Land], [Purchase-Biodiversity], [Purchase-Waste],[Purchase-Economic], [Purchase-Public Health], [Purchase-Labor], [Purchase-Corruption], and [Purchase-Various Social], and the total ESCU's.

12.3.3 Use of O.F. Country statements.

[O.F.-04 Country Statements] contains default data on countries and an inventory of countries which may be assumed free of impacts on the different sustainability aspects on the product or raw material. These statements may be used without further evidence. If a purchased material or service consists of a composition of deliveries from several countries for which the statements differ, the organization shall separate the relevant data accurately. If the practical or juridical ownership of a material makes a detour over more than only the country of origin and the country of destination, all involved countries must be taken into account. If the organization cannot demonstrate exact recording of the origins and ownership flow of its supplied materials, the worst ESCU outcome of possibly involved countries shall be assumed. Without sufficient traceability on the upstream supply chain back to countries, worst case scenarios shall be used. From the internet, internal and external experts, and especially from input-output databases, a survey shall be made from possible upstream supply chains and ESCU's calculated for all supply chains, together making at least 80% of probability to include the actual supply chain. The worst outcome of ESCU's shall be allocated. If several aspects are involved, the supply chain with the worst aggregated outcome shall be assumed.
For ESCU's from certified suppliers, no further upstream traceability is required for this standard, although companies may require such data themselves, e.g. for marketing reasons.

12.3.4 Supply chain.

If the product is not an "origin material" (see definition in section 5), ESCU's for assessed materials shall be required from the suppliers, including their certificate. The data shall be verified in **[O.F.-01 Assessed Products],** which will only mention the ESCU's of the product without other data on the upstream and downstream supply chains.
For not certified materials the ESCU's shall be obtained in one of the following ways:

- Require certification of the relevant purchased product.
- If for an aspect, **[O.F.-02 Default Product ESCU Values] or [O.F.-03 Default Agricultural Product ESCU Values]** lists a "Default ESCU score" (see definition and section 12.3.1), for either an aspect category or for the total of all aspects, it may be used. For lower scores and for lacking data on categories, evidence shall be demonstrated. Such evidence may be obtained by having a therefore accredited CB determine the ESCU score at supplier's site, per aspect and assuming worst case situations where no evidence of a better situation is demonstrated.
- If a large primary resource is concerned and **[O.F.-02 Default Product ESCU Values] or [O.F.-03 Default Agricultural Product ESCU Values]** lists no default ESCU scores, or data are lacking for aspect categories, O.F. may be requested to determine such default ESCU scores on paid base.

All obtained ESCU scores shall be listed in the relevant **Supply-list (section 12.3.2)**.

12.3.5 Grouping of small suppliers.

If the materials from a group of suppliers are combined, without separate communication of ESCU's, the average ESCU's may be taken if an exact average can be demonstrated. Without such demonstration, the highest ESCU's per unit from the parts of the combined materials shall be taken.

The organization **may** take over the task of ESCU calculation from groups of suppliers provided that:

- The relevant products of the suppliers were not certified before.
- The supplier has no more than 10 full time employees.
- The organization has more than 10 suppliers for the relevant material and these suppliers are Demonstrably of similar character in activities and management.
- The organization can demonstrate to be knowledgeable about all aspects of the management of the small suppliers, has clear and communicated guidelines about the management of sustainability aspects for these suppliers and verifies at least sample wise, following sound statistical techniques and therefore qualified people.
- The CB has given permission for the take-over of the calculations and samples the relevant group of suppliers during its audit.

This possibility of take-over is intended for example for large groups of small farmers, workshops and home workers.

Organizations with a turnover over € 50.000.000, - (for all its outsourced activities for the product) or with over 250 workers (average number of full time employees and temporarily hired people, working for the company) **shall** investigate the possibility to take over the calculations for groups of mutually similar small suppliers before using other methods (see section 12.3.4) to obtain ESCU scores. Such take-over shall be accompanied with a continuous guiding and monitoring of the group by a qualified local person.
If an organization is supplied by several small businesses through one or more third parties (usually trade, transporter, intermediary, warehouse), which do not have O.F. certificates for their services, the organization may also take over the calculations for these third parties under the same conditions as described above (except for the requirement that at least 10 of these parties are required) and providing that de ESCU´s include the contributions of the activities of the third party itself.
Also sector organizations, other collectives, intermediaries, exporters, accountants and other bodies may take over the calculations from small businesses (<10 employees) under conditions as described above, provided that the relevant collective itself is a juridical unit and are O.F. certified themselves.

12.3.6 Capital Goods.

The use phase of capital goods such as buildings, machines and furniture is included in section 12.5 of this standard. But all capital goods must be or have been produced and will be disposed of, causing impact.
For new capital goods, the (un)sustainability related to their production and disposal shall be calculated and ESCU´s allocated to products in the same ratios as the capital goods are depreciated, if they don't fall under de exemptions described in the sections 12.3.1., ESCU's shall be calculated based on the same depreciation allocations that the organization uses for cost allocations. If capital goods are used for several products, the total ESCU's shall be divided over the different products, according to organization's own cost allocation procedures or in absence of such procedure proportionally to their financial turnover.
The upstream supply chain ESCU contribution of existing capital goods is theoretically zero, because the impact was in the past and cannot be prevented. However, because this causes disparity between new and existing capital goods, preliminarily, capital goods are exempted from ESCU calculations.
However, this exception does not apply for capital goods for production, transport or storage of renewable energy, water-, air- or soil- cleaning installations or other equipment specifically designed for sustainability impact mitigating reasons or if its major applications are for this goal. For products for which ESCU calculation of capital goods is required, this may be limited to the 80% of the involved capital goods (sorted by depreciation with highest on top). If involved capital goods are used for more than one product, ESCU allocations shall be proportional to organization's economic cost allocations.
For existing capital goods that require supplier ESCU calculations, ESCU's shall be requested from suppliers at the next order of similar goods and assumed equal for the existing capital goods.

12.3.7 Trade, retail and intermediaries in the downstream supply chain.

All types of products and services and all types of organizations shall be included if they occur on the SCID list (see section 11.4). Sector-dedicated questionnaires may be developed for simplifying the assessment for sectors with limited activities. Every organization and body that receives payments for materials or services is a supplier and is not an employee or self-employed worker, including (amongst others) traders, distributors, agencies, transporters, consultants, subcontractors and accountants is a supplier that shall be requested ESCU's for the delivered product or service.

A special case is the following:
All organizations in transport and other services that are used by the **end-producer** to get the product (unchanged) to the consumer or end user, are considered **suppliers** of services (warehouses, retailers, trade, exporters, importers, intermediaries, etc.), in spite of the fact that in reality such organizations are often the end-producers' customers. This type of suppliers shall calculate and communicate their own contribution per kg. product or per piece, but may do so for large groups of products with similar impact magnitude (e.g. for supermarket deepfreeze; cooled, fresh, etc.). This contribution shall consist of:

- Suppliers contribution (section 12.3), but excluding the involved traded goods.
- Gate to Gate contribution (section 12.4).
- Bonus (section 12.6).

The average of these ESCU (of all such supplier's/customer's contributions shall be listed in the relevant **Supply-list (section 12.3.2).**

12.3.8 Allocation of ESCU's for purchased materials and services.

ESCU´s of purchased materials and services are allocated to products the same way the organization allocates their standard economic costs to the end-product, with direct and indirect ESCU's.

Direct ESCU allocations are for materials or activities that can be allocated to the product precisely, for instance because they are 100% related to the product.

- Indirect ESCU´s, for materials and services for which the organization does not use direct economic cost allocations, ESCU's are divided over different products in the following sequence of preference: 1. According to organization's own cost allocation methods.
- 2. The actual proportion of the purchased value used for the product.
- 3. Proportionally to the different product's turnovers.

It shall be demonstrable that every effort was exerted to follow this sequence of preference.

ESCU's for purchased materials that become part of the product are always allocated per number of pieces or units of weight. If liquids or gasses may evaporate, "ex-factory" quantities are applied. Water and purchased gasses are also considered materials with ESCU´s.

ESCU's for purchased materials that do not become part of the product (e.g. auxiliary materials, lubrication, water, gasses, energy resources) shall be allocated proportionally to the financial costs of the purchased products. The same applies to purchased materials that partially become part of the product (e.g. animal feed, of which a multiple is required to grow the animal). If not all products of the organization are certified, it shall be demonstrated that no ESCU´s are `greenwashed' to not certified products.

ESCU's for capital goods (if required) are allocated proportionally to organization's economic cost allocations (but based on real expected lifetimes and replacement values).

ESCU´s for purchased services need direct allocations where possible and where not possible, proportional to organization's cost economic allocations.

For outsourced internal and external transport of purchased goods the ESCU´s per km. as listed for the different transport means in [O.F.-08 Transport Means] apply.

12.3.9 Materials for recycling

Incoming materials for recycling, either originated from organization's own products or from elsewhere may carry the following ESCU's:

- If a price was paid to the supplier and the material originates from an Oiconomy-certified product, ESCU's have been subtracted by the originating organization, which' ESCU's shall be taken as the ESCU's for the purchased recycling material. (See section 12.4.5.). These ESCU's shall be requested. If a price was paid to a non-certified origin, the organization shall investigate (and usually already has) the ESCU's for the virgin material and allocate ESCU's to the non-virgin material, proportionally to the prices for non-virgin and virgin material.
- ESCU's for collection, disassembling, treatments, transport and storage shall be either calculated or requested from the supplier, depending on who is responsible for these activities.

12.3.10 Total ESCU score for purchased products.

The subtotal **[ESCU-Purchase]** is obtained by aggregation of all ESCU's for purchased goods and services for a product.

12.4 Organization's "Gate to Gate" contribution.

For all damage to the current or future generations of man and environment, ESCU´s are allocated to products, based on the 10 aspect categories listed in section 3.
All aspects in this sector shall be considered, independent of the result of the SCID, which only applies to the supplier's contribution. (Good knowledge of the previous sections is required).

Note that the following sections require determination of ESCU's for energy, water and transport, sometimes using data from the suppliers, but careful attention is required to avoid double counting.

12.4.1 Pollution and Climate Change.

Considered Sustainable Development Goals: **3,7,13,14,15**

This standard distinguishes 5 measurement method-related pollution subcategories:

A. Air Pollution by the emission of bulk gasses.
B. Pollution of air, land or water by agricultural practices with very hard to measure emissions of harmful substances.
C. Pollution of air, land or water, with measurable quantities of harmful substances.
D. Heat pollution.
E. Potential pollution by incident-caused emissions of any type.

All direct and indirect emissions shall be considered, including harmful substances that enter the environment via defecation of humans and animals, such as antibiotics, hormones and medicines. The organization shall assess, using therefore qualified persons, if its activities or materials related to the product, cause pollution. If an organization may reasonably expect that, related to the relevant product or for general purposes, it causes pollution of air, soil or water, it shall determine, initially and at relevant process changes, using a therefore accredited testing body, which type and which quantities of harmful chemicals or substances are emitted and how to sample and measure the yearly emitted quantities, using validated methods only. If however, the organization can demonstrate to only perform standard activities, common to its industry sector, of which the emissions are known and published, or if the emissions can be calculated and demonstrated accurately from other variables, or if an O.F. default ESCU score on emissions exists for the product, (produced according to standard operations) listed in **[O.F.-02 Default Product ESCU Values], or [O.F.-03 Default Agricultural Product ESCU Values]**, that known or calculated score may be used.

If any threshold concentration of emitted harmful chemicals is achieved by dilution, other than by technically unavoidable and process-required activities, the point of highest achievable concentrations and related quantities of the chemicals shall be taken as base for ESCU allocations. If it can be demonstrated that pollution is mitigated by external bodies (e.g. by municipal waste water facilities) without intermediate pollution of the environment, and that mitigation is controlled by contract, mitigation measurement and regular communication on the average achieved mitigations, the emission data may be based on the externally mitigated emissions. If the mitigated emissions are below the toughest standards of all downstream product life cycle countries, no ESCU's need to be allocated. "Downstream product life cycle countries" is here defined as all countries of destination of the product and its derivatives. *(Note that this standard measures against the legislation, not only of the country of emission, but of all downstream countries)*. **In practice, this means that for many intermediate products the ESCU's for emissions are measured against world's toughest legislation.** Also note that for chemicals occurring on **[O.F.-11 High impact Materials and Activities],** ESCU's are allocated for any quantity.

12.4.1.1 **Type A pollution (Air pollution by the emission of bulk gasses)** (SDG's 3,7,13,14,15)

The definition of "bulk gasses" includes fine dust. Considering all gasses for any purpose, **[O.F.-05 Energy Resources]** and **[O.F.-14 Pollution Substances]** list the ESCU's which shall be allocated, including:

- GHG emissions caused by combustion of **fossil energy resources**. From energy suppliers, the ESCU´s for certified energy resources are requested per unit of supplied energy or energy resource. Suppliers of energy or energy resources shall, considering losses, production activities, transport, etc., make their "well to gate" calculations according to the criteria of this standard.

In addition, certified suppliers of energy carriers shall provide the exact quantity of emitted gasses and dust particles at normal use (see section 11.2) of the energy carrier (e.g. combustion), if necessary for the different categories of use, and the ESCU's listed for gasses in **[O.F.-06 Harmful Gasses]**. The organization shall yearly verify, using validated measuring methods, if its own gas emissions for energy generation are in accordance with suppliers' definition of normal use, and if necessary correct the supplier-obtained ESCU's. If own data are lower than supplier's data, a causal explanation shall be demonstrated showing that the difference is systematic and correct.

Emissions covered by tradable certificates may not be subtracted here, but according to the criteria in section 12.7. If the energy resource is a blend and/or from different sources, the energy supply calculations shall be based on the yearly average composition and the supplier shall be able to demonstrate his balances of sources (see also section 12.2.3).

Note the following:

1. Both for all combustion of fossil energy carriers, ESCU's are allocated, and for electricity for the involved combustion activities, independent of the occurrence of the energy carrier on the SCID list (see section 11.4).
2. In agriculture, ESCU's shall be allocated for CO_2, N_20-, NO_x, ammonia and methane emissions from the soil, fermentation, heating, transport means, equipment, water, (e.g. from rice fields), animals, manure, fertilizers, urine and burning.
3. ESCU's shall also be allocated for other aspects than CO_2 emission, such as for.
    - Direct gas emissions from products or production processes related to the product, or the consequences thereof (e.g. CFK's, fine dust, evaporated solvents, methane from livestock).
    - Gas emissions caused indirectly by the activities of the organization related to the product (e.g. ammonia from fertilizers, CO_2 from clearing forests or wetlands or methane from barrier lakes).

Not included here, are the emissions caused by the use of utensils which are covered in section 12.5 of this standard.

12.4.1.1.1 Use of non-tangible energy resources.

The ESCU's per Kwh. for certified electrical energy, heat or cold shall be requested from the supplier, who has measured or calculated these from the use of his specific choice of energy resources and processes. For not-certified electrical energy, **[O.F.-05E Electricity]** lists the ESCU's which shall be allocated by the suppliers per Kwh. For electricity of nuclear origin, the supplier shall use the ESCU's listed for the relevant country in **[O.F.-05 Energy Resources]** (based average carbon intensity).
If the non-tangible energy resource is a blend from different sources, but paid for its components or properties separately (e.g. renewable electricity from the common grid), the supplier shall be able to demonstrate his balances of sources and destinations (see also section 12.2.3).
For electricity from the grid without more specific data on its sources, **[O.F.-05 Energy Resources]** lists the ESCU's/Kwh to be allocated by country and the ESCU's/Kwh if even the country of power generation is unknown.
Note that energy related ESCU's always need calculation, however without **double counting**. Already included ESCU's from the supplier (because it is on the SCID list), need no extra allocations if they include transport- and other losses. The calculations shall be based on DAP (delivered at place).

12.4.1.1.2 Emissions by employee commuting.

For transport to and from the work location, **[O.F.-08 Transport Means]** lists the ESCU´s per km. per person for the different transport means. The organization shall make an inventory of the commuting distance for all its employees (and other workers) related to the product and their yearly commuting days, and calculate ESCU's based on driver-only driving an average car. However, if the organization can demonstrate a lower emission than listed in **[O.F.-08 Transport Means]** for an

average car as a clear result of its policy or calculations based on the specific used transport means, the lower ESCU score may be used. For employees related to several products, ESCU allocation methods shall be equal to the organizations' financial allocation methods if available for the aspect and else proportional to the different product's financial turnovers.

12.4.1.1.3 Emissions of combustion gasses by transport of goods and persons.

[O.F.-08 Transport Means] lists the standard ESCU's for transport means, which shall be allocated for any transport under responsibility of the organization related to the product (except for the transport covered in section 12.4.1.1.2). The organization shall make a yearly calculation of the ESCU's for each transport volume unit that it uses under its own responsibility (e.g. a pallet size) per km., using the ESCU's listed per ton.km. in **[O.F.-08 Transport Means],** and last year's average payload occupancy rates of the relevant transport means. Return trips shall be included.
If the organization can demonstrate a lower emission than listed in **[O.F.-08 Transport Means]** as a clear result of its policy, the lower ESCU score may be used. For this purpose, calculations shall be made for transport using exact data on fuel use, emissions and maintenance as for any other process.
For outsourced transport the ESCU's shall be requested from the transport company. (**Note** that outsourced transport may be excluded as minor purchased activity in section 11.4, but is always included as own activity).

12.4.1.1.4 Other gas emissions as result of the activities of the organization.

Direct emissions by the activities of the organization, related to the product, can be measured and ESCU's shall be based the above criteria. Indirect emissions are more hidden consequences of the activities and not always easy to measure.
[O.F.-12 Examples of Indirect Emissions] lists a series of gas emitting activities with the ESCU´s that shall be allocated, such as for changes to nature (e.g. forest fires), open methane producing fermentation processes and some types of drainage basins. The organization shall convert the listed ESCU's from the listed unit to ESCU's per kg. or per piece of product.
If the organization can demonstrate a lower emission, confirmed by a therefore accredited body, the lower ESCU score may be used. For this purpose, one-off emission causing actions (e.g. forest fires or -clearing) shall be depreciated in 10 years.

12.4.1.1.5 Emission of commercial gas.

For purchased gas, including those that come as component of equipment, the criteria of section 12.3 apply. These do not include their emission. Emissions of these gasses related to the product shall be measured and ESCU´s listed in **[O.F.-06 Harmful Gasses]** shall be allocated. However, for gasses that have been extracted from the atmosphere or have been collected as a by-product of combustion processes that already obtained their ESCU´s, no extra emission-ESCU´s need to be allocated.

12.4.1.1.6 Calculation of ESCU's for emission of Type A (gas) pollution.

All emissions shall be determined and converted to ESCU's according to above sections.
By aggregation, the total ESCU score is obtained for direct and indirect emissions of gasses listed in **[O.F.-06 Harmful Gasses].** However, more case specific price factors may be allocated instead following the criteria in section 12.2.15.
The total ESCU score is allocated per unit of product as described in section 12.2.5. If the organization sells more than one product, for emissions that are directly related to the product, the ESCU´s are directly allocated to the product, but for emissions caused by more general purposes, ESCU's are allocated using the same proportional allocation as the organization uses for indirect cost allocations.

12.4.1.1.7 Documentation of ESCU's for emitted Type A (gas) pollution.

The organization shall, where applicable, keep a list **[Gate to Gate - Pollution A]** with the quantities of gasses that are emitted or indirectly caused and the associated ESCU´s per kg. of product or per piece.

12.4.1.2 Type B pollution: emissions of hazardous agri-chemicals. (SDG's 2,3,13,14,15)

This section only applies to agricultural organizations. Considered is pollution by nutrients or pesticides, of which the pollution quantity cannot be easily measured. Before considering emissions as type B pollution, the organization shall investigate if they are measurable and in that case consider the emissions as either type A pollution (see section 12.4.1.1), or C pollution, (see section 12.4.1.3). Nutrients such as nitrogen and phosphates are for instance measurable by calculation of amount added as fertilizer minus the amount in the sold produce (accounting for the involved chemical conversions). However, it may be unknown how these emissions are divided between air, soil and water systems.

Purchased materials shall be assessed and ESCU's allocated like normal purchased materials for their upstream life cycle ESCU's. Nutrients are an inherent requirement for agriculture, but shall be managed properly in order to prevent pollution of water- and air systems, land degradation and eutrophication. (Land degradation is covered in section 12.4.4). If the possibility exists that nutrients pollute open water, ground water systems or air, the yearly quantity of leaking nutrients shall be determined/estimated by a therefore accredited body and the quantity considered as type C pollution.

Harmful pesticides need to be avoided, but a farmer also has the responsibility to prevent large scale pests endangering food supply, which sometimes justifies the use of pesticides. The responsible organization complies with the principles of IPM (integrated pest management) as described in standards listed in **[O.F.-19 Approved Standards]**. But even with a IPM certificate, ESCU's are allocated for pollution with agri-chemicals. In addition, ESCU's are allocated for the reduced biodiversity, as described in sections 12.4.3 and 12.4.4.

12.4.1.2.1 Calculation of ESCU's for type B pollution.

For type B pollution the ESCU's for total purchased quantities of all categories of hazardous agri-chemicals listed in **[O.F.-14 Pollution Substances]** or **[O.F. 03 Default Agricultural Product ESCU Values]** (both files shall be searched) **shall** be allocated per kg. of product, reduced by a reducing multiplication factor (RMF), determined in one of the following ways**.**

1. If the organization has certificates, listed in **[O.F.-19 Approved Standards]** for this purpose, that cover the complete operation relating to the product, no ESCU's are allocated.
2. If the organization has no such relevant accredited certificate, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of type B pollution risks, resulting in a reducing multiplication factor (RMF). ESCU's shall be allocated for the full purchased quantity of hazardous chemicals, multiplied with the reducing calculation factor.
   At least initially and thereafter every 4 years this governance assessment shall be executed by a therefore accredited certification body.
   Note that **[O.F.-23 Governance Level Scoring Model]** contains criteria to measure emissions, and if the emissions become measurable, the relevant emission becomes type C pollution.

However, the organization may demonstrate its own "cost distance to perfect governance" on type B pollution risks instead, following the criteria of section 12.2.15, e.g. by means of a concrete investment proposal or calculations, made or verified by an independent qualified expert, and allocate these ESCU's per kg. of product or piece instead.

12.4.1.2.2 Documentation of ESCU's for type B pollution.

The organization shall, where applicable, add its measurable quantities of polluting materials to the list of type C pollution (see section 12.4.1.3), and keep a list **[Gate to Gate - Pollution B]** of the

purchased quantities of less concretely measurable polluting materials, and the associated ESCU's per kg. of product or per piece, determined according to the rules described for type B pollution.

12.4.1.3 Type C pollution: quantitatively measurable emissions of harmful substances to soil-, water- systems or air:

Agricultural: Pollution with pesticides are only considered type C pollution if independent sampling and measurements can be demonstrated. (Otherwise they must be considered type B).

1. The quantity of pesticides, left in the soil after one year (even when not active), actually measured or calculated from applied quantities and the worst case half-life, described in the NPIC factsheets (http://npic.orst.edu/factsheets/archive/index.html) or similar database.
2. The full quantity of pesticides and their harmful degradation substances, leached into water systems or evaporated in the air, which shall be sampled and analyzed at a worst case moment (e.g. considering rain and the period after application).
3. The full quantity of pesticides leaving the farm on produce or waste, which shall be sampled and measured. Excepted are quantities of which harmless degradation or disposal resulting in harmless chemicals before reaching consumers and within one year can be demonstrated.

Agricultural and Non-agricultural:

- COD in water systems.
- Acidifying or alkalizing agents into soil or water systems.
- Organic solvents, mineral oils and other not accumulating eco- or human toxic substances.
- Risk DNA material: Use of organisms with genetically modified DNA without solid, published and independent evidence that this DNA, set loose in nature, may supersede or damage other organisms or without effective control by an international body of supervision. If more than 1% of the DNA of a material consists of risk DNA, the complete material and lot is considered 'risk DNA material'. Legally permitted risk modified DNA is excepted if it is clearly declared on all packaging or at all sales locations.
- Heavy metals, POP´s and in plants or animals accumulating pollutants.
- Antibiotics, hormones, pharmaceutical products and other not previously mentioned human-toxic or eco-toxic substances. Included shall be residual hazardous chemicals present in sold product (e.g. meat, diary), unless it can be demonstrated that residues of these chemicals are below the lowest maximum levels allowed by all countries in the downstream supply chain of the product. Included shall also be any quantities used on animals that are not diseased (exception: vaccines).
- Unsterilized animal material (including manure) from a human or animal that has been treated with antibiotics until XX days after the last administration or until absence of resistant microorganisms and antibiotics is demonstrated. (XX = 7 days for eggs and milk, 28 days for meat, fat and animal-waste products and 500 degreedays (see definitions) for fishproducts
- Radioactive materials with radiation higher than the toughest legal standard of all downstream countries.
- Any dumping of solid materials (e.g. plastics, metals, excluding naturally occurring materials like sand and natural organic materials), including micro-particles in water or soil systems, other than in governmentally approved landfills (see section 12.4.5).

12.4.1.3.1 Calculation of ESCU's for type C pollution. (SDG's 2,3,13,14,15)
[O.F.-14 Pollution Substances] and **[O.F. 03 Default Agricultural Product ESCU Values]** (for nutrients and pesticides) list the ESCU´s to be allocated per kg. pollutant for all categories of emitted hazardous chemicals.
ESCU's shall be allocated for all purchased quantities of hazardous, extracted or generated chemicals, listed **[O.F.-14 Pollution Substances]** and **[O.F. 03 Default Agricultural Product ESCU Values],** for which no emission free destination can be demonstrated, unless otherwise described in section

12.4.1.3. The quantities of process-generated hazardous chemicals listed **[O.F.-14 Pollution Substances]** and **[O.F. 03 Default Agricultural Product ESCU Values]** shall be calculated based on an analysis by a therefore accredited body. For all quantities for which no emission free destination can be demonstrated, ESCU's shall be allocated.
Chemicals may end up in the product and may become pollutants at unsustainable disposal of the product. The actual practice of product disposal shall be measured per country of use and the product embedded quantity for which no emission free disposal can be demonstrated shall be considered polluting chemicals. The criteria on "sustainable disposal" are described and ESCU's allocated for this aspect in section 12.6.1.
However, more case specific price factors may be allocated instead following the criteria in section 12.2.15.

12.4.1.3.2 Documentation of ESCU's for type C pollution.

The organization shall, where applicable, keep a list **[Gate to Gate - Pollution C]** of the quantities of polluting materials that it willingly or unwillingly releases into the environment, and the associated ESCU's per kg. of product or per piece.

12.4.1.4 Type D pollution: thermal water pollution. (SDG 14)

The responsible organization that changes the temperature of water systems is able to demonstrate to have investigated the consequences of this temperature change, other than water evaporation, to the environment and the local population. The following industry sectors/activities need to calculate ESCU's for thermal pollution: Power plants and other plants with large cooling facilities, sewage effluent plants, use of deforested land, cities, barrier lakes.
If the organization cannot demonstrate absence of negative or persistent consequences of the temperature change to the environment or humans at or downstream the location, ESCU's shall be allocated. **[O.F.-14 Pollution Substances]** includes the ESCU's to be allocated per kg. water per degree centigrade. Water evaporation is covered in section 12.4.2.1.1. Temperature changes lower than 1^{o} C at 1 km. from the heating activities are exempted.

12.4.1.4.1 Calculation of ESCU's for type D pollution.

[O.F.-14 Pollution Substances] lists the ESCU's to be allocated for harmful heating of a water system. The organization may demonstrate its own "cost distance to no temperature change, e.g. by means of a concrete investment proposal or cost calculation, made or verified by an independent qualified expert on the relative aspect and finance, and allocate these ESCU's per kg. of product or piece instead.

12.4.1.4.2 Documentation of ESCU's for type D pollution.

The organization shall, where applicable, keep a list **[Gate to Gate - Pollution D]** of according to the rules of this section determined ESCU's for heating pollution per kg. of product or per piece.

12.4.1.5 Type E pollution: potential incident caused emissions.

The responsible organization can demonstrate a worst case assessment, executed by qualified persons, of potential pollution at potential incidents, related to facilities, activities and materials related to the product. Fire, explosions, implosions, natural disasters occurring in the region, human failures, technical failures, collapsing of buildings and constructions, traffic accidents, power breakdowns and infections at farms must be included (not exclusively).

12.4.1.5.1 Calculation of ESCU's for type E pollution. (SDG's 14,15)

The organization shall determine the maximum quantities of harmful substances listed in **[O.F.-14 Pollution Substances]** that could potentially be emitted into the air, water or soil systems by incidents, at least including the highest potentially present quantities on its premises of

hazardous chemicals listed in **[O.F.-14 Pollution Substances]**. For the fire risk, quantities of chemicals developing at "normal household fires" may be excluded.
Included shall be potential reaction chemicals in organization holding and processing several chemicals. If related to the product, harmful chemicals are purchased, processed or generated, the following applies:

1. If the organization has relevant accredited certificates that cover the complete operation relating to the product, or if the organization can demonstrate that no hazardous incidents are known for the industry sector, or that hazardous chemicals are never present in organizations' premises (including asbestos) and transport means in larger than "household quantities", no ESCU's are allocated.
2. Without a demonstration as indicated in point 1, the organization's governance level shall be determined using the **[O.F.-23 Governance Level Scoring Model]**, resulting in a reducing multiplication factor (RMF). ESCU's shall be allocated equal to the maximum, reduced by multiplication by the reducing calculation factor. At least initially and thereafter every 4 years this governance assessment shall be executed by a therefore accredited certification body.

However, the organization may demonstrate its own "cost distance to perfect governance and consequential actions" on type E pollution risks instead, following the criteria of section 12.2.15, e.g. by means of a concrete investment proposal or calculations, made or verified by an independent qualified expert, and allocate these ESCU's per kg. of product or piece instead.
ESCU's shall be calculated and allocated per kg. of product of per piece**.**

12.4.1.5.2 Documentation of ESCU's for type E pollution.

The organization shall, where applicable keep a list **[Gate to Gate - Pollution E]** of maximum possible quantities of incidental emission of polluting materials, and the associated ESCU's per kg. of product or per piece, determined according to the rules described for type E pollution.

12.4.1.6 End Calculation of ESCU's for pollution.

The organization shall keep a list **[Gate to Gate - Pollution],** with the sum of **[Gate to Gate - Pollution A], [Gate to Gate - Pollution B], [Gate to Gate - Pollution C], [Gate to Gate - Pollution D], [Gate to Gate - Pollution E]**.

12.4.2 Depletion of Scarce Resources.

Considered Sustainable Development Goals: **2,7,12,15**

If the ESCU's for depletion of a purchased scarce resource are already included in the ESCU score of the purchased material and applied according to the criteria of section 12.3, the ESCU's of this section need not to be allocated again.

12.4.2.1 Scarce Resources. (SDG's 2,7,11,12)

The concept of scarcity is negotiable. Scarcity may depend on available technology and may therefore be temporary. **[O.F.-07 Scarce Resources]** lists the resources which currently shall be considered scarce.
Considered are naturally occurring materials like fresh water, fossil energy resources, scarce minerals and natural plant- and animal species at land or sea, that are newly extracted (virgin). If a material consists of a blend of virgin material and recycled material, the ESCU calculations shall be based on last years' average percentage of virgin material used for the product.
ESCU's shall be allocated for every vergin quantity of the scarce resource. Without a supplier demonstrated (year average) percentage of recycled material, the full quantity shall be considered virgin. Without supplier data the exact amount of scarce materials listed in **[O.F.-07 Scarce Resources],** present in purchased materials or used for the production of the materials and thereafter not recycled shall be determined by a therefore accredited body. For certified materials

these data shall be provided both in ESCU's and weight units, for not certified materials in weight units only.

12.4.2.1.1 Calculation of ESCU's for scarce resources.

For every kg. of scarce resources that are listed in **[O.F.-07 Scarce Resources]**, not already included in purchase-ESCU's obtained from suppliers, the associated ESCU's that it uses as raw material directly are allocated, increased with the materials and associated ESCU´s per kg. or per piece listed in **[O.F.-07 Scarce Resources]**, which come as a component in purchased composite materials. If the organization consumes scarce resources listed in **[O.F.-07 Scarce Resources],** occurring on the SCID list (see section 11.4) for other reasons than as a component, ESCU´s shall be allocated to the organization's products in the ratio of turnover in weight. However, more case specific price factors may be allocated instead following the criteria in section 12.2.15.

12.4.2.2 **Fresh Water** (SDG 3,6)

If the water is purchased from a supplier and occurs on the SCID list (see section 11.4.3), the ESCU's shall be requested from the supplier. For organization's own processes involved in the water supply, such as pumping, transport, purification, desalinization and storage, the ESCU's shall be calculated according to the criteria of this standard.
The organization shall measure the quantity of fresh water used or lost in relation to the product. The following categories of water losses shall be considered:
1. Biochemically or chemically contaminated wastewater; 2. Fresh water incorporated into product; 3. Evaporative loss and 4. Loss into the soil. At the issue of evaporation, the increased evaporation by changing the surface or flow rate of surface water shall be included. All water losses shall be determined, initially and at relevant process changes, by a therefore accredited body. For salt- and brackish water that has been desalinated or is desalinated by the organization, only the ESCU's for the involved processes are allocated and not for depletion. Also water that is returned to its original source unchanged (for temperature rise, see section 12.4.1.4), is not considered scarce or depleted. (groundwater to surface water for irrigation is not considered returning to its source unless it can be demonstrated that it returns to the same water table that it was taken from).

12.4.2.2.1 Calculation of ESCU's for use of scarce water.

The organization shall determine:

1. The quantity **(Q)** of lost water as defined above.
2. The location, its elevation **(EL)** in meters and its shortest distance **(DL)** in kilometers to the sea.
3. The water scarcity factor **(BWD)** in the Aqueduct Atlas (WRI, 2019; see section 14), specifically the "Baseline Water Depletion (BWD)".

The ESCU's for water depletion are calculated as:
ESCU's = Max{(BWD – 0,1) x Q x (WDC + CT),0}
WDC is the sea**w**ater **d**esalination **c**osts with renewable energy.
CT is the **c**osts of **t**ransport (pumping) the water from sea to the location with renewable energy, which can be calculated, using EL and DL and the data for horizontal and vertical transport in [O.F.-07 Scarce Resources – fields L29 and L30].
WDC = MIN(D_WNR + DPC x CSP), where:
D_WNR is the ESCU's for desalination with not renewable energy of 1 m3 of seawater and can be found in O.F.-07 Scarce Resources - field L23.
DPC is the **R**equired **P**ower **C**onsumption for 1 m3 of desalinated water and can be found in O.F.-07 Scarce Resources - field K25.
CSEP is the country specific ESCU allocation for 1 kwH of power and can be found in O.F.-05 Energy resources – column field C.

The country specific WDC in O.F.-07, column Q, is calculated based on the country specific average energy mix; If self-use of renewable energy can be demonstrated, WDC can be calculated with the data in O.F.-07, columns K and L.
The formula also shows that If BWD <= than 0,1, the water is not considered scarce and the ESCU's zero.

For calculation of the upstream supply chain water depletion at unknown locations, the following procedure can be followed:

- Determine the worst case water use in the upstream supply chain, using LCI's, water footprint databases or other reliable sources.
- Determine the countries together making 80% of the trade in the studied material to the country of the organization, using LCI's or IO databases like Exiobase and GTAB.
  Make above calculations for these countries, using **[O.F.-07 Scarce Resources – column Q]** and the distance from the most likely production location to the sea.

If the organization may demonstrate more specific values for above variables or alternative preventative costs, e.g. by investments for mitigation of water use, it may correct the ESCU's with its demonstrable specific values (see section 12.2.2).

ESCU's shall be calculated per kg. of product or per piece for the use of scarce water.
In the cases of unknown locations of water use, no reducing correction can be applied for the degree of water scarcity.

12.4.2.2.2 Documentation of ESCU's for use of scarce resources.

The organization shall, where applicable, keep a list **[Gate to Gate - Depletion]** of the quantities of the in **[O.F.-07 scarce resources],** per kg. of product or piece**.**

12.4.3 Land Occupation.

Considered Sustainable Development Goals: **2,7,11,12**

Most of global land surface is either covered by nature or occupied for agricultural use, both of which provide many vital services. Use for energy, urban development and infrastructure and industry increase pressure on natural ecosystems and food. No further valuable ecosystems should be lost. Sustainable land-use is an balance between maintaining optimal soil- and biodiversity conditions and maximum land use efficiency. Therefore, ESCU's are allocated for both land occupation (section 12.4.3) and for land degradation (section 12.4.4).
The responsible organization uses its land both minimizing land degradation and biodiversity loss, and efficiently in order to save ecosystems. Because world's major land use is for agricultural purposes, marginal preventative cost calculations are based on agricultural considerations. Land degradation and biodiversity are considered in section 12.4.4, the responsibility for efficiency in this section. Because fertility and climate vary greatly, the maximum yield of food crops is location dependent. The ESCU score for crops depends on the efficiency that the relative land area is used.

12.4.3.1 Calculation of ESCU's for land occupation.

The ESCU score for land occupation shall be divided over the different products produced at the land proportionally to their financial turnover and converted to ESCU´s per kg. of product or per piece. A "piece of land" is defined as all land, measured as horizontal projection, occupied by the organization and/or used for the product. Occupied but not yielding parts of land shall be divided over used parts of land, proportionally to the surfaces used for the different products. Unyielding parts with low biodiversity have a negative contribution (more ESCU's) and with high biodiversity a positive contribution (less ESCU's).

12.4.3.2 Calculation of ESCU's for agricultural or forestry purposes.

1. For land use on occupied land that was and is demonstrably maintained at a minimum of 80% of its natural biodiversity (see section 12.4.4), no ESCU's are allocated.
2. **FAOSTAT** (http://www.fao.org/faostat/en/#data/QC) provides the average yield/ha by country **(CY)** for world's most common crops. If FAOSTAT data are lacking, CY may be derived from other reliable databases. In absence of any reliable data, those on the best related crop, listed in FAOSTAT shall be used (for fodder see below). Demonstrable reliable 5-year average yield data with higher granularity on the specific region, may be used. Note that the product must be defined in a wide way (e.g. "wheat" and not "biological wheat" and also "region" must be defined in a wide way (e.g. to political/geological/climatological character).
   The ESCU score per hectare is calculated as follows:
   The yield factor **YF = AY/CY**, where **CY** is defined above and **AY** is the actual 5-year average yield/ha on the piece of land of product that was actually sold. If the yield or location is unknown, YF is assumed 0,5.
   Zero or low yields in periods of green manure or fallow, shall be included in the average.
   If cash-crops are grown on a piece of land in rotation with other cash-crops, the yield factor shall be determined for all involved products and the financial turnover-weighted average taken as AY for all involved crops.
   If 0,9 < YF >1,1, no ESCU's are allocated. For yield factors outside this range both positive ESCU's (damage) or negative ESCU's (bonus) shall be allocated, using the formula: **ESCU = (1-YF) x the Price Factor for land occupation**, listed in **[O.F.-09 Land Use]**.
3. For non-food wood and other tree-derived products, the same rules apply as above. However, with a biodiversity relevant certificate listed in **[O.F.-19 Approved Standards]** no ESCU's are allocated.
4. For livestock and -derived products the following applies:
   1. For the land occupied by livestock, fed by grass and feedstuffs from the farm, ESCU's shall be directly allocated per unit of product, calculated using the ESCU's in **[O.F.-09 Land Use].** Additionally, for purchased feedstuffs or fodder on the SCID list (section 11.4), the upstream ESCU's shall be required from the suppliers (section 12.3), where also the ESCU's the occupied land for the growing of the feedstuffs are included.
5. If the product is not agricultural **and** the turnover per hectare of the organization is greater than € 10.000 and the organization owns or uses less than 10 hectares of land, no ESCU's for land occupation need to be allocated. Otherwise:
   For crops for other purposes (fiber, energy, pharmacy) and for non-agricultural purposes the full ESCU's for land occupation listed in **[O.F.-09 Land Use]** shall be allocated per unit of product.

12.4.3.3 Calculation of ESCU's for non-agricultural/forestry purposes.

For land occupation for other than agricultural purposes **[O.F.-09 Land Use]** lists the ESCU's to be allocated per hectare, which shall be converted to ESCU's per kg. or piece of product.

12.4.3.4 Documentation of ESCU's for land occupation.

The organization shall, where applicable, keep a list **[Gate to Gate - Land]** of the land use in hectares, the crops it delivers, the space intensity per crop, the used space per crop in hectares and the allocated ESCU´s per kg. product or per piece. For the aspect of land occupation, no more specific price factors may be used.

12.4.4 Biodiversity and Nature; Degradation of Land or water ecosystem

Considered Sustainable Development Goals: **2,6,12,14**

12.4.4.1 Types of impact on land or water ecosystems, biodiversity and nature. (SDG's 2,6,12,14,15)

Considered are:

- Reduction or degradation of the area of natural forest, wetland, corals, kelp or seagrass, or other valuable ecosystems after 16-02-2005, unless it can be demonstrated that the area is recuperating and effectively protected as locally natural ecosystem.
  ESCU's for degradation of ecosystems shall be allocated for:
  - All kinds of wood culture and other produce from forestry without a certificate listed in **[O.F.-19 Approved Standards].**
  - Agricultural or non-agricultural activities that decrease or risk future crop yields (e.g. erosion and soil deterioration, exposing soil slopes, soil salinization, increasing eco-toxicity, changing water tables, sand depositions, roads and other impervious services, overgrazing, removing vegetation that protects against wind and evaporation), other than already covered in section 12.4.1 (pollution).
  - Activities in forests, wetlands, mountainous areas with erosion risk, on sea bottom or near corals, in polar regions, or other valuable ecosystems without demonstrable monitoring of biodiversity and the impact of the activities of the organization by qualified persons/bodies, or without a governance program for effective preservation of the ecosystem.
  - Property, use or management of forest or other valuable ecosystems without effective protection against fire, foray and other damage by third parties.
  - Fishing practices without a certification listed in **[O.F.-19 Approved Standards],** or other marine activities damaging aquatic bottoms or -ecosystems.
  - All types of mining, build areas, construction, roads, railways, industry, recreation. However manmade recreational areas are considered nature provided that they provide locally natural biodiversity and effective and long term protection can be demonstrated.

12.4.4.2 Calculation of ESCU's for loss of biodiversity or nature and degradation of land or water ecosystems.

[O.F.-09 Land Use] list the ESCU's per hectare by Biotope (land or sea).
However, more case specific price factors may be allocated instead following the criteria in section 12.2.15, but only by means of demonstration of one of following methods:

1. Determine the actual fraction of the number of vascular plants, relative to the locally natural ecosystem (for the method, see (Vogtländer, Lindeijer, Witte, & Hendriks, 2004)), resulting in the biodiversity factor, leading to ESCU's by multiplication of the factor by the ESCU's for 0% biodiversity, listed in **[O.F.-09 Land Use]**.
2. Actual costs of methods of (partly) restauration of the area back to the original ecosystem, followed by calculation of the expected new biodiversity factor and further calculation of ESCU's using the method described in **[O.F.-09 Land Use]**.

12.4.4.3 Documentation of ESCU's for biodiversity or nature and degradation of land or water ecosystem.

The organization shall, where applicable, keep a list **[Gate to Gate - Biodiversity]** of all areas and their sizes in hectares on land or at sea which it uses for any activity in relation to the product. This list shall demonstrate if before 16-02-2005 the area was forest, wetland, coral or other valuable ecosystem, and which harmful activities listed in **section 12.4.4.1** are being practiced. The associated ESCU's are allocated as surface x ESCU/hectare. The total of ESCU's score is thereafter converted into ESCU's per kg. product or per piece.

12.4.5 Waste and Disposal from production.

Considered Sustainable Development Goals: **9,12**

12.4.5.1 Waste and waste processors.

Considered are all materials that are disposed of from organization's operations, as consequence of the processes or other activities related to the product. Also included are disposed materials that are used in relation to the product outside of organization's premises (e.g. transport means, construction

materials, cables, rented materials or leased equipment). Included are also produced products that were not sold, due to overproduction or lack of compliance with customer's requirements.
If the organization itself is not legally responsible for the waste, the legally responsible organization or person shall be considered a supplier, required to communicate its ESCU's. If that supplier is unknown or if disputed, the organization shall calculate disposal- ESCU's as if self-responsible. The ESCU's for disposal of capital goods shall be allocated proportionally to organization's financial cost allocations for using these goods.

In this section **"sustainable disposal" is defined as "disposal of materials resulting in functional reuse of the material or all its components". Landfill of any type is not considered sustainable; incineration with energy recovery is considered partly sustainable (for the recovered energy).** No ESCU's are allocated here for resource depletion because these where already allocated in section 12.4.2. (Disposal due to the use of the product is considered in section 12.5.3, and the end-of-life disposal in section 12.6.).

The following rules and exceptions apply:
1. All materials, purchased, extracted, generated or existing from processes, in relation to the product, that do not become (part of) the product, are considered "waste".
2. If waste relates to several products in unknown quantities, the quantities allocated to the product shall be proportional to the products' financial turnover.
3. Litter on land or in water systems and all quantities of waste for which the organization cannot demonstrate registered disposal, is considered both **pollution** for all quantities of hazardous components listed in **[O.F.-14 Pollution Substances],** covered by section 12.4.1, and **waste** for the remainder.
4. Disposed materials, transported over country borders to other locations belonging to the organization, are considered waste at the origin location of the waste, unless it can be demonstrated that the materials are returned to an upstream certified supply chain actor, and/or remain traceable until recycled into a marketable new material or product.
5. Waste, returned to the organization from the downstream supply chain is defined as "waste", unless recycling can be demonstrated.

12.4.5.1.1 Calculation of ESCU's for waste.

Waste is considered a product with an either positive, zero, or negative value. All ESCU's allocated to the product, including internal waste/recycling processes and materials, shall be calculated according to the criteria of this standard and divided between product and waste-product proportionally to their financial turnovers (see section 12.2.8).

Internal reuse or recycling.

The proportionally calculated ESCU's for other aspects shall be divided between the original and destination-products exactly according to the organization's financial allocation methods of indirect costs. The reuse and recycling costs are simply processes belonging to the production process. No ESCU's for disposal are allocated.

External recycling under internal responsibility.

ESCU's shall be calculated as for internal recycling and added shall be the ESCU's for the external waste/recycling processes and materials, obtained from the external recycling body. No ESCU's for disposal are allocated.

Recycling under external responsibility.

If the waste is recycled into a certified product under responsibility of an external body, as part of a negotiation process, the proportionally determined waste-part of the allocated ESCU's may be transferred to the external body, keeping the reduced ESCU's for the original product. The ESCU's for the recycling processes and materials are allocated to the external bodies' destination-product. Such negotiation process can only occur if both origin and destination product are certified.

If no such certified external product(s) can be demonstrated as recycling destination, but the ESCU's for the recycling processes and materials are demonstrable (e.g. by means of reliable data on standardized processes and traceability of the waste), all known ESCU's for demonstrably recycled quantities, and for the remainder the default values listed in **[O.F.-15 Waste Categories]**, are allocated to the original product.

If no ESCU's for recycling processes are available, the default ESCU's listed in **[O.F.-15 Waste Categories]** shall be allocated for the complete quantity of disposed materials.

Waste that is incinerated with energy recovery.

If ESCU's are provided by a certified incineration body, they shall be allocated. Without demonstrable KwH's or ESCU's, the ESCU's listed in **[O.F.-15 Waste Categories]** shall be allocated (positive or negative).

Waste, incinerated without energy recovery, or for landfill, or destination unknown.

The full default ESCU's listed in **[O.F.-15 Waste Categories]** shall be allocated.

Pollution causing waste

The responsible organization can demonstrate the quantities of hazardous chemicals in its waste. For natural organic materials only quantities higher than naturally occurring in average agricultural soil are considered, measured at the highest on-site stage concentration.
Quantities of waste for which no sustainable disposal can be demonstrated and containing hazardous chemicals shall be considered pollution for the full quantity of embedded hazardous chemicals, listed in **[O.F.-14 Pollution Substances]** and allocated with extra ESCU's according to section 12.4.1.
Quantities of organic material for which no sustainable disposal or composting can be demonstrated are considered to be "landfill without methane" recovery and are allocated ESCU's for methane production, listed in **[O.F.-14 Pollution Substances].**
For quantities of waste disposed of in unseparated state of different materials, the complete quantity shall be considered consisting of the ESCU requiring component, unless it can be demonstrated that either separation is not necessary, or separation is included in the price obtained or paid for the waste.

For the aspect of waste, more case specific price factors may be allocated instead following the criteria in section 12.2.15.

Note, that ESCU's can be reduced by using waste materials as raw materials (see section 12.3.9)

12.4.5.1.2 Documentation of ESCU's for waste.

The organization shall, where applicable, keep a list **[Gate to Gate - Waste]** of the quantities of all waste materials that it produces, its first and final destination (a functional reuse destination is considered final) and the method of processing (the organization requires from its buyers of waste proof of the waste processing method) and the associated ESCU's per kg. of product or per piece.

12.4.6 Economic Responsibility.

Considered Sustainable Development Goals: **1,12,16,17**

The responsible organization aims for sustainability and avoids sudden changes that may damage the environment or people. It aims for transparency of the supply chain and money flows and considers itself co-responsible for the wellbeing of its stakeholders and especially its employees, customers, consumers and suppliers.

12.4.6.1 Fair Transactions. (SDG's 1,16)

The responsible organization does not misuse unequal bargaining power against a low developed supplier (LDS) (see definition in section 5), and does not pay prices for purchased products that do not enable a LDS and its workers to gain a fair minimum wage. If workers are hired though an intermediate, compliance by this intermediate shall be demonstrated, preferably by its certification.
The responsible organization has made an analysis of the "typical income" (income per worked hour as if the LDS would deliver the one product only, and under reasonable labor conditions as described

in section 12.4.8). At systematic use of LDS's, such analysis shall be based on a reliable multi-LDS study. Special responsibility exists if the organization takes more than 30% of the yearly turnover of a LDS.

12.4.6.1.1 Calculations of ESCU's for unfair transactions.

The following cases are distinguished:

1. If the organization can demonstrate an analysis made or verified by a therefore accredited body, of the typical income per hour of the LDS, pays no less than the calculated fair price, enabling fair minimum wage payment as listed in **[O.F.-04 country statements]**, and has at least 2- year purchasing contracts with the LDS if it takes more than 30% of his yearly turnover, no ESCU's are allocated. The analysis may be made for a group of LDS's or a standard type of work and must be based on a situation without forced work or exaggerated performance.
2. If the organization can demonstrate such analysis of the typical income of the LDS, but does not pay the fair price for all products to all suppliers, the price difference required to pay all workers of the supplier the fair minimum wage, as listed in **[O.F.-04 country statements]** shall be allocated as ESCU's. If the organization does not have at least 2-year purchasing contracts with suppliers of which it takes more than 30% of his total turnover, the extra ESCU's listed in **[O.F.-16 Labor Aspects]** are allocated.
3. If the organization cannot demonstrate an analysis of the typical income of a LDS, or purchases goods that typically have the risk of being underpaid, in a manner that it has no direct influence on the price paid to the supplier (e.g. via the stock market or via traders that do not provide ESCU's), the ESCU's, listed in **[O.F.-16 Labor Aspects]** for unknown underpayment shall be allocated, which ESCU's are based on a worst case situation.

12.4.6.2 Transparency. (SDG 16)

The responsible organizations in the supply chain (not-end-producers) communicate the 10 aggregated category-ESCU's and the total ESCU's through the supply chain.
The responsible **end-producer** fully communicates to the consumer/user, before the transaction, and in an understandable, legible, easily accessible and unambiguous way. If not all information can be displayed on the packaging or near the product's sales location, at least the customer shall be informed about a website that does contain this information, that must be easily accessible and in all languages of countries where the product is sold. Information considering the use phase shall be accessible during the full lifetime of the product. The following aspects about the product and its delivery need to be communicated, where applicable based on normal use (see section 11.2):

1. Directly and indirectly to the product related costs, such as the price, taxes, delivery costs, costs and terms of credits, installation costs, replacements to be expected due to wearing materials and of maintenance and energy use, disposal costs and the costs of required or advised insurances or subscriptions, taxes and tied sales with other products, contract- and cancellation periods. All these are based on the defined normal use and the year/moment of sales. For case specific costs (e.g. installation costs), averages may be used.
2. All legal communication requirements, all other terms of delivery or conditions for use of the product, and all addresses for redress, return and complaints.
3. The expected product life at normal use. The expected product life is not necessarily equal to the warranty period. "Dependence on use" may be mentioned.
4. If applicable, the potential adverse effects of the use of the product to the user, the environment or other people, and the measures the user/customer may take to minimize that impact and the costs of such measures. For financial products, the risks of the product.
5. No communications by the organization contradicting the data demonstrated by ESCU's.
6. Information on the proper disposal of the product and its packaging material at end of life.

If valid for the product, information may be displayed for groups of similar products instead of for every individual product separately.
The ESCU's listed in **[O.F.-17 Economic Risks]** shall be allocated, depending on the completeness of demonstrated responsible communication, in 4 levels:

1. All responsible communication, as described in this section, can be demonstrated, both at more than 80% of the sales locations and at locations of price communications → No ESCU's are allocated.
2. All responsible communication can be demonstrated at more than 80% of the sales locations, but not elsewhere where prices are communicated → 33% of the % listed in **[O.F.-17 Economic Risks]** are allocated as ESCU's.
3. Responsible communication can be demonstrated, but they are incomplete, not clear, or at less than 80% of the sales locations → 66% of the % listed in **[O.F.-17 Economic Risks]** are allocated as ESCU's.
4. The required communication cannot be demonstrated for most sales locations → 100% of the % listed in **[O.F.-17 Economic Risks]** are allocated as ESCU's.

12.4.6.3 **Finance related criteria.** (SDG 16)

Considering the risk for the international community, investments with a too high speculative character are considered not sustainable. Special risks are considered: Financial leverage-products, speculative overvalues of investments, the structure of remuneration within the organization (covered by section 12.4.8), corruption (covered by section 12.4.9) and the level that the financial organization invests on the stock markets for own risk. A company shares responsibility in stock market related risks by the decision to be financed on the stock market.

[O.F.-17 Economic Risks] lists ESCU's to be allocated for unsustainable financial risks.

1. For investments in deposits or bonds of states with a too low credit status.
2. For investments in companies involved in fossil energy or -energy resources, unless it can be demonstrated that these are transforming to renewable energy with a speed of at least 3%/year. (percentage kept at a defined starting moment).
3. For investments in states or financial companies that cannot demonstrate responsibility in the above 3 points.
4. For speculative investments in agricultural, fish, forest, or food resources or other resources needed for basic needs, other than used by the organization itself.
5. For investments in land or waters used by small or subsistence farmers, in living areas or houses of the poor, or other resources that may impact the primary needs of people.
6. For investment in derivatives with leverage, unless exclusively used for protecting the company against temporal price- or currency fluctuations.
7. For investments in companies involved in weapons, bonds of countries with a corruption perceptions index < 40, or in uncertified companies not being able to demonstrate fair payment and labor conditions at an unannounced audit on these aspects.
8. For banking with organizations not complying with Basel III and by 2022 Basel IV requirements.
9. For working with financial institutions with a score in the fair finance guide (https://fairfinanceguide.org/ lower than 50% of the maximum score.
10. For extraction of money or value from acquired companies within 5 years from their acquisition.
11. For irresponsible payout ratios and for unsustainable raise of shareholders value by repurchasing shares. ("sustainable" here defined as: "not being able to regularly being repeated".
12. For loans between allied organizations against interest rates higher than Libor- or Euribor + 1%.
13. For remunerations to employees or other people with shares or financial leverage products that can be cashed within 5 years.

Involved are risks and ESCU's at organizational level and shall be calculated as the yearly total amounts. These ESCU's shall be allocated to the products of the organization, proportionally to their financial turnovers.

12.4.6.4 **Tax evasion.** (SDG 16)

Translocation of profits to allied companies or countries with tax friendly regimes or by other constructions is not considered fair and transparent management.
The responsible corporate tax is, according to this standard, based on profit allocations between locations of an international corporation, proportional to the number of workhours in the different countries related to the product.
The ESCU's that shall be allocated are equal to the difference between the perfectly responsible tax and the paid tax.
Contrary to most other aspects, for the aspect of tax evasion, the profit, investments and financial status and conduct of the corporate company is considered instead of that of the juridical unit.
ESCU's are allocated to the product or the product's turnover-share of the corporate organization.
The average of 5 year organization's gross profits and taxes shall be taken and calculated to the product based on its last-years share in the turnover.

12.4.6.5 **Sustainability taxes and subsidies**

Sustainability taxes and subsidies or other financial governmental assistance are the responsibility of governments and may be very useful for sustainability, but they confuse the monetary Oiconomy system. Therefore, ESCU's shall be allocated for received subsidies for sustainability aspects as discussed and, in section 12.7, paid taxes may be allocated as negative (Bonus) ESCU's. Subsidies and taxes relating to several products, are divided proportionally to their turnover. **[O.F.-17 Economic Risks]** mentions the ESCU's to be allocated. If the organization produces more products the ESCU's are allocated proportionally to their financial turnovers.

12.4.6.5.1 **Calculation of ESCU's for economic responsibility.**

All ESCU's as described above in the various aspects of economic responsibility are added and the total allocated to the product per kg. or per piece.
ESCU's in % of turnover or in % of investment or equity are converted to ESCU's per kg. or per piece of product proportionally to their turnover.
The total ESCU's to be allocated for economic irresponsibility are maximized to 20% of the product's sales price.

12.4.6.5.2 **Documentation of ESCU's for economic responsibility.**

The organization shall keep a list **[Gate to Gate - Economic]** containing:

1. The average prices per year of all purchased products and services, (if available) the analyses per country of origin the typical income of the low developed suppliers of materials and the belonging ESCU's per kg. of product.
2. The allocated ESCU's for economic responsibility and the specific criteria reasons for their allocation.
3.

12.4.7 Public Health and Safety Risks.

Considered Sustainable Development Goals: **3**

12.4.7.1 **Risks.**

Considered in this section are health- and safety risks of production, storage and transport to third parties, of waste flows and risks of limiting access to clean and fresh water or other vital necessities. However, pollution related risks are considered in section 12.4.1, occupational health and safety risks in section 12.4.8., and risks due to the use of the product in section 12.5.2.
(Public health risks, caused by contamination of water, air or soil are covered in section 12.4.1 of standard and only need attention under this section considering incidents in the direct surroundings of the premises, equipment or transport means related to the product).

The responsible organization can demonstrate a risk assessment, executed by qualified persons, including worst case scenarios, and an estimate of how many external stakeholders (facility surroundings, customers, transporters, cleaners, waste handlers or other third parties) may be harmed or diseased by organization's activities, related to the product. Included shall be (not exclusively) potential indirect and future impacts such as the creation of antibiotic resistant organisms by the use of antibiotics and the potential transfer of pathogens from animals to humans, impacts from incidents, traffic and transport of dangerous goods, criminal misuse of information technology and software, and databases. Included shall be the risk to third parties of accidental release of quantities of chemicals listed on the List of Regulated Substances under the Risk Management Plan (RMP) Program **(https://www.epa.gov/rmp/list-regulated-substances-under-risk-management-plan-rmp-program)**.
The responsible organization applies good governance on external public health and safety aspects and actual risks depends on organization's governance level.

12.4.7.1.1 Calculation of ESCU's for Public health and Safety risks.

For health risks to third parties, ESCU's are calculated based on the marginal preventative costs per industry sector multiplied with a reducing risk factor, depending on organization's governance level. **[O.F.-10 Health Risks]** lists the marginal preventative costs for the different industry sectors. One of the following rules apply:

1. If the organization has relevant accredited certificates on external health and safety risks that cover the complete operation relating to the product, or if the organization can demonstrate not to present health risks to third parties, greater than normal households, no ESCU's are allocated.
2. Without such certificate, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of external public health risks, resulting in a reducing multiplication factor (RMF). ESCU's shall be allocated equal to the maximum, reduced by the reducing calculation factor. In high health-risk industry sectors, as indicated in **[O.F.-10 Health Risks],** at least initially and thereafter every 4 years this governance assessment shall be executed by a therefore accredited certification body.

ESCU allocations shall be made per kg. product or per piece.
However, the organization may demonstrate its own "cost distance to perfect governance" on external public health aspects instead, following the criteria of section 12.2.15, e.g. by means of a concrete investment proposal or calculations, made or verified by an independent qualified expert, and allocate these ESCU's per kg. of product or piece instead.

Note that often the preventative measures work against both occupational and public health risks and that only the highest of these needs to be allocated (see section 12.2.13).
If the activities of the organization do not cause any external public health risk, this shall be demonstrated by the risk analyses. The ESCU scores for the different public health risks are added together and allocated per kg. product or per piece.

12.4.7.1.2 Documentation of ESCU's for Public health and Safety risks.

The organization shall keep a list **[Gate to Gate – Public Health]** demonstrating:
1 The complete risk assessment**.**
2 Maximum ESCU's calculated as in **[O.F.-10 Health Risks]** in percentage of the financial turnover.

3 The governance level depending reducing risk factor and the ESCU score per kg. or per piece.

12.4.8 Labor.

Considered Sustainable Development Goals: **1,3,4,5,8,10**

12.4.8.1 **Wages.** (SDG's 1,8)

This standard distinguishes three types of unfair remunerations: underpayment for labor (unfair wages), underpayment for purchased products (unfair transactions, covered in section 12.4.6.), and unfair remuneration inequality. This section applies to both wages paid to own personnel, wages for outsourced work and to all services that are purchased from small companies or private persons that do not pay wages to their employees themselves.

12.4.8.1.1 Calculations of ESCU's for Wages.

Payment under the fair minimum wage **(FMW)** (see definition in (Croes & Vermeulen, 2016b)). Most countries have legal minimum wages, but not all. Not all legal minimum wages are also **FMW**. If an organization produces several products, has no consistent cost allocation method or exact wage-data on individual products are not available, allocations of ESCU's for wage aspects shall be calculated proportionally to the products' added values (turnover – purchased value).

Employment Benefits (SDG's 3,4,8)

In addition to the described, **[O.F.-16 Labor Aspects]** lists the ESCU's to be allocated for:

1. **Fair Minimum Wages.**
   [O.F.-04 Country Statements] lists the gross fair minimum wages **(FMW)** per country, per year and per hour, to be gained in normal work hours (NWH), defined as: a maximum of 40 hours per week, and a maximum of 1864 days per year. For people under 21 years old the FMW is set at a percentage of the adult FMW as listed in **[O.F.-20 Child Labor]**.
   The ESCU's to be allocated are determined with the formula: **ESCU = ∑[H x Σ (FMW_p- LW_p)]**, where p is a person, FMW_p is the **hourly** fair minimum wage, and LW_p is the actual paid (lower) **hourly** wage per person doing work related to the product and **H** is the amount of hours work on the product by the person, aggregated for all underpaid persons that worked on the product.
   For foreign migrants, residents of a foreign country, ESCU's may be subtracted, equal to the difference between paid unemployment- and health insurances or other common fees in the country of their work, and the required taxes and insurance fees of the country of origin, but only if these differences can be demonstrated and are based on the highest quality level of insurances common in the involved countries of work and origin, and on the actual remuneration (minimum FMW).
2. **Fair Inequality.**
   [O.F.-16 Labor Aspects] lists the Maximum Acceptable Inequality Ratio **(MAIR)** within the organization. As only exception to the rule of this standard that all criteria apply to the juridical unit, this criterion of inequality applies to the largest conglomerate of bodies that the organization belongs to.
   The ESCU score to be allocated is the total costs required to raise all gross remunerations (based on a 40-hour work week) paid by the organization to the level of 1/MAIR of the highest gross remuneration. However, for differences within corporate organizations, the income-difference factor is multiplied with a factor [PPP correction x GNI country of location/ GNI reference country (The reference country must be equal for all bodies in the corporate organization). **[O.F.-04 Country Statements]** lists the GNI's and PPP conversion rates per country. For expatriates, the reference country may be the country of his/her nationality.
   [O.F.-16 Labor Aspects] also lists the ESCU's to be allocated.
3. **Overwork Wages.**
   For overwork (based on last full year) that is not paid a percentage over normal pay (minimum FMW), **[O.F.-16 Labor Aspects]** lists the minimum extra percentage overpay and the ESCU's to be allocated.

4. **Pension Plans.**
   Lack of provision to all personnel of shared paid pension plans for a pension of at least 60% (including governmental pension schemes) of previous pay (average pay during the last 10 work years). **[O.F.-16 Labor Aspects]** lists the maximum ESCU's to be allocated. However, because pensions were included in the FMW calculations as listed in **[O.F.-04 Country Statements]**, they may be subtracted from the fair minimum wage- ESCU's.
5. **Health Insurance.**
   Lack of provision of shared paid (at least 50% for the organization) health insurance and disability insurance to all personnel, including temporary personnel and subcontractors that do not have such insurance. The ESCU's are equal to those listed in **[O.F.-16 Labor Aspects],** minus the demonstrable paid costs for health insurances.
6. **Personal Development.**
   For lack of provision of opportunities (financial and time) for personal professional development, to all personnel, **[O.F.-16 Labor Aspects]** lists the ESCU's to be allocated. The ESCU's are equal to those listed in **[O.F.-16 Labor Aspects],** minus the demonstrable paid costs for personal development.
7. **Temporary Work.**
   For use of temporary workers longer than for 2 months, **[O.F.-16 Labor Aspects]** lists the ESCU's to be allocated. Excepted are jobs that are clearly of temporary nature (< 1 year), jobs that clearly are for training purposes, new jobs that exist no longer than 2 years, and replacement for performance reasons.
8. **Minimum employment time.**
   This standard assumes that people that are hired for short terms need one month time to find a new job after leaving the organization. The responsible organization pays the full month. (exception for seasonal work and incidental emergencies; subcontractors shall apply the same rule if they don't provide a time joining new job). **[O.F.-16 Labor Aspects]** lists the ESCU's to be allocated.
9. **Various wage related aspects.**
   The responsible organization complies with the following criteria:
   - Contracts are communicated at least one week in advance.
   - Wages are paid with regular intervals of maximal one month.
   - No money deposits or hiring fees are taken for or from any worker, neither by the organization, nor by intermediate agencies.
   - Nothing of the remuneration is refrained than is permitted by law or by individual or collective contract.
   - A system has been established guaranteeing equal pay for equal work (differences based on age, experience, career planning, and performance are permitted, if objective, transparently documented and equally applied).
   - Parental leave of a parent after the birth of a child is permitted without risk of losing employment. Minimum payment according to countries legislation, but minimum the fair wage (see section 12.4.8.1).

[O.F.-16 Labor Aspects] lists the ESCU's to be allocated.

All ESCU's shall be converted to be allocated per kg. product or per piece.

12.4.8.1.2 Documentation of ESCU's for Wages.

The organization shall keep a list **[Gate to Gate - Wages]** showing the ESCU's for wage aspects per kg. product or per piece.

12.4.8.2 Occupational Health and Safety.

The responsible organization feels responsible for Occupational Health and Safety (OHS) of all people working for the organization, which it can demonstrate by means of good governance.

Small family- or other small businesses (< 10 persons working at any moment at the same time), that do not belong to high OHS-risk industry sectors listed in **[O.F.-10 Health Risks],** are exempted from ESCU allocations, unless they belong to group of suppliers of a bigger organization with influence on the operations of the small suppliers.

12.4.8.2.1 Calculation of the ESCU score for Occupational Health and Safety.

For occupational health and safety (OHS) risks, ESCU's are calculated based on the marginal preventative costs per industry sector multiplied with a reducing risk factor, depending on the organization's governance level on OHS. **[O.F.-10 Health Risks]** lists the marginal preventative costs for the different industry sectors. One of the following rules apply:

- If the organization has relevant accredited certificates on OHS, listed in **[O.F.-19 Approved Standards]** that cover the complete operation relating to the product, no ESCU's are allocated.
- If the organization has no relevant accredited certificate on OHS that covers the complete operation relating to the product, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of OHS risks, resulting in a reducing multiplication factor (RMF). For ESCU allocation, the ESCU's listed for OHS in **[O.F.-16 Labor Aspects]** are reduced by the reducing calculation factor.
  In high OHS-risk sectors, as indicated in **[O.F.-10 Health Risks],** at least initially, thereafter every 4 years, and within 1 year after every major OHS incident, this governance assessment shall be executed by a therefore accredited certification body.

ESCU allocations shall be made per kg. product or per piece.

However, the organization may demonstrate its own "cost distance to perfect governance" on labor conditions instead, following the criteria of section 12.2.15, e.g. by means of a concrete investment proposal or calculations, made or verified by an independent qualified expert, and allocate these ESCU's per kg. of product or piece instead. If the activities of the organization do not cause any OHS risk, this shall be demonstrated by the risk analyses.
The ESCU scores for the different OHS risks are added together and allocated per kg. product or per piece.

12.4.8.2.2 Documentation of ESCU's for Occupational Health and Safety.

The organization shall keep a list **[Gate to Gate - OHS]** showing the ESCU's per kg. product or per piece for Occupational Health and Safety.

12.4.8.3 Labor Conditions. (SDG's 5,8)

The responsible organization feels responsible for the wellbeing of all that work for the organization and their families, disregarding if they are directly employed by the organization or by a subcontractor. The responsible organization can demonstrate compliance with the following criteria (mostly from Dreyer, Hauschild, & Schierbeck, 2010), and derived from ILO conventions, the GRI and ISO 22000 (Extra criteria for child labor are covered in the separate category 12.4.8.4)):

1. Nobody within or outside of the organization is confronted with discrimination of any type and from anyone.
2. Employees have complete freedom of association.
3. At least 60% of the workers are of local origin, sufficiently present in management positions and of sufficient level of education, in order to be aware of all aspects that could harm the local community or environment and of labor conditions that could harm the workers and the local community. If necessary, education and training is provided.
4. No workers are forced or tending to work more than 48 hours per week.
5. The standard workweek for employees is no longer than 40 hours. Overtime hours and -payment are kept on file. This does not apply to owners.

6. All workers are free in their work and the nature of the work is not compulsory to an extent that it could physically or mentally harm the worker. No physical enforcement is used to any person.
7. All workers have freedom of speech, even if conflicting with the organizations' policies, but may be required to respect secrecy about companies' intellectual- and financial assets.
8. Immediate and proper action is taken against violence afflicted by or to employees in the performance of their duties. The organization regularly assesses if every worker feels safe and takes actions where people don't.
9. The work periods of employees give enough room for rest and time for privacy and sufficient paid vacation (minimum 15 working days per year) is permitted for this purpose.
10. First aid healthcare, trained people and provisions for handicapped people are available at the site. (for organizations > 10 persons)
11. Official personal documents, such as birth certificates and passports are consulted and their data kept on file, safe from unauthorized access. None of such documents is taken from the worker. The organization, at all times, can demonstrate that all people working for the organization, including via subcontractors, are legally registered as employees or self-employed worker.
12. Employment- and apprenticeship contracts, internal and external education, trainings and apprentice programs for all employees are kept on file.
13. Employment contracts, in understandable language for all involved, systematically include wage, working time, annual holidays and length of personal holiday and terms of resignation, which ensure employees voluntary leave of employment, and are kept on file.
14. All workers are free to file complaints without repercussions and are ensured a fair response and uniform and confidential treatment. Complaints and responses are kept on file.
15. At end of employment, a letter of resignation is handed to the employee. The organization sees to, that intermediates do the same. The worker is notified about ending employment at least one month in advance.
16. If housing or transport is provided, that must be voluntary for the worker, of good standard quality, reasonably priced compared to the wage and with respect to the worker's freedom and privacy.
17. Food provided by the organization is of high quality and reasonably priced.
18. Loans, credits and other financial schemes, are all by contract, transparent, reasonably priced, not strangling at resignation, and kept on file.
19. Known whistleblowers are taken seriously and their points thoroughly investigated by an independent and qualified person; The identity of unknown whistleblowers is not investigated.
20. Privacy is well protected. All personnel data are well protected by demonstrable best available technology, but preferably not connected to the internet, and physically in locked and safe conditions.
21. Any security personnel used by the organization is trained in human rights and first aid.
22. The organization only works with legally recognized contractors or intermediates, after assessment if their social performance complies with companies' social policies. In addition, the contractor is a supplier and shall provide ESCU's and allow independent verification.

12.4.8.3.1 Calculation of ESCU's for Labor conditions.

[O.F.-16 Labor Aspects] mentions the maximum ESCU % relative to the total labor costs related to the product for perfect labor conditions, which shall be converted to ESCU's per kg. product or per piece. A reducing multiplication factor (RMF) may be applied depending on organization's governance level on Labor Conditions, according to the following rules:

1. If the organization has an accredited certificate, on Labor Conditions, covering all aspects listed in section 12.4.8.3, and covering the complete operation relating to the product, no ESCU's are allocated.

2. Without such certificate, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of above labor conditions, resulting in a reducing multiplication factor (RMF). For ESCU allocation, the marginal preventative costs are reduced by the reducing calculation factor.

However, more case specific price factors may be allocated instead following the criteria in section 12.2.15.

12.4.8.3.2 Documentation of ESCU's for Labor conditions.

The organization shall keep a list **[Gate to Gate – Labor Conditions]** showing the level of governance on labor conditions and the associated ESCU's per kg of product or per piece.

12.4.8.4 Child Labor. (SDG's 1,8,10)

Harmful labor child labor refers to children's work for which any of the following issues apply:

- Deprives children of proper education or of more than 2 hours work on schooldays.
- Deprives children of sleeping- or play time at home.
- Involves the risk of causing mental, moral, social or physical harm to children.
- Is excessively heavy, too far from home or school, without proper daylight, or work at night.
- Involves payments for children, too far under the fair minimum wage.
- Is more than 5 days per week or with too long working hours.
- (For children under 16 years) includes work with chemicals, weapons, dangerous goods, knives or other sharp objects, hot objects or liquids (>60 ^{0}C) or open fire.
- For children under 16 years, includes work without the attention of a responsible adult.
- Involves any type of organized recruitment, organized transport or trafficking.

All conditions outside of the limits listed in **[O.F.-20 Child Labor]** are considered harmful child labor. Light work during vacations and with a lower total durance than 2 months per year or light labor in the business of the parents or neighbors at the own living location that does not deprive the children of education, and during less than 4 hours per day and 5 days per week, is not considered harmful child labor. Work at home does not need payment. However, the other criteria of table 1 and of this section remain valid.

12.4.8.4.1 Calculation of ESCU's for child labor.

Child labor at locations under organization's direct responsibility.

The ESCU score for child labor per kg. product or per piece depends on 2 possible situations:

1) Absence of child labor, outside of the acceptable range, defined in **[O.F.-20 Child Labor]**, resulting in zero ESCU allocation, may be demonstrated by one in the following ways:
   a) By a zero percentage of child labor in the country, indicated in **[O.F.-04 country statements].**
   b) By a zero or low risk in the sector-country combination in the social hotspot database **(SHD)** (http://socialhotspot.org/).
   c) By an, at least 2-yearly, unannounced inspection by a therefore accredited CB, in the season most sensitive for child labor for the relevant product/location.
   d) A certificate, listed as approved standard for absence of child labor in **[O.F.-19 Approved Standards]**

2) In other cases, a case of harmful child labor is assumed and the organization shall demonstrate in practice (by at least 5 auditor-chosen workers for each involved activity of manual labor) to a therefore accredited certification body the average measured workhours **(AWH)** necessary for the product.
   The fair Adult Labor Costs **(ALC)** are calculated as the **[FMW x AWH]**, where FMW is the fair

minimum wage for adults (see 12.4.8.1). The ESCU's are calculated as the **[ALC – DP)**, where DP is the actual demonstrated payment for the relevant work, in accordance with product cost calculations]. At any doubt about of the actual payment, DP shall be assumed equal to the product of the local minimum wage (for 13 year old children) and the Human Development Index score for the country.

3) In cases that even the data required under point 2 are unknown or not even the exact supplier is unknown, the ESCU's are determined based on **worst cases**, as follows:
   a) Based on IO databases, the worst country with highest child labor in **[O.F.-04 country statements]** for the material or activity is determined.
   b) Based on IO databases and other demonstrable labor intensity data, the amount of hours for the labor on the product is determined.
   c) The ESCU's are calculated for the found worked hours as the difference between the FMW and the product of the local minimum wage (for 13 year old children) and the Human Development Index score (HDI) for the country.

   The only way to obtain lower than these worst case ESCU's is to organize traceability and demonstrable foreground data.

Child labor at locations outside of organization's direct responsibility.
If an organization uses a group of not certified small suppliers in a country with child labor risk, according to **[O.F.-04 country statements]** and the SHD, in such as workshops and home based workers, absence of child labor shall be demonstrated by at least following measures:

- The organization shall at least monthly verify absence of child labor by an unannounced onsite inspection; present children shall be interviewed and findings documented.
- The independent Certification Body shall pay a 2-yearly unannounced visit to 5% of the involved sites, and check completeness of the supplier list by sampling and tracking the sources of several lots of finished products.

All ESCU's are thereafter allocated per kg. product or per piece.

12.4.8.4.2 Documentation of ESCU's for child labor.

The organization shall keep a list **[Gate to Gate - Child Labor]** with its products, the relevant levels of governance of child labor, the associated ESCU's per kg. or product or per piece, and references to documents of proof.

12.4.8.5 Documentation of ESCU's for aggregated labor-ESCU's.

The organization shall keep a list **[Gate to Gate - Labor]** of ESCU's per kg. or per piece, which is the sum of **[Gate to Gate - Wages], [Gate to Gate - OSH], [Gate to Gate – Labor Conditions] and [Gate to Gate - Child Labor]**.

12.4.9 Corruption and Conflict Situations.

Considered Sustainable Development Goals: **16,17**

12.4.9.1 Corruption and fair competition.

Corruption is one of the greatest obstructions to the development of a country and for certification. The responsible organization does not participate in any type of corruption and takes preventative measures where it may expect corruption, if necessary by doing no business in a country or region at all. Corruption is illicit by nature and therefore is hardly measurable. Nevertheless, this standard introduces a certain level of measurability by measuring the quality level of governance. For this purpose, 2 categories of criteria/managerial measures are considered: 1. General governance criteria (GGC) and 2. Subject specific managerial measures (SSM). The GGC include criteria to assess the risks and define the SSM's. For this purpose, the responsible organization consults experts and anti-

corruption guidelines, such as (OECD, 2011; Transparency International, 2009; United Nations Global Compact, 2010; World Bank, 2008).
In areas with a large governmental corruption or violence accompanied extortion, the organization usually has little own influence on corruption. However, this standard adheres the opinion that economic pressure can eventually persuade authorities to act against corruption and always has the choice to leave the country or even the business. The responsible organization can demonstrate a risk analyses on corruption. Evidence must be provided in the following way:

12.4.9.1.1 Organization Governance against Corruption.

The responsible organization can demonstrate a chart of its relations with other organizations, including trusts and foundations, and all potential sources of corruption, supposing bad will, and including shareholders with a share > 5%, that actively interfere with the companies' policy or finance, listing the ultimate benefiting owners. The responsible organization can demonstrate effective preventative measures against all potential sources of corruption, both internally and externally. It can demonstrate that the organization is not used for the purpose of unjust decisions, e.g. by related organizations, or owners.
Considering business in countries with a score in the Transparency International Corruption Perceptions Index < 60, the responsible organization takes collective action against corruption, together with as many as possible other organizations in the country. In addition, it clearly communicates its policy publicly and to all involved parties, repeating this at any business.
Policy and consequential managerial measures should at least include its position on bribery, engaging suppliers, customers and governmental institutions and -officers, legal compliance (including differences between countries), disciplinary actions, negotiations, traveling, gifts, meals, donations, complaints and whistle-blowers, notification-, communication-, Documentation- and consult in difficult situations, and exceptions (e.g. if employees are in danger).
Even if the organization has little influence on sources of corruption, for instance because of its governmental origin, the relevant sources of corruption must be described generically. If the relevant authority forbids such description or that is feared, maximum ESCU's must be allocated (see section 12.4.9.11).

12.4.9.1.2 Employee Governance against corruption.

The responsible organization can demonstrate an assessment of the risks and potential methods of corruption by "risk employees", which are those employees that have the theoretical power to give or receive unjust favors. For not certified outsourced work to organizations bigger than 10 persons, such assessment is required from the supplier. Not certified outsourced work from organizations smaller than 10 persons, must be considered work by own employees (considering the corruption aspect).

12.4.9.1.3 Surveillance.

The responsible organization can demonstrate a yearly surveillance of its bookkeeping on unjust or suspect money flows, by an independent and at least every 4 years changing accredited accountant, without any other relations with the organization.
The responsible organization requires all "risk employees" to undergo a random check on signs of unjust income or favors by the same accountant. The responsible organization accepts not any risk of corruption, further investigates and takes measures where necessary.

12.4.9.2 Conflict and violence

12.4.9.2.1 Situations of conflict.

Situations of conflict are very harmful to the development and well-being of people and countries. The responsible organization has no activities related to situations of conflict, no business with a risk of financing conflict situations and no connections to known perpetrators of violence. If the organization uses other organizations to do business in countries in conflict, it shall either consider these as suppliers and require their certification and ESCU's, or (for small suppliers < 10 persons) control them and calculate ESCU's for their actions as for its own.

12.4.9.2.2 Weapons.

The responsible organization does not produce or trade weapons or military materials listed in the common military list of the EU (The Council of the European Union, 2015) to unsafe bodies (all organizations apart from governments of countries with Corruption Perceptions Index <60, or of countries in armed conflict, as listed in **[O.F.-04 Country Statements]**).

12.4.9.2.3 Risk of future conflicts.

The responsible organization can demonstrate that it does not share responsibility for potential future conflict situations, for instance by depletion of water in water poor areas, diverting of rivers, land grabbing, displacement of people, destruction of income sources of indigenous people, publishing of discriminating documents, trading in drugs, white laundering of money, teaching violence to children.

12.4.9.2.4 Financing of conflict situations or complicity.

The responsible organization has no part in financing of conflicts or weapons of unsafe bodies. It must consider that in countries in conflict even regular flows of money tend to reach perpetrators of violence. Activities in a country in conflict present an extremely difficult situation. The presence of the company may help develop the country and prevent violence, but once the violence has started its presence or activities are usually used for financing violence. Therefore, this standard gives companies 4 year after the start of the violence without the requirement of solid proof for absence of unintended financing of it, but after those 4 years, solid proof of not financing shall be demonstrated to avoid ESCU allocations. **[O.F.-04 Country Statements]** lists countries with such risk. The responsible organization avoids complicity with unlawful actions, violence or corruption of others. E.g. doing business with companies which are clearly corrupt, abuse or discriminate workers.

12.4.9.3 Political involvement.

The responsible organization (with the exception of political organizations themselves) prohibits the use of undue influencing or undermining the political process. It does not contribute to political organizations or politicians; it is transparent in any lobbying activities influencing regulations and does not use any misleading information, threats or promises to policy makers and does not make any other unjust attempt to influence policy makers. It makes an assessment of the persons within the organization that have the power to influence politics and makes sure they are well informed and trained about organization's policy and behavior at conflicts of interest.

12.4.9.3.1 Opinion awareness.

The responsible organization is aware of society allegations towards the organization and can demonstrate investigation of the truth of such allegations.

12.4.9.4 Calculation of ESCU's for corruption and situations of conflict and violence.

No ESCU's are allocated for corruption and violence if:

1. The corruption perceptions index of the country of establishment, listed in **[O.F.-04 Country Statements]** is >=64 and no money transfers with any other organization or private person with which it has >5% with ownership relations, in a country with a corruption perceptions index < 64.
2. The organization can demonstrate not to contribute to armed conflicts as defined in the sections 12.4.9.5/6/7/8.

In all other cases, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of corruption and conflict situations and considering the aspects discussed in this section, resulting in a reducing multiplication factor (RMF). ESCU's shall be allocated equal to the maximum, listed in **[O.F.-17 Economic Risks],** reduced by the reducing multiplication factor (RMF).
At least initially and thereafter every 4 years this governance assessment shall be executed by a therefore accredited certification body.

12.4.9.4.1 Documentation of ESCU's of corruption and conflict situations.

The organization shall keep a list **[Gate to Gate - Corruption]** of the countries it is active in, its company governance score on corruption and involvement with conflict situations and the associated ESCU's.

12.4.10 Various Social Responsibilities.

Considered Sustainable Development Goals: **5,16,17**

Social Irresponsibility Aspects.

Starting point for the assessment of ethical damage, not covered in other sections, is whether potential victims and auditors are confronted with one of the following types of irresponsibility or disturbance:

1. Absence of an at least 5 year sustainability development plan with allocated finances.
2. Discrimination in personnel policy, advertising or other communication considering sexes, health, handicap, religion, race, origin, age, political conviction, pregnancy or migrants, including unequal gender distribution in the organization's leadership.
3. Lack of efforts to stimulate labor participation of minorities, disabled and underprivileged. However, this standard does recognize the necessity of well qualified personnel for the job.
4. Physical or mental violence and harassment to persons inside or outside of the organization.
5. Publication of pornography, nude or other communications that could be taken offensive by major parts of the population of the country.
6. Advertising without respect for groups of the society, such as stereotyping, or advertising on media that divide instead of connect, or on media that do not prevent use by others of their media to divide or mislead.
7. Lack of demonstrable involvement of vulnerable groups and lack of avoiding discrimination by gender, race or other, and in low income countries of local suppliers.
8. Payment of suppliers,, employees or other workers more than 30 days after delivery or after the agreed limit of the payment date.
9. Illegal use of a brand name, knowledge, domain, design or intellectual property of others, use of origin statements without substantial activities at the relevant location.
10. Violation of property rights of both tangible goods and intellectual property.
11. The use of property rights based on DNA properties directly from nature (e.g. natural seeds).
12. The use of property rights on food and health products longer than 5 years based on DNA properties of material derived from nature (e.g. by plant breeding or modified DNA).
13. The use of property rights on sustainability enhancing developments, longer than 5 years.
14. Under-market compensation for acquired property and using any pressure to acquire property.
15. Disrespect for not well defined traditional property, e.g. involving indigenous people, or their culture and rights.
16. Advertising with potential wins, prizes or profits without publishing the chance, or advertising subscriptions with temporary reductions without mentioning the expiration data of the reduction and what cost may be expected after the reduction period. (exception: lotteries and other products that present this chance/risk ratio and the related uncertainty as the product itself).

17. Advertising smoke, health damaging food- or care-products, or pharmacological products (except on medical prescription), without presenting substantial negative side effects one of the clearest communications. Not intended here is a copy of the package leaflet for prescriptions, but only the major issues (such as cancer by smoke).
18. Use of health claims without reference to published independent scientific evidence of their correctness.
19. Use of misinformation on the product or on the purpose/circumstances.
20. Communicating negative information on competing products and companies.
21. Not consistently communicate the sustainability as it is determined by the use of this standard together with advertising about or including aspects of sustainability.
22. Incomplete, ambiguous, insufficient transparency of vital information, or information that raises expectations not conforming the product, on packaging, information leaflets, contracts, webpages, prospectus and other ways of communication about the product.
23. (Risk of) violation of privacy.
    a) Spam, uninvited telemarketing or other methods of violating the privacy of private persons.
    b) Keeping, disclosing or using personal data without a proper reason or without knowledge of the involved persons.
    c) Insufficient protection of personal data, both physically and digital.
24. Noise (>indicated in **[O.F.-21 Responsibility Levels]** in living areas), vibration, smell, dust, traffic in living areas or other disturbances to people, where this matter is not covered by the section on public health.
25. Earthquake- or flood risks due to operations, in areas where it may damage others.
26. Damage of cultural heritage.
27. Lack of easy access to service desks for complaints and grievances.
    The responsible organization, using service, keeps waiting times limited, answers in countries' own language, documents and effectively solves complaints incidents.

12.4.10.1 Calculation of ESCU's for lack of Social Responsibility.

For the category of various social responsibilities **(VSR)**, ESCU's are calculated based on a maximum default value per industry sector multiplied with a reducing risk factor, depending on organization's governance level. **[O.F.-21 Responsibility Levels]** lists the marginal preventative costs for the different industry sectors. One of the following rules applies:

1. If the organization has relevant accredited certificates on VSR that cover the complete operation relating to the product, no ESCU's are allocated.
2. If the organization has no relevant accredited certificate on VSR that covers the complete operation relating to the product, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of VSR, resulting in a reducing multiplication factor (RMF). ESCU's shall be allocated equal to the marginal preventative costs, reduced by the reducing calculation factor.
   At least initially and thereafter every 4 years this governance assessment shall be executed by a therefore accredited certification body.

ESCU allocations shall be made per kg. product or per piece.
However, the organization may demonstrate its own "cost distance to perfect governance" on social responsibility aspects instead, following the criteria of section 12.2.15, e.g. by means of a concrete investment proposal or calculations, made or verified by an independent qualified expert, and allocate these ESCU's per kg. of product or piece instead. If the activities of the organization do not cause any nuisance to external stakeholders, this shall be demonstrated by the risk analyses.
All ESCU´s shall thereafter be allocated per kg. product or per piece.

12.4.10.2 Documentation of ESCU's for lack of social responsibility.

The organization shall keep a list **[Gate to Gate - Responsibility Humans]** with its level of governance of social responsibility and the associated ESCU's per kg. product and the references to proof.

12.4.10.3 Animal Welfare.

This section only applies if animals are involved in the processes related to the product.
Animal suffering may be caused in the operation of the organization itself, by its activities anywhere in the world, or by its outsourcing of analyses or other businesses to suppliers. The responsible organization takes care that it does not directly or indirectly cause animal suffering activities, especially not of one of the following kinds.

General types of Animal Welfare issues ("the 5 freedoms of animals").

1. Deprivation of a continuous supply of water or deprivation of enough food for full development.
2. Deprivation of a, for the specific animal suitable, environment, shelter and resting area.
3. Pain, injury or disease that is not properly and quickly diagnosed and treated.
4. Deprivation of sufficient and proper space, facilities and company of its own kind that enables the animal to develop.
5. Fear en distress by causing or not preventing conditions of mental stress.

Specific types of Animal Welfare issues.

1. Tests on animals for medical reasons without transparency about this testing, without demonstrable minimizing it and without demonstrable research for alternatives.
2. Tests of cosmetics on animals.
3. Keeping animals with so little space that they become stressed and show species-abnormal behavior, such as in crates, battery cages or feeding cubicles.
4. Transport of animals more frequently or for longer durations than absolutely necessary, or with so little space that they become stressed and show species-abnormal behavior.
5. No emergency plans for evacuation or preventing other animal suffering at any type of disaster.
6. Keeping of animals that do not do well in captivity or do not reproduce in captivity.
7. Deprivation of outside light and open air or of air conditions that keep the animals in good health.
8. Feeding animal with food, drugs or medicines that make them more sensitive to disease.
9. Keeping animals under conditions that increase the risk of mass infestations with diseases which force owners, governments or others to mass killings in case of emergencies.
10. Capturing or keeping animals for their fur or other ornamental use as main purpose.
11. Manipulation of the genetic code of animals by other means than selection or without care for their physical and mental health as one of the most important selection criteria.
12. Any operative techniques without proper anesthesia.
13. Keeping wild animals for educational purposes or entertainment (keeping in animal-friendly zoo's excepted).

12.4.10.3.1 Calculation of ESCU's for Animal Welfare.

For animal welfare risks, ESCU's are calculated based on the marginal preventative costs per industry sector multiplied with a reducing risk factor, depending on organization's governance level. **[O.F.-18 Animal Welfare]** lists the maximum ESCU allocations per industry sector, to be multiplied with a reducing factor calculated as follows:

1. If the organization can demonstrate not to be involved in the use of animals, or has relevant accredited certificates that cover the complete operation relating to the product, no ESCU's are allocated.
2. If the organization uses animals and has no relevant accredited certificate on animal welfare that covers the complete operation relating to the product, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of animal welfare risks, resulting in a reducing multiplication factor (RMF). ESCU's shall be allocated equal to the

maximum, reduced by the reducing calculation factor.
At least initially and thereafter every 4 years this governance assessment shall be executed by a therefore accredited certification body.

ESCU allocations shall be made per kg. product or per piece.
However, the organization may demonstrate its own “cost distance to perfect governance” on animal welfare instead, following the criteria of section 12.2.15, e.g. by means of a concrete investment proposal or calculations, made or verified by an independent qualified expert on animal welfare, and allocate these ESCU’s per kg. of product or piece instead.

12.4.10.3.2 Documentation of ESCU’s for Animal Welfare.

The organization shall keep a list **[Gate to Gate - Responsibility Animals]** with its level of governance on animal welfare and the associated ESCU’s per kg. product and the references to proof.

12.4.10.4 Calculation and Documentation of total ESCU’s for Social responsibility.

The organization shall keep a list **[Gate to Gate - Various Social]** with the sum of **[Gate to Gate - Responsibility Humans] and [Gate to Gate - Responsibility Animals]**.

12.4.11 Total ESCU score for organization’s own Gate to Gate contribution

The subtotal **[ESCU-Gate to Gate]** is obtained by aggregation of all 10 ESCU scores of section 12.4.

12.5 Use phase.

Considered Sustainable Development Goal: **12**

A utensil may cause damage to the environment, consumer, user or third party as result of its use. Also capital goods usually are utensils. To suppliers of capital goods, it is advised to provide their **B2B- customers** with data to help them calculate the ESCU’s for their operations. However, because the ESCU’s for their use are included for customers’ operations, no ESCU’s are allocated for its use by the producer of the capital good. This only applies to capital goods with an average product life > 1 year. However, ESCU’s for the (Supply, Gate-to-Gate and End-of-life sections) creation of the capital good shall be calculated just like for any product.

The end-producer is primarily responsible for the design of the utensil and the damage that is caused by its use and disposal, which shall be expressed in ESCU’s which will provide the information to the user. This section only applies to products under the responsibility of the end-producer.
In principle any of the 10 aspects may be involved in the use phase if companies are involved. Examples are the contributions of laundry services and repair shops for clothes, repair shops and services for equipment and houses. Preliminarily most of these are exempted from ESCU calculations.
Of the 10 aspect categories, the following shall be considered:

12.5.1 Emission of harmful gasses and other chemicals and depletion of scarce resources.

(SDG’s 3,7,13,14,15)

By the criteria of this section various emissions may result into ESCU allocations. However, if the organization can demonstrate that several emissions can be prevented by one preventative measure, only the highest of the involved ESCU allocations needs to be applied.

12.5.1.1 Energy resources.

Suppliers of combustible energy resources shall determine the quantities of harmful gasses listed in **[O.F.-06 Harmful Gasses]** that are emitted by combustion of the product at normal use (see

section 11.2) and allocate the associated ESCU's using **[O.F.-06 Harmful Gasses]** and the quantities of depleted scarce resources listed in **[O.F.-07 Scarce Resources]**.

12.5.1.2 Use related energy consumption and emissions.

Many products cause energy related emissions and some products cause non-energy related emissions during their use (e.g. leaking cooling or heating fluids and lubrication oils from machines or soot from wood fire places). The product may be a utensil (e.g. a car) or a consumption item (e.g. a piece of meat that needs to be cooked). The energy consumption (or increase) and the gas emissions (including fine dust) caused by the use of the product and its use of energy resources, shall be determined by a for this purpose accredited body, at normal use. The energy use is expressed in kj. per km. for transport means and in kj. per hour of use for other utensils, and per kg. for consumption items.
Also for utensils that cause or increase energy consumption of other utensils (e.g. a caravan that increases the energy use of the pulling car or computer application that needs a server to be downloaded and a computer to run, both using energy).

12.5.1.3 Calculation and allocation of ESCU's for use related energy consumption.

The product life-total (maximum 10 years), based on the defined normal use, of ESCU's connected to the used energy sources shall be allocated to the product.
[O.F.-05 Energy Resources] both lists the ESCU score for scarcity of the energy resource that shall be allocated per kg. of energy resource, and the ESCU score for emission per kg. of the harmful gasses. The sum of both shall be converted to ESCU´s per hour of use of the product, or per km. for transport means, or per kg. for consumption articles. However, if it can be demonstrated that, for the specific energy use, both GHG emissions and resource depletion can be prevented by one preventative measure, only the highest of both is allocated. **[O.F.-05 Energy Resources]** also lists the ESCU's to be allocated per KwH of electrical energy by country, based on the carbon intensity of the countries' electricity generation (corrected for nuclear KwH's which are given equal ESCU's as for the world average carbon intensity).

For rechargeable batteries, the same ESCU's for electrical energy shall be used as above, augmented with the loss factor of dis- and recharging and self-discharging, for which **[O.F.-05 Energy Resources]** lists the default value (e.g. + 20%). The ESCU's for pollution and waste caused by these batteries shall be determined according to section 12.5.3.

If it is demonstrated that a product (e.g. in a country) is exclusively used with energy that is cleaner than average, the lower ESCU's may be allocated, provided that the relevant data have been determined by a therefore accredited body and no certificates or other rights for the cleaner energy have been traded with third parties. The ESCU's for the use of electrical energy are converted to ESCU´s per piece of utensil.

However, more case specific price factors may be allocated instead following the criteria in section 12.2.15.

12.5.1.4 Calculations for emission by utensils of other gasses than combustion gasses.

Emissions from purchased gasses (e.g. in refrigerators) usually are obtained from suppliers, have their upstream ESCU's, and usually are not supposed to be emitted. The associated ESCU's per kg. gas are calculated according to rules of section 12.3. The organization shall calculate the total quantity of gasses that is emitted by the utensil by normal use (see section 11.2) during the normally expected product life and allocate the ESCU's for this total quantity to the utensil.

[O.F.-06 Harmful Gasses] lists the ESCU allocations required for the use related other harmful gasses (e.g. fine dust by mills and smoke from fire places), expressed by kg. of emitted gas.

However, more case specific price factors may be allocated instead, following the criteria in section 12.2.15.

12.5.1.5 Documentation of ESCU's for product-use related energy use.

The organization shall keep a list **[Use-Pollution-Energy]** per product with the energy use per km., per hour or per kg., the emissions per km., per hour or per kg. and the associated ESCU's for pollution and a list **[Use-Depletion-Energy]** with the ESCU's for the depletion aspect.
Suppliers of certified energy resources of mineral origin shall be asked to provide the ESCU score for combustion of the energy source. Utensils that are intended to be used as capital goods for the production of other products shall be sold with a separate specification of ESCU's for the use of the utensil, because the user only needs to calculate the ESCU's for the consequences of his use of the utensil one time.

12.5.1.6 Calculation of ESCU's for use related resource depletion.

The utensil may use scarce resources during its use, such as fresh water, consumption parts or lubrication oils. The consumption of scarce resources listed in **[O.F.-07 Scarce Resources], other than energy resources covered in section 12.5.1.3**, shall be determined by a for this purpose accredited body, at normal use (see section 11.2).
However, more case specific price factors may be allocated instead following the criteria in section 12.2.15.

ESCU's shall be allocated for the product life-total (maximum 10 years), based on the defined "normal use", of ESCU's connected to the used energy sources shall be allocated to the product.

The following situations are distinguished:

1. The use of the product leads to the use of other resources and the product is the functional cause. E.g. batteries and tires of a car. In this case ESCU's shall be calculated and allocated.
2. The product is just a means to use scarce resources, but is not the functional cause and the product has no influence on the quantity of resources used. (E.g. a water hose to water the garden). In this case, no ESCU's shall be allocated.
3. The product is a means to the use of other resources, is not the functional cause to the use of that resources, but affects the consumed quantity (e.g. a shower head).
   No ESCU's for resource use need to be allocated (exception energy related depletions (section 12.5.1.3)). If a product causes lower use than average and the organization wants to advertise this, it needs to be able to demonstrate lower ESCU's. This is covered by a bonus criterion in section 12.7.
4. For depletion of water, the rules for scarcity described in section 12.4.2.3 apply.

12.5.1.7 Documentation of ESCU's for use related resources depletion.

The organization shall keep a list **[Use-Depletion-a]** per product per kg. or per piece, with the total amount of scarce materials that it uses during its expected product life at normal use, and the associated ESCU's.

12.5.2 Product Health & Safety Risks.

(SDG-3)

The responsible organization can demonstrate an assessment on the harm that, at normal use (see section 11.2), the consumption item or utensil may cause to the health of people or animals during its complete life and during the handling and disposal of its waste.
Apart from at normal use, the responsible organization also identifies potential misuses and groups of people that are likely to misuse the product and if necessary, redesign or design special products

or measures for such groups to prevent harm. The responsible organization develops measures to prevent products to become unsafe during transport, storage or use of the product.
The responsible organization can demonstrate an effective monitoring of complaints, incidents and health effects of the utensil in the market and that it continuously takes preventative and improvement measures based on this monitoring. This also applies to utensils that are intended for professional use and may provide a risk for labor conditions.

12.5.2.1 Calculation of ESCU's for Product Health & Safety risks.

For Product Health & Safety Risks, ESCU's are calculated based on the marginal preventative costs per industry sector multiplied with a reducing risk factor, depending on organization's governance level. **[O.F.-10 Health Risks]** lists the marginal preventative costs (in % of production costs) for the different industry sectors. One of the following rules apply:

1. If the product is generally recognized as not causing health risks, is a regulated product (e.g. food, toys) complying with the safety legislations of all countries of use, or if the organization has an accredited certificate on the product's safety, no ESCU's are allocated.
2. If the organization has no accredited certificate on the product's safety, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of Product Health & Safety Risks, resulting in a reducing multiplication factor (RMF). ESCU's shall be allocated equal to the maximum, reduced by the reducing calculation factor. At least initially and thereafter every 4 years this governance assessment shall be executed by a therefore accredited certification body.

ESCU allocations shall be made per kg. product or per piece, or for utensils per km or per hour.
If the product does not cause any use related public health risk, this shall be demonstrated by the risk analyses.
ESCU allocations shall be made, expressed per kg. product or per piece, and be based on normal use as defined in section 11.2. The organization may demonstrate its own "cost distance to perfect governance" on product safety, e.g. by means of a concrete investment proposal or calculations, made or verified by an independent qualified expert on public health risks and finance, and allocate these ESCU's per kg. product or per piece instead. For utensils and consumption items calculations ESCU's are always allocated as ESCU's per piece.

12.5.2.2 Documentation of ESCU's for Product Health & Safety risks.

The organization shall keep a list **[Use-Public Health]** per kg. of product or piece of utensil describing:

1 All identified risks.
2 The ESCU score per kg. of product or per piece.

12.5.3 Pollution and waste.

(SDG – 4,12,14)

Utensils may cause pollution or waste by its use, other than caused by the use of energy or by the components of the item itself. For pollution and waste as consequence of the end-of-life disposal of the ingredients or components of the product itself, the criteria of section 12.6 apply.
The responsible organization can demonstrate knowledge of the exact quantities of harmful substances and materials per waste category, present in consumption parts, and the potential emission it may become (e.g. fine dust from brake linings).

Considered in this section are:
Wear: By its use the utensil may wear and materials parts in the environment (e.g. car tires and -brake linings).

Consumption parts disposal: By its use a utensil may cause waste or pollution by their use of "consumption parts". Typical examples are consumption of lubrication oil, batteries, the use of liquids or gasses for heating or cooling and wearing parts (such as car tires and brake linings). The responsible organization can demonstrate utensil design intended to prevent any consumption parts and emissions to end up in the environment. It investigates the customs and possibilities for consumption parts' disposal and organizes their proper disposal or recycling in every country of use of the utensil, already at the stage of design. For this purpose, it seeks cooperation with the suppliers of consumption parts, waste handlers, customers, colleagues and authorities.
The responsible organization does not sell waste producing products in a country (or area) where no proper, effective system is available for the sustainable disposal of the consumption parts of the utensil. Because in most countries products will be returned to the organization if the right price for the waste is offered, in principle sustainable collection and disposal is often theoretically possible.
Pollution from the product itself: The product may be polluting by being emitted by or during its use. Examples are plastic particles from using toothpaste and pharmaceutical chemicals emitted via defecation of people or animals.

12.5.3.1 Determination of waste and pollution due to utensils.

The organization determines the average weight loss of wearing parts of the utensils, lost in the environment at normal use (see section 11.2) and considers these as polluting materials if they contain harmful chemicals or may appear as fine dust.

In addition, the organization determines the quantity of harmful chemicals that leak, wash, evaporate, are created by reaction, or otherwise end-up in the environment from the utensil at normal use and during the life time of the product, end-up in the environment.

For all consumption parts and materials, the end-producer determines the average product life, in hours of use, at normal use (see section 11.2). Based on their product life, the quantity of pollution and waste for the used consumption parts and materials shall be determined and verified by a therefore accredited testing body.

12.5.3.2 Calculation of ESCU's for waste and pollution.

[O.F.-14 Pollution Substances] lists the ESCU's per kg. polluting substance for pollution categories, and **[O.F.-15 Waste Categories]** the ESCU's per kg. waste, which shall be converted to ESCU's per hour of use of the utensil or per km. for transport means.
For wear the lost weight of the product is determined per km. or hour of use, at normal use.
ESCU's shall be allocated per piece of utensil for the full product life at normal use (maximum 10 years). However, more case specific price factors may be allocated instead following the criteria in section 12.2.15.

The ESCU's for pollution and disposal of consumption parts are allocated per utensil in the following 3 levels:

- If the organization, either or not in cooperation with others, can demonstrate an effective disposal in every country of use of more than 90% of waste from the utensils, exclusively based on reuse or recycling, no ESCU's are allocated. For waste that is incinerated with energy recovery, the full ESCU's are allocated, but, if the net generated KwH's can be demonstrated, for net generated KwH's the ESCU's as listed in **[O.F.-05 Energy Resources]** per KwH of electrical energy may be subtracted.
- If the organization can demonstrate that 50% to 90% of the waste is disposed of by recycling or incineration with energy recovery, [100% - demonstrated %] of the ESCU's are allocated.
- In other cases, 100% of the ESCU's are allocated.

Demonstration shall include transparent communication to the user and statistically sound measurements of the practice of waste disposal in every country of use (either or not executed by the organization itself).

12.5.3.3 Documentation of ESCU's for waste and pollution during the use of a utensil.

The organization shall, where applicable, keep a list **[Use-Waste] and a list [Use-Pollution-Waste]** containing:

- A description of the function and normal use of the product.
- The expected product life at normal use in hours of use.
- All consumption parts, either or not components of the utensil, that may need replacement during the expected product life of the utensil (max. 10 years) and may cause pollution or become waste.
- All quantities of packaging materials that become source of pollution or waste after its use to transport the product to its final destination. The average practice must be reported.
- The recommended method of waste disposal, tailored to the country where the waste will exist, and references to the used communication to the users.
- The product-use associated ESCU's, depending on the list, for waste or pollution.

12.5.4 Social responsibility.

The use of products may be disturbing to people either or not being harmful. Some common examples are:

12.5.4.1 Noise.

ESCU's are allocated for every decibel over a limit that the utensil produces at normal use (see section 11.2), as tested by a therefore accredited testing body. **[O.F.-21 Responsibility Levels]** mentions the ESCU's per utensil per decibel > defined levels for short term- and for long term exposure at day- and night, measured at the closest location of exposure by people or animals.

12.5.4.2 Instructions for use.

ESCU's are allocated for erratic or unclear instructions for the use of a utensil, as tested by the therefore accredited testing body. **[O.F.-21 Responsibility Levels]** mentions the ESCU's per utensil for 5 quality levels of the instructions.

1. Working and maintenance are so easy that no instructions are required → Zero ESCU's.
2. Instructions are in the right and correct language, complete, nowhere confusing, completely conforming the use of the utensil, up to date and understandable for every user → Zero ESCU's.
3. The instructions include how to repair the most common failing and damage and where to obtain spare parts. If danger, special tools or complexity is involved at self-repair, the instructions may consist of advise and addresses where the product can be repaired.
4. 1 or 2 of the conditions mentioned in levels 2 and 3, are not met → 50% of the ESCU's are allocated.
5. More than 2 of the conditions mentioned in level 2 are not met, or the instructions for the utensil were not tested by a therefore accredited testing body → 100 % of the ESCU's are allocated.

12.5.4.3 Quality.

The responsible organization only sells high quality products that answer to customers' expectations. **[O.F.-21 Responsibility Levels]** lists the ESCU's for the different industry sectors. One of the following rules apply:

1. If the organization has relevant accredited certificates on quality that cover the complete operation relating to product quality, no ESCU's are allocated.
2. If the organization has no such relevant accredited certificate, the organization's governance level shall be assessed using **[O.F.-23 Governance Level Scoring Model]** for the aspect of quality, resulting in a reducing multiplication factor (RMF). ESCU's shall be allocated equal to the maximum, reduced by the reducing calculation factor. At least initially and thereafter every 4 years this governance assessment shall be executed by a therefore accredited certification body.

However, more case specific price factors may be allocated instead following the criteria in section 12.2.15.

12.5.4.4 Warranties

The responsible organization gives warranties on its products at least complying with the longest required in the legislation of all countries where the product is produced, sold or used. "product" should here be interpreted as the utensil, characterized by its functional and technical properties. Differences, e.g. by packaging, number, text, color, language and voltage don't count as a different product. In addition the responsible organization is easily accessible in all involved languages to answer to failing products.
[O.F.-21 Responsibility Levels] lists the ESCU's for the different industry sectors.

12.5.4.5 Documentation of ESCU's for lack of social responsibility.

The organization shall, where applicable, keep a list **[Use-Social Responsibility]** with the decibels that the utensil produces at use, the quality level of the instructions for use, the level of quality of the management or product, and the warranty time, with the associated ESCU's.

12.5.4.6 Consumption items.

Also consumption items may use energy and/or resources and/or cause pollution as a result of its use, such as a kg. potatoes that needs to be cooked, using energy and water, or a shirt that needs washing with energy, water and soap.
The use of energy and resources as a result of the use of the consumption item shall be determined at normal use (see section 11.2) a therefore accredited body. The energy source and resources, most commonly used for the purpose, shall be used. ESCU's for the use of the product are only calculated by the end-producer of a consumption item.

12.5.4.7 Utensil specific preventative measures

The use-impact of utensils is measured in section 12.5 by the marginal preventative measures of the used energy or resources instead of the actual preventative measures for the product specific aspect. However, the organization may use its own specific preventative costs under the following conditions:

1. The organization can demonstrate actual preventative costs, e.g. by an investment proposal or a detailed study, verified by an independent accountant.
2. At more than 80% of all sales locations of the ESCU's per unit of use and the product life-total (maximum 10 years) of ESCU's per piece are, presented together with the data described in section 12.5.4.4.

12.5.4.8 Consumption of use-related items

Products may need other products for its purpose or for maintenance. Examples are soaps for cleaning clothes, shoe polish for shoes, tires for cars and paint for buildings. The aspects of energy use and pollution for these items are covered in the previous sections, but not the production of

phase of these items.

12.5.4.9 **Calculations** of **ESCU's for consumption of use-related items**

The Organization shall determine, based on the defined and described normal use of the product, the quantities of items, required for the use of the product during its lifetime (maximum 10 years).

The organization shall either calculate the involved ESCU's for self-manufactures items, or require the ESCU's for typical required items from the suppliers, and also investigate if these already include ESCU's for energy use, wear or disposal. ESCU's, calculated as result of other criteria of section 12.5.5, for which a case of double counting with the ESCU's from this section can be demonstrated, these may be subtracted.

12.5.4.10 **Documentation of ESCU's for consumption of use-related items**

The organization shall, where applicable, keep a list **[Use-related Consumption Items],** including names of typical items and suppliers, their consumed quantities in the lifetime of the product, and the ESCU's.

12.5.4.11**Total score for use and its consequences.**

In all subsections of this section, if the use phase of utensils is considered, ESCU's shall be allocated for the product life-total (maximum 10 years), based on the defined normal use (see section 11.2), of ESCU's connected to the used energy sources shall be allocated to the product. (For fair comparison of utensils, it is advised to also present ESCU's to the user per hour of use or per km. for transport means).
However, if the organization can demonstrate that in a country (part of) the ESCU's have been internalized, for instance by an environmental tax (see section 12.7.1.3 for the conditions), that part of ESCU's may be subtracted.

The ESCU's on pollution: **[Use-Pollution-Energy]** and **[Use-Pollution-Waste]** shall be aggregated and registered in a list **[Use-Pollution].**

The ESCU's on depletion: **[Use-Depletion-Energy]** and **[Use-depletion-a]** shall be aggregated and registered in a list **[Use-Depletion]**
The subtotal **[ESCU-Use]** is obtained by aggregation of all ESCU's for the use of utensils (**[Use-Pollution], [Use-Depletion], [Use-Waste] [Use-Public Health], [Use-Social Responsibility] and [Use-related Consumption Items]**.

12.6 End-of-life.

Considered Sustainable Development Goal: **12**

12.6.1 Responsibility.

In this section "sustainable disposal (SD)" is defined as disposal resulting in (indefinite) functional reuse of the product of all its component or materials. Not sustainable is disposal involving pollution, landfill, litter, incineration without energy recovery, and disposal without demonstrable knowledge about the sustainable end-of-life destination of the product or parts thereof.
Disposal of materials transported over country borders without a formal treaty thereabout between the involved countries is not considered sustainable, unless it can be demonstrated that the materials are returned to and recycled by an upstream certified supply chain actor or remain traceable until recycled into a marketable new material.
For part of causes of waste at end-of life, ESCU's are allocated in the sections of depletion (12.4.2)

(for use of scarce materials) and in the section of supplier contribution (12.3) because no ESCUs are allocated for the lowest cost contributing materials and because recycled materials usually have low ESCU's. Therefore, recycled materials generally carry low amount of ESCU's.

Most tangible products consist of or contain components that after use or consumption must be disposed of. Disposal of a product involves three activities to be considered and ESCU's allocated for: Logistics (collection, storage and transport), dismantling, and the final disposal or processing. Two situations are considered: 1. The organization has full knowledge and control over the end-of-life disposal, and 2. This is not the case.
(All these responsibilities apply to End-producers and to suppliers of unchanged components. (note that wear of a component is not considered a change in this respect)).

The responsible organization can demonstrate:

Prevention of disposal and prolonging of product life.

The responsible organization takes care of a product design that presents an optimum in sustainability, considering all aspects of this standard, all measured by ESCU's. If a product is, among by other features, defined by price ranges, a cheap purchase should not turn out to be expensive in ESCU's. Product Life time plays an important role.

1. A product design that enables to use as many as possible recycled materials.
2. A product design and organization that enables repair or replacement of relatively fast wearing or failing parts by independent repair shops. If investments or expertise is required that may not be expected feasible for the average repair shop, the responsible organization takes care that easily accessible repair opportunities are available at all locations of use.
3. A product design that enables prolonging of product life by updating/refurbishment/ remanufacturing/overhauling and at final end of life recycling of all its components with minimal loss of value.
4. Marketing without tempting consumers towards replacement before products' technical end-of-life by focus on fashion or technological progress, unless for demonstrable sustainability purposes or -advantages.
5. Lifetime available instructions for repair and availability of the parts during the expected product life at normal use (see section 11.2), and communication of this possibility.
6. Lifetime availability of software updated, required for proper functioning of the product.
7. Necessary spare parts are kept available and accessible to optimize the product life and at prices at no higher margin than the average margin made on the original product. (with "cost calculations based on the original quantities).
8. Intended methods of sustainable repair and disposal have been tested and concluded feasible by a therefore accredited testing body or can be demonstrated by actual application. A list of all components, subcomponents and chemical composition with the relevant qualification from **[O.F.-15 Waste Categories]** of all components after dismantling, and the designed method of disposal is available. Components with equal method of disposal may be grouped.
9. Assessment of the feasibility of the sustainable disposal methods in every country of use. Where the possibilities for sustainable disposal are insufficient (< 80% sustainable disposal), systems of disposal are created either or not in cooperation with other organizations and authorities, and will be available before the first products are expected to have reached end of life.
10. Cooperation on sustainable disposal with other supply chain actors. Upstream suppliers of non-agricultural bulk products shall cooperate to assess the most sustainable way of end-of-life disposal, pay their share and if necessary recycle their supplied materials if these are not changed by other means than by normal use and wear. The responsible organization does not purchase from suppliers with which no such assessment and agreement on recycling responsibility can be made. However, because also the activities required for recycling may add

ESCU's, ideally, the different supply chain actors together develop the most sustainable and feasible route of recycling.

11. Cooperation with other producers of similar products and/or with authorities about the sustainable disposal.
12. Harmonization of parts and other measures to mitigate the disposal of products and consumption parts. However, this responsibility may be covered by an industry sector- or governmental organization, if demonstrable.
13. All separable components of the product are marked or at least recognizable in such a way that they are identifiable (as waste category) until disposal. The described composition and methods of disposal are accessible and available until the moment of final disposal.
14. Good and understandable communication is ensured about the sustainable disposal to the users, authorities, waste and recycling companies and workers, waste collectors, -transporters and other involved parties.
15. **Governance:** Assessment of the real practice of disposal in every country of use, if possible of the product itself and otherwise of similar products. Measurements, per country of use, of the percentage of waste that indeed is disposed of sustainably. Continuous improvement measures as long as product is disposed of unsustainably, either or not in cooperation with other parties.

12.6.1.1 Calculation of end-of-life disposal ESCU's.

Reliable data on country averages for disposal under municipal/ governmental responsibility may be used if it can be demonstrated that the product is likely to be disposed of through these channels. For the percentage, of which the organization can demonstrate full control over the sustainable end-of-life disposal of the product, ESCU's shall be allocated according to the criteria described for its own ex-factory-waste in section 12.4.5. For the remainder, the following applies:

The quantities of hazardous chemicals containing product going to landfill, or for which no sustainable disposal can be demonstrated, shall be allocated ESCU's both for disposal and extra for pollution (see section 12.4.1) for the full quantity of embedded chemicals, listed in **[O.F.-14 Pollution Substances].** Note that organic material for which no sustainable disposal (e.g. compost, fertilizer, animal feed) can be demonstrated, is considered harmful for its development of methane in landfill (see section 12.4.5).

For unsustainable disposal of non-hazardous materials, and for quantities for which no sustainable disposure can be demonstrated, **[O.F.-15 Waste Categories]** lists the ESCU's per kg. that shall be allocated per waste category per kg. (dry weight) of materials, related to the product. However, if a positive market value of the material can be demonstrated (indicating that there is use for the material), the ESCU's are reduced by the factor (OPV – EOLV)/OPV, where OPV is the Original Product Value and EOLV the End-of-life value.

For energy recovery at incineration, fermentation or landfill, for the net generated KwH's that can be demonstrated, the ESCU's as listed in **[O.F.-05 Energy Resources]** for 1 KwH of electrical energy may be subtracted and otherwise the (negative) ESCU's listed in **[O.F.-15 Waste Categories]** for co-firing are allocated. The incineration shall be considered an independent activity and supply to the organization for which all ESCU's must be calculated and allocated back to the product. ESCU's for C02 emissions are allocated according to section 12.4.1 based on the full dry weight of the waste, subtracted with CO_2 emissions from the demonstrable non-mineral part of the waste.

Note that amounts that are paid to governments and other bodies for waste collection and -treatment may be subtracted as Bonus ESCU's, described in section 12.7.

Additional ESCU allocations.

The organization shall make a lifetime curve for the product, which is the time between purchase by the consumer/user and the moment of disposal at end-of-life. (Any reuse that needs disassembling of the most valuable parts of the product is considered as end-of-life). From this curve, determined

shall be the timepoint with highest quantity of end-of-life (HEL) and the timepoint that 80% of the product has reached end-of-life (80%EL). The maximum redundancy factor (RD) is determined as 80%EL/HEL. Without foreground determination of this factor, the default redundancy factor, listed for the material category in **[O.F.-15 Waste Categories]** shall be used.

For each of the 3 groups of responsibilities listed in section 12.6.1, with which no full compliance can be demonstrated, the product's end-of-life-disposal ESCU score shall be multiplied with a Product Life Improvement Factor, **(PLIF)**, listed in **[O.F.-15 Waste Categories].** Without compliance with all of the 3 groups, the factor is applied 3 times.
However, if the ESCU's for utensil for emissions or product safety are mitigated by replacement of an average similar product in the market, these mitigated ESCU's may be subtracted.

Subtracted may also paid amounts, including sustainability taxes, for collection and treatment of waste, which is described in section 12.7: Bonus ESCU's.

Note, that ESCU's can be reduced by recycling waste materials as raw materials (see section 12.3.9), either by recycling the own products ("internal circularity") or externally wasted materials or disposed products ("open-loop circularity").

The organization may demonstrate its own "cost distance to sustainable disposal" e.g. by means of a concrete investment proposal or cost calculation, made or verified by an independent qualified expert on waste management and finance, and allocate these ESCU's per kg. of product or piece instead.

12.6.1.2 Documentation of ESCU's for end-of-life disposal.

The organization shall keep a list **[End-of-life Disposal]** per product listing for each criterion if and how it is met with the associated ESCU's.

12.6.2 Total ESCU score for End of Life.

The subtotal **[ESCU-End of life]** is also the Total of ESCU's for the aspect of End-of-Life.

12.7 Bonus ESCU's.

Considered Sustainable Development Goals: **All 17**

12.7.1 Bonus activities and products.

Bonus ESCU's may be allocated (subtracted) for positive externalities. A positive externality occurs when a third party benefits from activities or consumption of a product without incurring the (full) costs. Because this standard reveals the hidden preventative costs (externalities), not included in the standard economy, only for hidden positive impacts, bonus ESCU's may be allocated.
Exactly like ESCU's represent costs of prevention, Bonus ESCU's are equal to the actual (extra) expenditures (and not to the beneficial impact).
The following types of bonus activities/products are distinguished:

1 Activity/production related benefits. Considered are benefits that are not (fully) paid for.
2 Legally paid sustainability taxes and credits.
3 By-product related benefits.
4 High agricultural crop yields (see section 12.4.3).

For all below listed benefits applies that Bonus ESCU's may only be allocated if the benefit is not paid for and not used as advertisement as major goal (one to one B2B communications within the supply chain are OK). In addition, subsidies received for beneficial products/activities must be allocated as ESCU's.

12.7.1.1 Bonus ESCU's for activity/production related benefits.

1. Consistent (not the periodic selling off) below cost price provision of products with beneficial impact, e.g. medicines for underprivileged people.
2. Sustainable capturing of CO_2. It shall be demonstrated that this CO_2 is captured for intendedly indefinite times without major negative consequences. **However, no Bonus-ESCU's may be subtracted for product-related CO_2 emissions for which no ESCU's were allocated in section 12.4.1**. If the capturing is achieved by planting trees, long term protection and long term funds availability for effective protection shall be demonstrated, and that the concerned country has a corruption perceptions index > 40, listed in **[O.F.-04 Country Statements].**
3. Recycling of at least 5 years old waste, either from the organization, or from others, into useful products. Bonus-ESCU's are only subtracted if the organization does not delay recycling of current waste and products for more than one year.
4. Recovery or restoration of previously caused damage which was caused either by the organization itself or by others. Bonus-ESCU's are only subtracted if the organization currently and systematically does not cause the involved type of damage.
5. Development of products or technology aimed to serve as preventative measure (in the sense of this standard). Bonus-ESCU's are only subtracted if:
   a) The technology is especially designed for the impact mitigating purpose.
   b) The organization can demonstrate that the technology in development or (to be) developed, belongs to the best 20% in the market in its mitigating effect.
   c) All ESCU's for used products and activities are calculated.
6. Development of, Investment in technology, exclusively designed and used for ESCU-mitigating effects, such as installations for cleaning soil, water or air.
7. Restoration and/or long term protection of natural ecosystems, or upgrading of soils in countries with a corruption perceptions index > 40.
8. Poverty reduction in a country marked as "Poorest Country" in **[O.F.-04 Country Statements].** In countries with a corruption perceptions index <60, only for expenses directly to the underprivileged, Bonus-ESCU's may be subtracted.
9. Contributions to the local community (infrastructure, nature, education, sponsoring, cleaning, healthcare, cultural activities). No Bonus ESCU's are granted for activities with advertising as major purpose or for contributions necessary for the product or organization itself.
10. Provision/sustaining of medical care (not the insurances), health campaigns or birth control, either to own personnel or to others (excluding for harm caused by work in or for the organization) or organization/sustaining health campaigns.
11. Emergency relief, suitable for and at the disposal of the community.
12. Costs for activities like peace initiatives and community bonding, other than for the organization's own purposes.
13. Costs for protection of cultural heritage and indigenous peoples and stimulation of cultural activities that do not harm sustainability, other than for the organization's own purposes.
14. Losses caused by providing micro credits (calculated over the total of micro credits) provided that proper control can be demonstrated that the credits are used for development of small scale businesses.
15. Cancellation of micro debts to the underprivileged.
16. Donations to government recognized NGO's for nature protection, health care or aid. Excluded are political parties.
17. Capacity raising training or education of local people, not working for the organization or training of local suppliers to improve their quality, yield, legal compliance or commercial skills, or sustaining local schools or trainers.
18. Education for own personnel or trainees, elevating the capacity of these people also for employment outside the organization for skills that are locally scarce, such as in complex technology.

19. Extra costs for employing people with distance to the labor market (e.g. by a mental or physical handicap). Included may be costs for adaptations, extra guidance and costs of lower efficiency if demonstrable by comparison with an average worker.
20. The surplus of paying above the FMW for work that demonstrably is paid at or below the FMW in the 20% poorest countries of the world (measured by the GDP per capita).
21. Other extra costs for benefits for the community that are not paid for and not used as public advertising purposes, but only after demonstrable consultation and agreement with all stakeholder groups, including indigenous people.
22. Infrastructural investments or services beyond companies' own operations, benefitting the local community, but only if a full assessment can be demonstrated about absence of negative environmental impact, also in the long term.
23. All other activities and products promoting and helping achieve one or more of the 17 sustainable development goals, but only for "hidden positives" (externalities) and therefore not part of products or activities which the organization is paid for, or are used in advertisements.
24. Improvement of access to food, water or other essential needs for the local population in low income countries/regions where these are scarce.
25. **All not hidden activities (internalities) and products that reduce costs for the user/consumer/community in addition to a sustainability improvement.** The cost reduction must be based on demonstrable average prices of current alternatives.
26. Construction or running installations for cleaning polluted ecosystems (soil, water- or air).

12.7.1.2 Bonus ESCU's for paid sustainability taxes, treatments and -certificates

27. Paid taxes, specifically and fully concerning sustainability. These Bonus-ESCU's may only be subtracted, if it can be demonstrated that the relative tax is purely calculated based on sustainability aspects.
28. Paid certificates/credits/emission rights, specifically concerning the exchange of sustainability related rights.
29. Paid amounts (including tax) for end-of-life disposal services by governmental- or other bodies.

12.7.1.3 Bonus ESCU's for beneficial by-products

30. If a company provides beneficial by-products (e.g. heat from a chemical company, used for municipal heating), that by-product is considered a product, resulting in ESCU – reduction of organization's other products.

12.7.2 Calculation of ESCU's for Bonus activities.

Contrary for ESCU's on negative impacts where these are based on calculated or planned preventative measures, ESCU's on positive impacts can only be based on demonstrated actual status. **[O.F.-22 Bonus ESCU's]** lists the ESCU scores for each bonus - activity per quantity of compensated damage or action of aid.
However, the ESCU's for the activities used for execution of the bonus activities themselves shall be allocated. Bonus-ESCU's are subtracted per kg. product or per piece, and divided over the different products, proportionally to their financial turnovers.
For expenditures in investments (e.g. a hospital, water installations of firetruck) benefitting communities for several years, Bonus ESCU's are allocated equal to depreciation in 5 years or less at shorter investment lifetimes.
One activity can only lead to one negative ESCU allocation (for one aspect).
All Bonus-ESCU's shall be based on last year's average, unless otherwise specified in section 12.7.1.2.
Beneficial by-products are allocated with ESCU's proportionally to their financial turnover, this way reducing the ESCU's of the involved products that the by-product(s) exist from.
No Bonus ESCU's may be allocated:

- If only a partwise assessment is made, only for those aspects for which the ESCU's are included, Bonus ESCU's may be allocated.
- For paid mitigation products, because this standard considers these as internalities.
- If the upstream assessment is incomplete, e.g. does not reach to the origin (see definition).

Documentation of ESCU's for Bonus activities.

The organization shall keep a list **[Bonus-1]** per product, listing for each criterion a description of the bonus activity and the associated ESCU's.

12.7.3 Total ESCU score of bonus ESCU's.

The subtotal **[ESCU-Bonus]** is obtained by aggregation of all Bonus - ESCU's as a negative amount.

12.8 Total ESCU score

The total ESCU score for the product is obtained by aggregation of **[ESCU-purchase], [ESCU-operation], [ESCU-use], [ESCU-disposal] and [ESCU-bonus].**
The total ESCU for the product is also obtained by aggregation of the 10 aspect totals of **[Total-Pollution], [Total-Depletion], [Total-Land], [Total-Biodiversity], [Total-Waste], [Total-Public Health and Safety Risks], [Total-Economic], [Total-Labor], [Total-Corruption], [Total-Various Social].**
This way the **[O.F.-ESCU Matrix]** is completed.

13. Appendices.

13.1 Choices and Positions.

To facilitate future stakeholder assessment, the more controversial positions are described here:

1. GHG émissions cause climate change.
2. Modification of DNA presents both opportunities and threats. The OS considers genetic modification harmful until either an international body controls research and approves potential products, or research, reviewed by 100% independent and qualified scientists, has proven the resulting products and production methods harmless for people and environment, and the country of use has approved the resulting products. The OS will take a similar position to other new technologies with major threats.
3. Nuclear energy presents both opportunities and threats. Scientific assessment without emotions is virtually impossible. An international body controls the development and use of nuclear technology. The OS considers the use of nuclear energy equally harmful as GHG emission, also because most preventative measures are the same as for fossil energy sources.
4. Animal welfare is an emotional aspect. Nature itself is extremely cruel, but nonviolence and care including for animals may well be considered a positive direction for humanity. Because growing numbers of people consider animal welfare as an aspect, and because the tension between livestock efficiency should not go lead to cruelty, the OS includes its measurement.
5. A long term vision provides a far better prospect for sustainable management than a short term vision. Therefore, the OS includes long term vision and responsibility considerations in its criteria, with consequences for aspects like remuneration and financial products.
6. Conflict, war, corruption and crime are great dangers to sustainability.
   Therefore the OS includes criteria on both situations where the activities of an organization may contribute to situations of conflict, violence or corruption, and situations where the transparency

and reliability of the organization and its communication may be questioned by the presence of situations of conflict or corruption.

7. Crops rival for space with each other and with nature. The OS considers further loss or damage of natural ecosystems, such as forest, wetlands and corals, unacceptable. Because large parts of the old world were denuded long ago, it would not be fair to only impose ESCU's on relatively newly denuded space only. Inefficient use of land in one part of the world may lead to loss of nature in other parts. Therefore, the OS allocates ESCU's to any inefficient use of land.
8. The OS strives for a sustainable economy by means of a free market, functioning within moral boundaries. Poverty is one of the major sustainability aspects but also the one most affecting other aspects. Global population growth, climate, conflict, health and safety conditions, erosion, forest clearing, pollution and many other conditions, all are strongly (positively or negatively) interrelated to poverty. Therefore, the OS includes criteria on fair pay of both fair wages and fair transactions.

9. Remuneration differences are necessary because they belong to the free market, providing motivation and opportunities. Some rewards however, are harmful because they stimulate decision takers to prevalent their own interests over the interest of sustainability. Therefore, the OS includes criteria on inequality.

14. Literature

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Instruction: Use above website – water stress → click map → mark the exact location on the map → apply analysis →download as CVG →convert the rows from text to table by comma separation→find base water depletion

(BWD_raw).