Guidance document

COSP data collection

May 2023

Version 1.1

Contents

PART I. Introduction

1. Introduction guidance document

This document is intended to provide general guidance for calculating and reporting the production costs of Fairtrade certified producers[1] as part of the collection of the Cost of Sustainable Production (COSP) data. COSP data is one of the key sources of information for the development of Fairtrade Minimum Prices (FMP), which intends to cover the average production costs of all producers within the system. The FMP is intended to protect producers from market instabilities, providing a safety net in case of low market prices. This guide aims to support Producer Networks and Companies, National Fairtrade Organizations (NFOs), consultants, and all other Fairtrade International staff in the COSP data collection process.

The Fairtrade International's Standards Unit makes regular FMP setting and/or review in order to expand the geographical scope of producers benefiting of Fairtrade and to keep the database of FMP up to date. Besides the FMP, members or workers of a certified small producers' organization (or registered producers under the Contract Production standard) or company, respectively, also receive a Fairtrade Premium (FP). Although the development of a FMP may involve the determination of a FP, this guidance document refers only to the calculation of COSP for the FMP and not the FP.

In order to develop the FMP, the collection and reporting of representative COSP data is of key importance.[2] This document examines the main types of production costs incurred in the various stages of production from the farm to the export process and provides examples that illustrate the concepts presented. This document is meant as a guide and is not intended as an in-depth study of the costs of production of a particular product.

This guidance document is structured in four parts. The first part provides an overall introduction to the FMP price setting process and the COSP data collection process. This part is intended for readers who want to familiarize themselves with the general process and objectives of COSP data collection. Part two of this document provides general guidance for collecting and reporting of COSP data, including guidance on how to collect COSP data at farm-level, general considerations for collecting COSP data and guidance on how to use the COSP template. Part three of this guidance document consists of a description of each of the cost categories and the corresponding calculation methodology. Part 4 of this document consists of the annex, with examples of HREDD and environmental cost items, and an explanation of approaches for allocation of costs, amortization, depreciation and calculation of transformation, preparation and packaging costs.

[1] Fairtrade certified producers refers to both SPOs and HLOs unless otherwise specified.

[2] The term representative refers to the sample of producers included in the data collection being a good representation for all producers of the specific region and agricultural product.

Interpretation and utilization of this information is the responsibility of the user. If a facilitator of the COSP data collection process requires further assistance in developing individual COSP, additional information and/or an explanation of the calculations, please contact: standards-pricing@fairtrade.net.

2. Introduction FMP price setting process

One of the key elements of the Fairtrade system is the establishment of Fairtrade Minimum Prices (FMPs) for Fairtrade certified products. The FMP is the minimum price which the importer or other buyers of Fairtrade products are obliged to pay. In practice the FMP only comes into effect when the reference market price is below the FMP that is set for a specific product. This way, the FMP acts as a safety net for Fairtrade producers when market prices are low. The FMP is based on the principle of covering the average costs of sustainable production for a product, while enabling the average producer to produce in an economically and financially sustainable way without systematic economic losses. To achieve this, COSP data is collected as part of a Fairtrade pricing project. This COSP data is used to estimate the typical production costs that Fairtrade producers have to produce Fairtrade certified products[3]. A Fairtrade pricing project follows 6 steps:

1. **Start of pricing project:** A Fairtrade pricing project is submitted and accepted by Fairtrade International's Pricing Team or carried out following a regular review cycle.
2. **Definition of project scope and planning:** The project scope is defined together with relevant stakeholders.
3. **COSP data collection:** COSP data is collected from Fairtrade producers.
4. **Consultation:** COSP data is used in a consultation process to determine the FMP. This consultation process takes place with various stakeholders, including National Fairtrade Organizations and Producer Networks.
5. **Approval**: the FMP proposal is developed, submitted, and approved by the Standards committee.
6. **Implementation of approved FMP:** the FMP is communicated to affected stakeholders and published on the website of Fairtrade International.

Figure 1. Visualization of the steps within the FMP price setting process

This guide and the COSP template are used for step three, the collection of COSP data. After the COSP data is recorded in the COSP sheet, the data can be used for validation. The development of the FMP relies on good quality data on the cost of sustainable production. To collect good quality data, trust and co-operation of

[3] More information about the price setting process can be found in the document Standard Operating Procedure for the Development of Fairtrade Minimum Prices and Premiums, Fairtrade International (2016).

Fairtrade producers is of key importance. Maintaining the confidentiality of all data collected is therefore of paramount importance to Fairtrade International Standards Unit. To maintain confidentiality, COSP data is aggregated, and all information supplied by Fairtrade producers is treated confidentially for FMP development purposes only.

3. Introduction COSP data collection process

The objective of COSP data collection is to obtain a value representing the production cost incurred at farm level and at central structure level to produce a Fairtrade Certified product. To guide the collection of COSP data, facilitators can make use of the COSP template that accompanies this document. Figure 2 visualizes the structure of COSP data collection and the COSP template. COSP data is collected based on seven different production stages. For HLOs, the costs for each production stage can be reported by central management. For SPOs, the production stages are divided into cost at farm-level and cost at central structure level. Costs for each production stage can be either incurred by farmers or by central management of the SPO.

Fairtrade International sets prices at *Ex Works (EXW)* and *Free on Board (FOB)* levels, depending on the type of products and trading practices. According to the ICC (2000)[4], EXW indicates that the exporter delivers the product to a specific place (warehouse, packaging plant, etc.) but does not incur export or handling costs. FOB indicates that the exporter places the product in the means of transport (air, sea, and rail). The exporter assumes the risks and responsibilities up to that stage. This distinction is also made in the collection of COSP data. At EXW price level, the COSP includes costs of establishment; field operations; harvest and post-harvest; transformation and/or processing; product preparation and packaging; and central structure expenses. At FOB price level, include the same as above but in addition, export costs are considered.

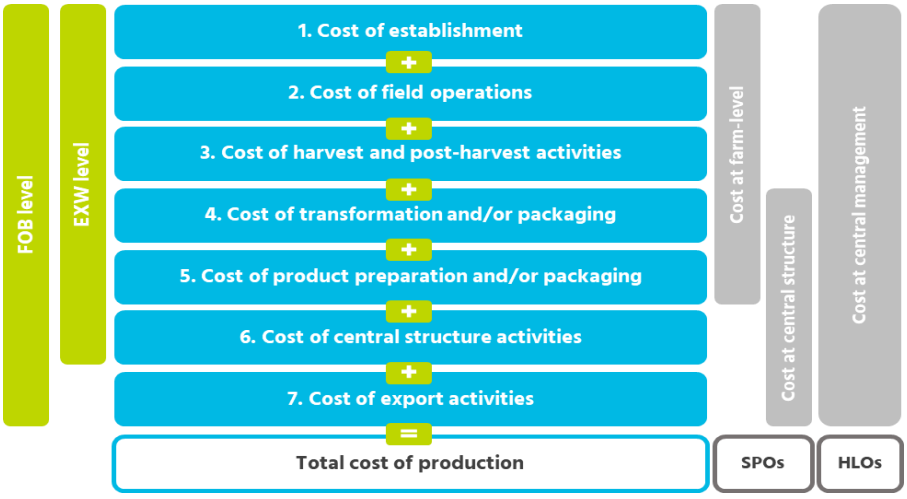

Figure 2. Visualization of the structure of COSP data

[4] International Chamber of Commerce (2000). Incoterms 2000.

PART II. Collecting and reporting COSP data

This section provides guidance on how to collect and report COSP data. Chapter 4 gives guidelines on how to collect from SPO members to obtain representative data on the cost on farm-level. Chapter 5 discusses some general considerations that should be taken into account while collecting and reporting COSP data. Chapter 6 gives an introduction to the COSP template and explains the various cost categories that are included.

4. How to collect representative COSP data at farm-level

To obtain representative COSP data at farm-level it is recommended for SPOs to use a consensus building process with participation of SPO members. SPO members can provide information on:

- Representative farm size in use for the product in question (in chosen land measurement unit)
- Representative productive life cycle of the crop (in years); annual crops have a life cycle of 1 year, for perennial crops the life cycle can last over multiple years.
- Representative costs of production related to field operations and harvest/post-harvest activities
- Representative transformation/processing and product preparation/packaging if applicable
- Representative yield per hectare (in chosen measurement unit)

SPOs are responsible for the collection of data among SPO members. To obtain data, SPOs can implement various methods such as, farmer household surveys, focus group discussion and farmer record keeping. SPOs are free to choose which data collection method they use based on the resources and expertise available. However, focus group discussion have been identified as a useful method for the collection of COSP data as focus groups are an effective method for building contextual understanding and identifying other sources of data that might be relevant to the cost of production in the specific region. The SPO members who take part in the focus group discussion can be identified by local facilitators (usually leaders of small producers' organization) and should either be chosen based on random sampling or be representative of a farm in the area in terms of farm size and productivity level. Each focus group discussion consists of a consensus building process. Members are asked to develop a typical production system drawing on their personal farms and experience. During the discussion, the resulting COSP data is entered into a preliminary COSP input file. Once the discussion is completed, calculations should be done to show the participants the projected information for their representative farm. The SPO members are then asked to adjust their input values for costs, yields, etc. Adjustments to production costs are generally made by the panel until they are satisfied that COSP represents their farm data. This interactive validation process has proven to be helpful because it gives the panel immediate feedback that their efforts were worthwhile.

5. General considerations for reporting COSP data

This chapter discusses some general considerations that should be taken into account while collecting and reporting COSP data.

5.1 Use case COSP data

Accompanying this guidance document is the COSP template that can be used to report COSP data. The template consists of a detailed COSP sheet and a 'light version' of the COSP sheet. The extensive COSP sheet contains all cost categories that are relevant for the production of Fairtrade certified products. This detailed COSP template can be used for in-depth research into the costs of producers, or for the development of commodity specific COSP sheets, in which the relevant cost items can be adopted from the detailed COSP template.

The light COSP sheet is geared towards more efficient data collection by using aggregated cost categories. The same main cost categories are used; labor, inputs/services, capital/investment, but without making distinctions between the various production stages or farm activities. Though this provides less detailed results, it enables more cost and time efficient data collection. The 'light' COSP template therefore lends itself well for data collection that requires less granular results. For example, the full COSP data sheet can be used for a full pricing project for a specific commodity every 5 years, and the 'light' COSP template can be used for yearly review and update of the data.

Before the start of the COSP data collection process it is recommended to clearly define the use case for the COSP data and the required level of detail of cost-items. If the use case of the COSP is to obtain detailed data on the cost incurred by Fairtrade producers, and there are enough resources for extensive research, the detailed COSP sheet can be used for data collection. If the use case of the COSP data collection is to obtain a rough estimation of the cost of production incurred by Fairtrade producers and resources are scarce, it is recommended to use the light COSP sheet for data collection.

5.2 Reporting per commodity

It is important to note that the COSP should be reported per commodity. In case a SPO or HLO produces several products, one COSP sheet must be filled in for each product. If multiple crops are produced, it is possible that certain expenses relate to multiple products. To account for these so-called joint costs, the costs need to be allocated to a specific crop based on allocation techniques. Allocation should, where possible, be based on objective criteria, such as man-hours/days, product quantities, or machine hours. It is important to be transparent on the use of allocation rules to inform the interpretation of the data and enable validation. A more detailed description of allocation approaches is provided in appendix 9.1.

5.3 Reporting per production stage

As shown in figure 2, COSP data is categorized based on the various production stages of a product. The production stages are based on those production practices typical for all products but might not apply to all. If no costs are made certain production stages, these costs can be reported at non-applicable or the COSP template can be adjusted for specific commodities depending on which production stages are applicable.

5.4 Cost at farm-level and central structure level

COSP data is divided into cost at farm-level and cost at central structure level. For HLOs, the costs at farm-level and central structure level are both incurred by central management. For SPOs, costs at farm-level and central structure level can be either incurred by farmers or by central management of the SPO. SPOs can differ significantly in the extent to which they provide services to their members. To understand what cost are incurred by farmers and what cost are incurred by central management, it is recommended to record who bears the cost for each cost item. The COSP template includes a column to report this information.

5.5 Reporting for one-year agricultural period

COSP data is reported for a one-year agricultural period. In the case of annual crops, calculation of the average cost per year is straightforward as every year consist of a full production cycle. In the case of perennial crops (also known as multi-annual crops), harvesting does not necessarily occur regularly or may start only a few years after plantation, giving rise to irregular cash flows. Therefore, the COSP data should be based on the average yearly costs of the full agricultural cycle of a product. To calculate this, the panel of SPO members should first reach a consensus on the number of years of the representative agricultural cycle of the product in question. For each year in the cycle, the average cost of production should be estimated for each year of the agricultural production cycle. The average cost for each year should then be summed and divided by the years of the agricultural cycle. A similar approach should be taken for calculating the average yield. After a consensus on the number of years of the representative agricultural cycle of the product, yield data for each year should be provided. Once this information is obtained, the average is taken by summing up all the yields and dividing this value by the number of years agreed by the panel.

5.6 Unit of reporting

COSP data can be reported in the unit of preference for example kg/mT or hectare/acre. The unit used for reporting the COSP should be indicated in the first section of the COSP template. To calculate the values for the chosen unit, the total production cost can be reported for each unit by dividing the yearly costs by the typical farm size or typical yield. It is important to take into account that some commodities are transformed in order to be suitable for sales. For example, in coffee production cherry beans are harvested and then transformed into green beans through the process of hulling. It is important to indicate for which product the costs are reported, and what conversion factor is applied to indicate how much raw material is converted into the final product.

6. How to use the COSP template

As mentioned, accompanying this guidance document is a template that can be used to report COSP data. This chapter first provides a description of the full COSP sheet, explaining each component and the underlying cost categories. This is followed by an introduction to the 'light' COSP sheet.

6.1 Introduction COSP sheet

The full COSP sheet is composed of two parts with five main components. *Part I. General information* consist of the components: a) Contact information, b) Fairtrade Certified Producers' Information c) Product information. The second part *Part II. COSP data* consist of the components: d) COSP at farm-level and e) COSP at central structure level. The COSP template can be filled out based on chosen unit for land size and unit weight, as long as the unit is clearly indicated at the beginning of the template.

Part I. General information

a) Contact information

Date form filled out	
Name	
Email	
Telephone number	

- **Date:** Date when the COSP template is filled out.
- **Contact details**: Name, email, telephone number of the person who fills out the COSP template.

b) Fairtrade Certified Producers' Information

Name of Fairtrade Producer	
FLOID	
Country	
Last step as undertaken in the marketing chain	

- **Name of Fairtrade Producer:** Name of SPO or HLO.
- **FLOID:** FLOID of the SPO or HLO.
- **Country:** Name of the country in which the producers is located.
- **Last step as undertaken in the marketing chain:** Description of the level of the supply chain where the responsibility of the certified producer ends.

c) Product information

Crop information	
Agricultural period	
Market of the product	
Conventional or organic	
Unit of measurement for yield	
Unit of measurement for land size	
Currency	

- **Crop information:** Description on the product and crop for which the COSP sheet is filled out, including crop variety and standard production cycle.
- **Agricultural period:** Information on the agricultural period (month/year until month/year) for which the COSP is filled out.
- **Market of the product:** An indication must be done if the product is for transformation/processing or for exportation.
- **Conventional or organic:** It must be indicated if the produce is organic or conventional.
- **Unit of measurement for yield:** indication of the unit used to report yield (kg, tonnes, other).
- **Unit of measurement for land size**: indication of the unit used to report land size (acre, hectare, other).
- **Currency:** Indication in which currency the COSP is reported.

Part II. COSP data

d) COSP at farm-level

Product description product at farm gate level	
Average yield at farm gate level	
Average farm size	

Before reporting the cost per cost category for production stages at farm-level, Fairtrade certified producers should provide a description of the product at farm-gate level, as well as the productivity level at farm-gate level. This enables comparability of COSP data between different producers.

- **Product description of product at farm-gate level**: description of product as delivered from farmer to cooperative.
- **Average yield:** An average yield of the product in questions needs to be reported.
- **Farm size:** Average size of the land used for agricultural production of the crop.

	Cost per unit of land size	Cost per unit weight
1. Total cost of establishment		
2. Total cost of field operations		
3. Total cost of harvest and post-harvest operations		

The section *COSP at farm-level* refers to cost items that are incurred at farm level by SPO members or in the case of a HLO by the central management. The section is divided in three production stages. In the COSP template each production stage consists of various cost categories with cost-item examples for which the cost should be recorded.

1. **Establishment costs:** This category includes all cost related to the initial investment done to establish the product in question. Includes cost related to land use and preparation, labor, inputs and services and capital and investments.
2. **Field operations costs:** This production stage refers to all expenses related to farm activities needed for the production of the product. Farm activities are for example: weed management, irrigation, mulching, fertilizing, pruning, pest and disease control, shade management and agroforestry, replanting and rejuvenation. The underlying cost categories that should be reported are labor, inputs and services, and capital and investments.
3. **Harvest and post-harvest costs:** Cost relating to harvest and post-harvest activities. The underlying cost categories consists of labor, inputs and services and capital and investments. Harvest and post-harvest operations could be sorting, sizing, grading on specialized machines. If machinery is employed fuel, oil, and investments (depreciations, insurance, repairs, and maintenance) should also be considered. Cost can also include transport from farm to cooperative, either incurred by the farmer or by SPO management.

e) COSP at central structure level

	Cost per unit of land size	Cost per unit weight
4. Total cost of transformation and/or packaging		
5. Total cost of product preparation and/or packaging		
6. Total cost of central structure activities		
7. Total cost of export		

The section *COSP at central structure level* contains cost items that are incurred by the organization at management level. The section is divided in four components responding to different production stages. Per section various cost categories with cost-item examples are described for which the cost should be recorded. If certain production stages are not applicable to the producer, the fields can be filled out as n/a.

4. **Cost of transformation and/or packaging:** Includes all costs related to transforming a product in order to be suitable for consumption. In the reporting of these cost, it is important to consider the conversion rate of the raw material to the final product.

5. **Cost of product preparation and/or packaging:** All costs related to preparing, selection, cleaning, sorting and treatment. Usually, these activities are carried out in a packaging or processing plant.
6. **Cost of central structure activities:** Includes all costs related to the management of the umbrella organization, including certification costs. Examples are office expenses, management salaries, taxes, certification fees.
7. **Cost of export:** Includes all export and handling costs, including transport costs, insurances costs, taxes and fees, handling costs.

Fairtrade certified producers should also provide a description of the product for export, as well as the total volume sold by the producer. This enables comparability of COSP data between different producers.

Product description product for export	
Volume sold at SPO/HLO level	

6.2 Light COSP sheet

The light COSP sheet consist of the same four main components as the detailed COSP sheet. The first three sections a) Contact information, b) Fairtrade Certified Producers' Information and c) Product information are identical to the detailed COSP sheet. The other two sections c) COSP data farm-level and d) COSP data central structure level are a condensed version of the detailed COSP sheet.

D) Cost at farm-level	Cost per unit of land size	Cost per unit weight
1.1 Labor		
1.2 Inputs, materials, tools, resources		
1.3 Capital and investments		
1.4 Other costs farm-level		

E) Cost at central structure level	Cost per unit of land size	Cost per unit weight
2.1 Labor		
2.2 Inputs, materials, tools, resources		
2.3 Capital and investments		
2.4 Certification and compliance costs		
2.5 Export costs		
2.6 Other costs at central structure level		

In the light COSP sheet no distinction is made between the various production stages. Instead, the yearly costs at farm-level are divided into four categories; labor, inputs/materials/tools/resources, capital/infrastructure and other costs. These cost categories are reported per hectare and per metric ton. For cost at central structure-level, the cost are divided into six categories; labor, inputs/materials/tools/resources, capital/infrastructure, export costs, certification and compliance costs, and other costs.

Part III. COSP data calculations

7. How to calculate COSP data

This section provides guidance on the calculation of COSP data. 7.1 provides some general considerations for cost categories; labor, inputs/services, capital and investments, human rights and environmental due diligence and environmental costs. The remaining of this section, 7.2 and 7.3, continues with explanations on how to calculate case-by-case each stage of production in the COSP sheet.

7.1 General considerations costs of production

Labor

To estimate and report the labor cost for each of the production steps, labor can be divided into three subcategories: a) family labor, b) regular hired labor, and c) temporary hired labor (i.e., seasonal and casual). Family labor is generally provided by the farmer or farm family members. Regular hired labor is used primarily for the performance of general farm operations such as equipment operation, pruning, etc. Temporary hired labor is used primarily for planting, weeding, harvesting, and packing of products. The amount of family, regular hired, and temporary hired labor required for each product depends on the number and frequency of tasks, the overall size of the farm, and whether harvesting is accomplished by hand or machine.

Though most family labor used by small-scale farmers is unpaid, the value of this labor should be calculated to arrive at an accurate estimation of the production costs. Family labor can be estimated by reporting the required man-days[5] and multiplying this by the local daily wage rate. Temporary hired labor should also be reported in man-days and multiplied by the daily wage paid. In the case of regular hired labor this should be reported in number of workers, period paid and amount paid per worker. The calculation of regular hired labor involves reporting the salary (e.g., weekly, monthly, etc.) of the workers during the agricultural period contracted plus the value of mandatory government benefits such as social security and workers compensation.

Inputs and services

The cost category inputs and services refers to expenses that are directly related to farm operations. Examples of these items include chemical inputs such as fertilizer, herbicides, and pesticides; irrigation water; seeds or plants; small tools and/or small hand equipment used in the field; fuel and oil; repair and maintenance costs of machinery, among others. This cost category also includes services that are required and paid for relating to farm operations. Some examples of services are: custom work such as lime application, grain drying, machinery

[5] A man-day is the amount of agricultural labor performed by an average worker in one day and commonly is not superior to 48 hours per week.

operations, and transport. Assigning costs is more straightforward for those inputs or raw materials purchased for a single production period. In this case, the costs can be calculated by the quantity of the input multiplied by its paid price. Multiplying the quantity applied by the price per unit gives the cost that can be further divided by the number of hectares to obtain costs per hectare. If inputs and services are used for more than one crop, the costs should be allocated for the specific crop. The allocation of these farm expenses to specific crops can be made using a variety of allocation schemes. Producers should use or develop a scheme that is both simple and reasonably accurate. Examples of allocation approaches can be found in Appendix 9.1.

Capital and investments

The cost category capital and investments refers to various expenses during the year that are accrued independently of the size of production, also referred to as *fixed costs*. Some examples are: insurances; investment repairs; annual depreciation; interest costs on operating capital; building, machinery and field tools. A brief explanation of these examples is discussed below:

- *Capital goods*: refers to assets that are not used up during one production period. The cost of these goods are often a one-time investment. Examples include: buildings, infrastructures, machinery and equipment. The costs of these capital goods are reported as the annual depreciation rates. The annual depreciation is the portion of the cost of the machinery or building that is counted as an expense each year. Depreciation can be estimated using the straight-line method spreading the total costs over the expected useful life. The calculation method for depreciation is explained further in Annex 9.3.
- *Insurance:* insurance for farm investments varies depending on the asset and the amount of coverage. Insurance costs should be reported as annual costs and can be based on an average nominal interest rate.
- *Repairs and maintenance of capital assets:* refers to the repairs of building and machinery investments. This should be calculated with the same approach as capital goods, using a straight-line depreciation method.
- *Interest on operating capital:* It is a common practice among producers to incur short term loans to pay for materials and other capital assets. To account for this, interest on operating capital is usually included as a cost of production. To calculate the interest on operating capital, for field operations, the period (in months) is multiplied by the annual rate chosen. Interest on harvesting is calculated for a shorter period (e.g., one month only). For the purposes of COSP calculation, the most common nominal interest rate for short-term and intermediate loans can be selected.

Human rights and environmental due diligence

Human rights and environmental due diligence (HREDD) is generally understood as a process with which companies can efficiently identify, prevent, mitigate and account for the negative impacts of their activities or those of their suppliers. The HREDD process comprises the following steps: commit, identify, assess, prevent, mitigate, monitor, and remediate negative impacts on human rights and the environment in the supply chain, and embed responsible business conduct into company policies and management systems. These steps are explained further in the *Guide for smallholder farmer organisations. Implementing human rights and*

environmental due diligence (HREDD) published by Fairtrade International in 2022[6]. This guide is intended to provide support and tools to Fairtrade Certified SPOs for the implementation of HREDD work.

HREDD requirements are increasingly taken up in the Fairtrade Standards. As a result producers are required to identify and record risks of human right violations and environmental risks. Based on the risk assessment producers should develop relevant policies and procedures to remediate the risks. Implementing HREDD work will result in additional costs incurred by producers for the implement systems to monitor and collect data to comply with the HREDD requirements. Costs of implementing HREDD processes differ significantly for Fairtrade certified producers depending on the level of engagement with HREDD required, as well as the maturity of monitoring systems. However, as HREDD processes become more integral, the cost related to HREDD should be identified and reported in the COSP data collection process.

The costs of HREDD can be divided between costs at central structure level and costs at farm-level. Cost at farm-level consist of the management of monitoring systems. Cost at farm-level consist of practices at farm-level to manage the identified risks. The cost at farm-level should be recorded as part of the field operations as these relate to changes in inputs used, changes to farm infrastructure and implementation of conservation practices among others. Cost related to cost at central structure level can be reported as a separate cost category and will generally consist of cost of labour, cost of equipment and cost of remediation in case of violations. Appendix 8.1 provides an overview of activities and cost related to HREDD.

Environmental costs

Fairtrade International is continuously updating Fairtrade standards to include practices that increase sustainability, build climate change resilience, and minimize the risks of deforestation and biodiversity loss. The implementation of such practices results in additional costs for Fairtrade certified producers and should therefore be considered in the COSP data collection process. Environmental costs refer to costs related to climate adaptation and mitigation measures and cost of practices related to biodiversity protection. There can be an overlap within activities relating to HREDD and environmental practices, as remediation in HREDD can include the implementation of certain climate change practices. However, as mentioned in the previous paragraph, costs relating to implementation of practices are integrated in the costs reported at farm-level as part of the required labour, inputs and services and investment in infrastructure.

Climate adaptation costs

Adaptation to climate change refers to the adjustment to actual or expected climate and its effects. Common adaptation methods in agriculture include developing crop varieties that are resistant to flood, drought, heat, or other stressors, improving water management and irrigation, increasing crop diversification, soil conservation and agroforestry practices. The implementation of these practices is associated with costs, both

[6] Fairtrade, 2022. Guide for smallholder farmer organisations. Implementing human rights and environmental due diligence (HREDD)

on farm-level and at central structure level. Appendix 8.2 includes main cost items that relate to climate adaptation practices.

Climate mitigation costs

Climate mitigation refers to interventions to reduce greenhouse gas emissions or enhance carbon sinks, thus limiting climate change. One example of a climate mitigation practice is the implementation of agroforestry systems, in which shade trees can contribute to climate change mitigation by acting as a carbon sink. Moreover, agroforestry systems tend to be more resilient towards pests, diseases, and other climate stressors. What type of agroforestry system should be implemented depends on the type of commodity as well as local climate characteristics and requires research and consultation of technical experts. Other climate mitigation actions include nutrient management, tillage management, erosion control, manure management. The main cost items relating to climate mitigation practices are described in Appendix 8.3.

Biodiversity protection costs

Fairtrade certified producers are encouraged to adopt practices that will enhance habitats and promote the growth of plant and animal species. To contribute to biodiversity protection Fairtrade certified producers and farmers need to change their practices and implement monitoring systems to prevent adverse impacts on biodiversity. In Appendix 8.4 the relevant activities and cost items regarding biodiversity protecting are identified.

There will be an overlap between climate change adaptation and mitigation practices and biodiversity protection activities. In the COSP data collection process these cost will be part of the cost reported at farm-level. The materiality of the cost depends on the commodity as well as the local climatic context.

7.2 Calculations for cost at farm-level

Production stage 1: Cost of establishment (COSP template: 1.1 - 1.5)

	Cost per unit of land size	Cost per unit weight
1. Total cost of establishment		

- **Land costs:** It is recommended to calculate the costs of land based on the average rental price per hectare that is representative for the region. This ensures comparability between land rental and land tenure costs.
- **Labor:** Labor cost related to clearing, pruning, cutting, pest control, disease control, fertilizer application and other labor needed to prepare the land for agricultural production.
- **Inputs and services;** Cost related to seeds, fertilizer, herbicide, machinery and tools needed for the preparation of the land.
- **Capital and investments:** Cost related to investments required for the establishment of the production system.

- **Other establishment costs:** Any other costs that are incurred by Fairtrade producers for the production set up.

Establishment cost are pre-production cost related to the preparation of the land for agricultural production. These costs occur at the beginning the production cycle of a crop, before the crop is productive. How establishment cost should be reported depends on the production cycle of the crop. For **single-year** crop, the establishment costs are incurred in the same year as the productive life of the crop. Therefore, the establishment costs can simply be summed and divided by the value for farm size or average yield to come to the establishment cost per hectare or per metric ton. In case of **perennial or multi-year crops**, the establishment costs are incurred during the unproductive years of the crop. If COSP data is collected and reported for a perennial crop with a production cycle of multiple years, cash flows will vary between unproductive years and productive years. The establishment cost associated with this non-productive time needs to be allocated over the crop's productive life. This can be calculated through amortization in which the preproduction costs are allocated over the productive years using an annuity formula. This calculation method is explained in Annex 9.2.

Production stage 2: Cost of field operations (COSP template: 2.1 - 2.8)

	Cost per unit of land size	Cost per unit weight
2. Total cost of field operations		

- **Labor:** Labor cost related to weed management, irrigation, mulching, fertilizing, pruning, pest and disease control, shade management, agroforestry and other labor needed for agricultural production.
- **Inputs and Services:** All inputs, tools and other resources needed for the production of the product. Examples are: seeds, fertilizer, fuel, pesticide, water. This also includes any services hired to carry out field operations.
- **Capital and investments:** Depreciation cost on capital goods for field operations are for example; buildings, machinery, vehicles.

Cost of field operations are costs that are incurred only when production takes place, and they are typically used up or transformed during the production cycle. The COSP template is divided in the various field operations (2.1-2.7) including weed management, irrigation, mulching, fertilizing, pruning, pest and disease control, shade management, agroforestry and conservation practices. For each of these field operations the cost categories labor, inputs/ services and capital/investments should be reported. If other field operations are relevant for the production of the crop, this can be added to the COSP sheet or the costs can be reported under 2.8: other costs relating to field operations.

The production stage *field operations* also includes costs related to agroecology such as climate mitigation and adaptation practices, HREDD and biodiversity protection at farm-level. These agroecological practices are increasingly being adopted by Fairtrade producers and are gradually taken up in the Fairtrade standards, as

explained in section 7.1. Examples of these practices and related costs are provided in Appendix 8. All costs that are incurred at farm-level in relation to sustainable practices should be reported as part of the cost categories underlying the cost of field operations.

Production stage 3: Cost of harvest and post-harvest operations (COSP template: 3.1 - 3.3)

	Cost per unit of land size	Cost per unit weight
3. Total cost of harvest and post-harvest operations		

- **Labor:** Labor cost related to harvest and post-harvest operations such sorting, sizing, grading on specialized machines.
- **Inputs and Services:** all inputs, tools and other resources needed for the harvest and post-harvest activities. of the product. Examples are: seeds, fertilizer, fuel, pesticide, water.
- **Capital and investments:** Depreciation cost on capital items such as machinery or vehicles used for harvest and post-harvest operations.

The COSP template is divided in the harvest operations and post-harvest operations (3.1-3.2) referring to activities such as sorting, sizing, and grading on specialized machines. For both sections the cost categories labor, inputs and services and capital and investments should be reported. Costs that to not fall within one of these cost categories can be reported in 3.3 *other costs relating to harvest and post-harvest operations.* Please note that labor hours for harvest and related activities will vary on a year-to-year basis depending on crop and field conditions. Some crops can be planted and harvested at varying times throughout the year, therefore is important to take this into account when reporting COSP data.

7.3 Calculations for cost at central structure level

Production stage 4: Cost of transformation and/or processing (COSP template: 4.1 - 4.4)

	Cost per unit of land size	Cost per unit weight
4. Total cost of transformation and/or packaging		

- **Labor:** Labor cost related to the transformation of a raw material in the into the product that is sold to the buyer. For example, transformation of fresh mango to mango pulp.
- **Inputs and Services:** Cost related to inputs, tools and other resources needed for the transformation of the raw material into the processed product.
- **Capital and investments:** Cost related to capital items such as machinery or vehicles used for transforming the raw material into the processed product.
- **Other costs:** Any other cost related to the transformation of the raw material into the processed product.

Some products such as coffee have to be transformed in order to be suitable for consumption. In this case Fairtrade producer sell product that have been transformed, the cost of transformation from raw material to processed product should be calculated and reported. An explanation on how to calculate transformation costs while accounting for the conversion rate from raw material to final product is provided in Annex 9.4.

Please note that an indication must be done during the reporting of COSP data if the transformation and/or processing costs are incurred at the central structure (umbrella organization) level or at the individual producer level (which applies only to small producers' organizations or contract production projects). In the case of companies, the central structure should report these costs. Also take into account that if the price set is for a processed product form these costs are particularly relevant for the price calculation and therefore is compulsory to report them.

Production stage 5: Cost of preparation and/or packaging (COSP template: 5.1-5.4)

	Cost per unit of land size	Cost per unit weight
5. Total cost of product preparation and/or packaging		

- **Labor:** Labor cost related to preparing, selection, cleaning, sorting, treatment, and packaging of the product.
- **Inputs and Services:** Cost related to inputs, tools and other resources needed for the preparation and packaging of the product.
- **Capital and investments:** Cost related to capital items such as machinery used for preparation and packaging of the product.
- **Other costs:** Any other cost related to the preparation and packaging of the product.

One of the main tasks to be carried out after bringing the product from the field is to prepare it for subsequent packaging. Among the most frequent activities are: *a) Preparing:* consists of removing roots, leaves or stems that are attached to the product and that may affect its quality; *b) Selection:* separation of the products into marketable and nonmarketable based on marketing criteria such as shape, color, texture, etc.; *c) Cleaning:* elimination of soil and foreign objects; *d) Sorting:* separation of product according to quality and size in order to add value; in many cases, the product is labeled at this stage; labeling enables it to be differentiated from other similar products; and *e) Treatment:* application of a chemical or physical process to enhance the product's quality, durability, or appearance. An example of the calculation of packaging cost is provided in Annex 9.5.

Production stage 6: Cost of central structure activities (COSP template: 6.1-6.6)

6. Total cost of central structure activities	Cost per unit of land size	Cost per unit weight

- **Operational costs:** Labor costs, materials and equipment, and investments required for operations at the umbrella organization. This includes labor for administrative tasks, office expenses, investment in office buildings, among others.
- **Certification and compliance costs:** Cost directly related to certification (i.e. Fairtrade label and/or organic certification. This might include application fees, initial certification fees and follow up audition fees, among others.
- **Technical support agricultural practices:** Cost of labor, inputs and services, capital and investment and other costs relating to the technical support that the organization offers to producers. This is specifically relevant for SPOs that offer technical support to their members. Technical support can include training on various agricultural practices, provision of PPE materials, building central storage infrastructure and nursery activities. Note that this refers to cost incurred at central structure level. Compliance cost incurred by SPO members related to for example, soil management, pesticide application and weed management among others, should be reported in production stage 2: field operations.
- **Human rights and environmental due diligence:** Cost of labor and other costs related to risk assessment, implementation and management of grievance systems, development of policies and procedures, collection of geolocation data and assessment of living income.
- **Business and development:** Cost of labor and other cost related to the development of Fairtrade Development Plan, organisation of GA, reporting on Fairtrade Premium
- **Other costs at central structure-level:** Any other cost incurred at central structure-level that have not been reported in the abovementioned cost categories.
- **Business margin:** to ensure Fairtrade producers can operate in an economically and financially sustainable way and to secure a margin for unexpected costs, such as product loss due to climate events or potential remediation costs related to HREDD, a business margin can be added to safeguard a percentage of profit generated. The business margin can be determined as a percentage of the total costs at either EXW or FOB level. An average business margin tends to be in the range of 7-10% across different industries. In calculating the business margin, it is required to clearly indicate which percentage has been used to calculate the margin.

Please note that some of these costs at central structure level are fixed and do not directly depend on the quantity produced. To obtain their value per metric ton, the cost is divided by the total amount of production of the whole small producers' (or contract production project or company) umbrella organization. To calculate the cost per hectare, the cost per metric ton is multiplied by the yield of the product.

Production stage 7: Cost of export (7.1- 7.5 COSP template)

	Cost per unit of land size	Cost per unit weight
7. Total cost of export		

- **Transport costs:** Cost paid per unit of weight or volume (per kilos, quintals, boxes, etc.) or per distance. The most common method of representing transport cost is per unit. In the case of ground transport for example, it is normally quoted per containers of 20' (1 TEU12) or 40' (2 TEU), and the cost depends on distance traveled and type of container, which can be dry, refrigerated or frozen. When ground transport of an agricultural product is paid per container, the container cost is divided by the number of boxes or kilograms that it contains to determine the unit cost.
- **Insurance costs:** To minimize risks related to the transport of products, exporters generally purchase insurance policies which result in additional costs. The cost of insurance varies significantly, according to the circumstances in which the deal was made, type of product, market, etc.
- **Taxes, terminal and commission fees:** Various taxes are related to the export process such as ad valorem tax, merchandise tax, customs surcharge, export taxes. These taxes and other fees or licenses costs should be reported on the COSP sheet.
- **Other costs relating to export:** Common examples are handling costs, storage costs, product loss, financial management costs.

For the FMP on FOB level, the export costs of the product are also taken into account. Any costs relating to the export and transport of the product should be reported in this section.

7.4 Calculations light COSP sheet

When using the light COSP sheet, COSP data is not reported per production stage but a distinction is made between *Cost at farm-level* and *Cost at central structure level.*

Cost at farm-level (1.1- 1.4 light COSP sheet)

D) Cost at farm-level	Cost per unit of land size	Cost per unit weight
1.1 Labor		
1.2 Inputs, materials, tools, resources		
1.3 Capital and investments		
1.4 Other costs farm-level		

- **Labor:** costs of all labor (family labor, temporary hired labor, regular hired labor) for all operations at farm-level related to the crop in question. Family labor can be estimated by reporting the required man-days and multiplying this by the local daily wage rate. Temporary hired labor should also be reported in man-days and multiplied by the daily wage rate. In the case of regular hired labor this should be reported in number of workers, period paid and amount paid per worker.
- **Inputs, materials, tools, resources:** Costs for all inputs, materials, tools and resources used for operations at farm-level related or allocated to the specific crop.

- **Capital and investments:** costs for capital goods, insurance, interest and repairs and maintenance related to operations at farm-level for the specific crop.
- **Other costs at farm-level:** Any other costs that relates to farm-level operations.

Cost at central structure level (2.1- 2.6 light COSP sheet)

E) Cost at central structure level	Cost per unit of land size	Cost per unit weight
2.1 Labor		
2.2 Inputs, materials, tools, resources		
2.3 Capital and investments		
2.4 Certification and compliance costs		
2.5 Export costs		
2.6 Other costs at central structure level		

- **Labor:** Costs of all labor (staff of umbrella organization) for all operations at central structure level related to the crop in question. This includes labor related to office operations, monitoring of compliance, human rights and environmental due diligence and technical support to members among others.
- **Inputs, materials, tools, resources:** Costs for all inputs, materials, tools and resources used for operations at central structure level and allocated to the specific crop.
- **Capital and investments:** Costs for capital goods, insurance, interest and repairs and maintenance related to operations at central structure level.
- **Export costs:** All expenses related to export of the product such as transport costs, insurance costs, taxes, fees, handling costs and product loss.
- **Other costs at central structure level:** Any other costs incurred at central structure level that relates to the specific crop.

Part IV. Final considerations

COSP information is a key input for the development of FMP and an essential ingredient for farm level decision making. Knowing costs of production is the first step in controlling them and is a prerequisite for determining how well a producers' business is doing: the difference between the value of yield per hectare and inputs value. It also enables to evaluate how efficiently resources are being used by producers, to predict how a producers' business will respond to specific changes, and how to make other useful decisions for attaining producers' goals. Good COSP information starts with good farm records.

Understanding the costs involved in the production and export process are indispensables tools for every Fairtrade producer. Properly managed costs can be reduced and the saving considered as income. The mere fact of being able to identify the most relevant costs of a process can enable a producer to seek better technological options or seek ways to decrease those costs.

The development of FMP rests on the timing collection of good quality data, which relies on the trust and co-operation of Fairtrade producers. Maintaining the confidentiality of all data collected is therefore of paramount importance to Fairtrade International Standards Unit. To maintain confidentiality, COSP data is aggregated and all information supplied by Fairtrade producers is treated confidentially for wholly FMP development purposes.

PART V. ANNEX

8. Description of costs

8.1 Cost related to HREDD[7]

Cost item category	Cost item	Description
Farm-level costs	Implementation costs	Cost associated with the implementation of HREDD policies, action plans and other remediation activities at farm-level.
Central structure costs	Risk assessment	Assessing risks of human rights violations and risks of damage to environmental systems. This includes all resources (time, labour) to conduct a risk assessment.
	Grievance mechanism	Formal process for receiving and responding to complaints from members, workers, and community members. Setting up grievance system, handling, recording, and tracking of complaints.
	Developing policies, procedures, and action plans	Development of policies, procedures and action plans to remediate risks in the supply chain.
	Remediation costs	Costs for implementing procedures to mitigate and remediate human rights violations
	Monitoring, data collection, and tracking progress	Monitoring of performance and progress. For example, child and forced labour monitoring, monitoring of deforestation, and tracking biodiversity.
	Engagement and participation	The time and effort producers spend engaging with HREDD activities

[7] Non-exhaustive list displaying the most relevant items for agricultural production.

8.2 Cost items related to Climate adaptation actions[8]

Cost item category	Cost item	Description
Farm-level costs	Technology & equipment	Tools and equipment needed for the enablement of climate adaptation practices, such as pipes for drip irrigation systems
	Farm inputs	Agricultural inputs (seeds, fertilizer, chemicals) to sustain adaptation activities
	Labour costs	Cost related to extra labour for implementation of adaptation practices such as drip irrigation.
	Farm infrastructure	Changes made to the farm infrastructure, such as the creation of shelter belts, buffer zones, or barriers to protect crops
	Crop insurance	Cost of insurance premiums, cost of transport and time investment to obtain insurance or make insurance claim
	Time investment	Additional time invested for the implementation of mitigation practices such as attending trainings on climate adaptation.
	Transition costs	Costs of loss of productivity due to change in agricultural practices and transition of farming system
	Repairment costs	Cost associated with repairment of farm systems after a climate event
Central structure costs	Training	Time and resources spent on providing training and demonstrations to increase climate adaptation practices. Setting up demonstration plots.
	Development crop varieties	Establishment of nurseries, distribution of seedlings
	Technical support	Resources spent on providing support to farmers in the implementation and application of climate adaptation practices
	Monitoring and analysis	Soil and nutrient analysis, quality assessment

[8] Non-exhaustive list displaying the most relevant items for agricultural production.

8.3 Cost items related to Climate mitigation actions[9]

Cost item category	Cost item	Description
Farm-level costs	Technology & equipment	Tools and equipment needed for the implementation of mitigation practices, such as no till farming
	Farm inputs	Agricultural inputs (seeds, fertilizers, chemicals) to sustain mitigation practices
	Labour costs	Cost related to extra labour for implementation of mitigation practices such as conservation tillage, compost production or improved fertilizer application.
	Farm infrastructure	Changes made to the farm infrastructure, such as the creation of shelter belts to improve soil health and reduce erosion.
	Implementation agroforestry system	Site preparation, planting and maintaining (shade) trees, agroforestry management
	Time investment	Additional time invested for the implementation of mitigation practices such as attending trainings on climate mitigation.
	Transition costs	Costs of loss of productivity due to change in agricultural practices and transition of farming system
Central structure costs	Training	Time and resources spent on providing training and demonstrations to increase climate mitigation practices.
	Providing farm inputs	Provision of organic fertilizers such as manure, coffee pulp, or bio-chemicals.
	Technical support	Resources spent on providing support to farmers in the implementation and application of, for example, nutrient and tillage management.
	Reforestation activities	Establishment of nurseries, distribution of tree seedlings, replanting programmes, forest management

[9] Non-exhaustive list displaying the most relevant items for agricultural production.

8.4 Cost items related to biodiversity protection[10]

Cost item category	Cost item	Description
Farm-level costs	Reforestation activities	Practices to increase biodiversity through restoration and reforestation practices. These practices include planting and maintaining seedlings and management of agroforestry systems.
	Waste water management	Waste water management and treatment. Measurement and tracking of use of water resources both to limit the use of scarce water resources and monitor water pollution.
	Pesticide and fertilizer use	Measuring application of pesticides and inorganic fertilizer, pest control management, composting
Central structure costs	Training on biodiversity	Providing and facilitating trainings on biodiversity protection
	Management & measurement	Recordkeeping of biodiversity protection indicators, for example monitoring organic carbon content
	Reforestation activities	Establishment of nurseries, distribution of tree seedlings, replanting programmes, forest management

[10] Non-exhaustive list displaying the most relevant items for agricultural production.

9. Explanation of specific calculation approaches

9.1 Allocation approaches

As mentioned in the previous sections, there are several cost items that are not directly linked to a specific product or activity but relate to multiple products or farm activities (indirect costs, fixed costs, overhead costs). To account for these so-called joint costs, the costs need to be allocated to a specific crop based on allocation techniques. Allocation should, where possible, be based on objective criteria, such as man-hours/days, product quantities, or machine hours.

Cost allocation can follow two different approaches:

1. **Respondent based cost allocation:** In this approach the farmer is asked to allocate the costs based either on reporting the share of each cost relating to a specific crop or activity, for example the labor cost for the harvest of cocoa. Another option is to have the farmer report the farm-level costs and an indication of the share of the different activities with respect to the cost item. This would for example mean the total labor costs and the share of labor (in man-days or hours) spend on harvest or other activities. Based on these two values, the labor costs can be allocated. This approach is dependent on farmers knowledge and recordkeeping.
2. **Top-down allocation:** In this approach the allocation is carried out by an expert or analyst based on objective data. For example, to allocate the costs of agricultural inputs such as fertilizers that are used for multiple crops, the total farm-level costs of fertilizer can be allocated based on crop-specific application rates and planted area per crop. The limitation of this approach is the fact that it is time-intensive and requires a post-data collection procedure.

Deciding on which cost allocation approach is best implemented depends on the farmers knowledge, data availability (e.g., hours allocated to farm activities, input quantities), the complexity of the farm system and the nature of the cost item. As COSP data is often collected in focus group discussions or workshop settings, the respondent-based and top-down allocation approaches can be combined by including both the producer's own estimation as well as insights of technical experts. A good practice in cost allocation is to report on the allocation keys used and be transparent on underlying assumptions on the allocation approach.

Common allocation keys:

- Portion of gross margin; for example, if a commodity accounts for 30% of the whole farm gross margin, the commodity is charged 30% of the costs that need to be allocated.
- Number of hectares: based on the number of hectares of land used for the production of the crop. This allocation approach can only be applied when agricultural practice is at the same rate for all crops in question. For example, the pesticide application is the same for all crops.
- Hours spent on crop: labor and machinery use can be allocated based on te hours spend on activities related to a specific crop. This allocation approach requires tracking of hours spend per commodity.

No one allocation method is right for every farm business or every enterprise or for all expenses; it may take a variety of methods. Use the method that makes the most sense for your farm and each expense. It is recommended to clearly indicate which allocation approach is used, so that data can be validated in an appropriate manner.

9.2 Amortization

The term amortization describes the process of expensing costs associated with intangible assets over the course of their life.

Application: This method should be applied to allocate establishment or preproduction costs of a perennial crop. In case of **perennial or multi-year crops**, the establishment costs are incurred during the unproductive years of the crop, as visualized in figure 3 for a crop with an agricultural life cycle of 30 years. To obtain a representative value of the average cost of a productive year, establishment costs need to be taken into account. To do this, establishment costs are spread out over the expected productive life of the crop.

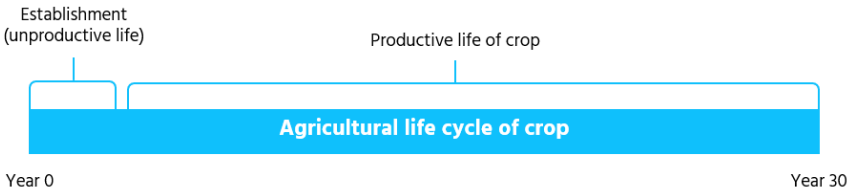

Figure 3. Visualization of the agricultural life cycle of a perennial crop

Method: It is recommended to use the cost recovery approach using the annuity formula[11]. In this method the preproduction costs are allocated over the productive years using an amortization factor.

Formula:

$$A = PV * (1/\text{Amortization factor})$$

- **A** = annual costs
- **PV** = sum to be amortized (in this case the total establishment costs)
- **Amortization factor** = $[i(1+i)n][(1+i)n-1]$
  - **n** = number of years (depending on crop productive life)
  - ***i*** = interest rate

[11] FAO. (2016). Agricultural Cost of Production Statistics: Guidelines for Data Collection, Compilation and Dissemination. *Global Strategy.*

The amortization factor can also be determined by finding the reciprocal of the value of annuity from the table of Annuity Discount Factors as shown in figure 4.

Calculation example: You are trying to calculate the annual costs of a particular crop. These costs include the standard categories of the COSP sheet (labor, input/services and capital investments). The crop's expected economic life is 11 years and the interest rate is 8%. To calculate your annual costs, you will need to amortize the establishment costs of the crop at 8% interest over 11 years. To obtain the Annuity Discount Factors the interest rate (i=0.08) can be matched with the number of years of the productive life cycle of the crop (=11), this results in the annuity discount factor of 7.1390. The amortization factor is (1)/(7.139) = 0.140. Each annual payment for the establishment costs per hectare will be: a) labor: $(20.65)*(0.140) = $2.89; b) inputs and services: $(88.89)*(0.140) = $12.44; and c) capital and investments: $(75.00)*(0.140) = $10.50.

	Labor	Inputs and services	Capital and investments
Establishment costs	$20.65	$88.89	$75.00
Crop's expected economic life	11	11	11
Interest rate	8%	8%	8%
Present Value of Annuity	7.139	7.139	7.139
Amortization factor	1/7.139 = 0.140	1/7.139 = 0.140	1/7.139 = 0.140
Amortized establishment costs per hectare (11 years at 8%) *	$2.89	$12.44	$10.50
Amortized establishment costs per metric ton (Yield at 1.1 t/ha)	$2.62	$11.31	$9.55

* To obtain the cost per metric ton each of the values can be divided by the value of yield per hectare, in the case of this example 1.1 t/ha.

Number of years = N	Interest rate = i								
	1%	2%	3%	4%	5%	6%	7%	8%	9%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052
12	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607
13	12.1337	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869
14	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862
15	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607
16	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126
17	15.5623	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632	9.1216	8.5433
18	16.3983	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556
19	17.2260	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501
20	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285
21	18.8570	17.0112	15.4150	14.0292	12.8212	11.7641	10.8355	10.0168	9.2922
22	19.6604	17.6580	15.9369	14.4511	13.1630	12.0416	11.0612	10.2007	9.4424
23	20.4558	18.2922	16.4436	14.8568	13.4886	12.3034	11.2722	10.3711	9.5802
24	21.2434	18.9139	16.9355	15.2470	13.7986	12.5504	11.4693	10.5288	9.7066
25	22.0232	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226
26	22.7952	20.1210	17.8768	15.9828	14.3752	13.0032	11.8258	10.8100	9.9290
27	23.5596	20.7069	18.3270	16.3296	14.6430	13.2105	11.9867	10.9352	10.0266
28	24.3164	21.2813	18.7641	16.6631	14.8981	13.4062	12.1371	11.0511	10.1161
29	25.0658	21.8444	19.1855	16.9837	15.1411	13.5907	12.2777	11.1584	10.1983
30	25.8077	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737
35	29.4086	24.9986	21.4872	18.6646	16.3742	14.4982	12.9477	11.6546	10.5688
40	32.8347	27.3555	23.1148	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574
45	36.0945	29.4902	24.5187	20.7200	17.7741	15.4558	13.6055	12.1084	10.8812
50	39.1961	31.4236	25.7298	21.4822	18.2559	15.7619	13.8007	12.2335	10.9617
55	42.1472	33.1748	26.7744	22.1086	18.6335	15.9905	13.9399	12.3186	11.0140

Figure 4. Annuity Discount Factor table.

9.3 Depreciation

Depreciation is method of spreading the cost of a physical asset (machinery, building, equipment) over its useful life. It takes into account the loss of value of these physical assets over time

Application: As assets like machines or buildings are used, they experience wear and tear and decline in their value over their useful lives. It is important to take into account this loss of value over time when calculating total production costs. This will ensure that your yearly income/revenue accurately reflects the value of your assets.

Method: It is recommended to use a straight-line depreciation approach[12]. In this method the costs of an asset are depreciated over a period of time in equal amounts.

Formula: Depreciation can be estimated using the *straight-line method:*

$$D = (PV-SV)/L$$

- **D** = annual depreciation cost
- **PV** = asset's present value*
- **SV** = expected salvage value* or residual value at the end of its useful life
- **L** = expected total years of useful life

Definitions:

- *Salvage value:* what one can expect to receive in exchange for selling or parting out the asset at the end of its useful life
- *Present value:* the item's expected replacement cost at the moment of analysis. The machine for example, might have actually cost $900 five years ago, but today the cost of replacing this five-year-old machine with a new is $1000

Calculation example: You bought a tractor for $900. However, the present expected replacement cost of your tractor is $1000, and it has an expected total useful life of 10 years. You estimate that at the end of its useful life, it can be sold for $200 as scrap. Annual depreciation = $(1000 – 200)/10 = $80

[12] FAO. (2016). Agricultural Cost of Production Statistics: Guidelines for Data Collection, Compilation and Dissemination. *Global Strategy.*

9.4 Transformation Costs

Transformation cost are the costs of transforming a product to another processing stage, eventually making it "suitable for consumption". In calculating the transformation cost, it is important to account for the conversion rate of raw material to final product.

Application: Some products, such as coffee, have to be transformed in order to be suitable for consumption. In this case the cost of transformation from raw material to processed product should be calculated and reported.

Formula:

(Cost of product to be processed) + (labor costs of processing) + (packaging costs)*

* If applicable, capital and investment costs need to be factored in as well.

Calculation example: One of the most common processes used for mango is to transform it into pulp. Pulp is usually used to prepare juice or drinks. In this case, a conversion rate of 60% is estimated. Meaning, for every 100 kilograms of mango, 60 kilograms of pulp and 40 kilograms of peel and seed will be obtained. It is assumed that the peel and seed do not have economic value.

Price of mango for processing*	$15 for every 100 kg of mango
Cost of processing	$16 for every 100 kg of mango
Cost of packaging	$28 for every 100 kg of mango
Output	60kg for every 100 kg of mango
Cost of mango/kg of pulp	$15 / 60kg = $0.25
Cost of processing/kg of pulp	$16 / 60kg = $ 0.27
Cost of packaging/kg of pulp	$28 / 60 kg = $0.47
Total transformation cost	$0.25 + $0.27 + $0.47 = $0.99

*Please note that the price of the mango for processing ($0.25/kg) should not be reported in this stage of production as it is accounted in the establishment costs, field operation costs and/or harvest/post-harvest costs.

To obtain the cost per metric ton of mango pulp, the costs per kilogram are multiplied by 1000 (labor: $0.27 x 1000 and inputs/services: $0.47 x 1000). Assuming that the yield of the mango pulp is 8.80 t/ha, the costs per hectare are calculated by multiplying the cost per metric ton by 8.80.

	Cost per hectare	Cost per metric ton
Labor	$2376	$270
Inputs and services	$4136	$470
Capital and investments	$0	$0

9.5 Preparation and packaging Costs

When a product is brought from the field, it first needs to be treated and prepared before it can be packaged. Activities include preparing, selection, cleaning, sorting and treatment as these are not carried out in the field, but in a packaging or processing plant.

Packaging costs are relatively easy to identify, since they are directly related to the product. Once the capacity of the package is known – for example, in the case of mangos, the boxes have a capacity of 4.2 kilograms, and in the case of bananas, the boxes are 18 kilograms – it is possible to determine packaging cost per kilogram.

Definitions:

- *Preparation costs:* The labor costs associated with the preparation of a product for subsequent packaging.
- *Packaging costs:* Refer to the cost of putting the product into a package that enables its adequate transfer to the final consumer

Formula:

Preparation and treatment costs + packaging costs + other costs

Calculation Example:

Suppose that a container of mangos is packed for the U.S market. Before being packaged, the product must be cleaned, selected, sorted and treated with hot water. This process has a cost of $0.18 per kilogram. Once the process has been carried out, the product is packaged in boxes of 4.2 kilograms capacity which is equal to:

Weight range of each mango (grams)	No. of units per box
300-400	12
400-500	10
500-550	8

As can be seen above, boxes with smaller mangos will have a larger number of units, while boxes with larger mangos will have fewer units; however, the weight of the box remains almost constant. The cost of the cardboard box is $0.30 and straps, clamps, and pallets or platforms account for an additional $0.20 per box.

The cost of preparation and packaging per box would be calculated as follows:

Treatment cost (4.2kg x $0.18)	$0.76
Packaging cost	$0.30

Other costs	$0.20
Preparation and packaging cost/box	($0.76 + $0.30 + $0.20) = $1.26

To calculate the cost per metric ton, the costs of preparation and packaging per kilogram are multiplied by 238 boxes (1 metric ton/4.2 kilograms capacity), this is $0.76*238 for preparation costs and $0.50*238 for packaging costs, respectively. Assuming that the yield of mangos is 5.5 t/ha, the costs per hectare are calculated by multiplying the cost per metric ton by 5.5. If applicable, capital and investment costs need to be imputed as well. Once the above values are calculated, these are reported in the COSP sheet in the following manner:

	Cost per hectare	**Cost per metric ton**
Labor	$994	$181
Inputs and services	$654	$119
Capital and investments	$0	$0