Delta Framework
Sustainability Indicators

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GLOBAL COFFEE PLATFORM
for a sustainable coffee world

ICAC INTERNATIONAL COTTON ADVISORY COMMITTEE

INTERNATIONAL COFFEE ORGANIZATION

Delta Framework

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The Delta Framework is the result of a 3-year consultation process that started in 2019 and engaged sustainability standards, retailers, donors, research institutes, national committees and international organisations from the agricultural sector.

In addition to the project partners[1], the stakeholders who have substantially contributed to the development of the indicators set through workshops, webinars, on-line surveys, field pilots and one-to-one calls include: the members of the Cotton 2040 platform[2], the SEEP members representing the Government of ten countries and the European Union, the Australian Sustainability Working Group, Cotton Incorporated (Cotton Inc), the ISEAL Secretariat and some ISEAL members such as Rainforest Alliance.

Several technical experts have been consulted for methodological guidance on specific indicators and tools: the FAO Global Soil Partnership for the soil indicator, the Australian Cotton Research Institute for the water metrics, the Cool Farm Alliance for the GHG emissions calculations using Cool Farm Tool, Global Forest Watch for the forest cover changes using the GFW Pro tool, and CARE International for the Women Empowerment indicator.

Cover photo: Farm-worker, Shahida, in Rahim Yar Khan, Punjab, Pakistan 2019.

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1 The four Delta Project partners are: Better Cotton, the Global Coffee Platform (GCP), the International Coffee Organisation (ICO), and the International Cotton Advisory Committee (ICAC).

2 The members of the Cotton 2040 Impacts Alignment Workstream include Better Cotton; Cotton Australia (for MyBMP); Cotton Made in Africa; the Cotton Research and Development Corporation (CRDC); Fairtrade; Textile Exchange; Cotton Connect, and the Organic Cotton Accelerator.

Introduction

The Delta Framework aims to align sustainability monitoring and reporting within and across the cotton and coffee sectors. It provides a common set of indicators to measure and communicate sustainability improvements.

This framework builds on the work already undertaken by several commodity platforms and initiatives to define and harmonise sector-wide sustainability goals, and in particular on the Coffee Data Standard developed by Global Coffee Platform (GCP) and on the Guidance Framework on Measuring Sustainability in Cotton Farming Systems published by the Expert Panel on the Social, Environmental and Economic Performance of Cotton (SEEP)[3].

The guiding principles draw inspiration from ISEAL's Sustainability Claims Good Practice Guide to communicate sustainability information generated through the common set of indicators, building on the principles of reliability, relevance, clarity, transparency, and accessibility.

Finally, the framework has a strong alignment with the Sustainable Development Goals (SDGs) to promote the adoption of a common language and holistic approach to global sustainable agricultureThe Delta Sustainability Framework is intended to apply worldwide to any cotton and coffee farming system, with the potential to be expanded to other agricultural commodities over time.

Intended uses

The Delta Framework is intended to apply worldwide to any cotton and coffee farm, with the potential to be expanded to other agricultural commodities over time. The scope is the farm, with the single exception of the greenhouse gas emissions indicator which also includes ginning in the estimation of the emissions per cotton lint.

The intended uses of the Delta Framework include:

- Integration in the Monitoring, Evaluation & Learning (MEL) Systems of Voluntary Sustainability Standards
- (VSS) working in agriculture;
- National reporting on the commitments set by the SDGs and the ratification of relevant international Conventions on chemicals, climate change, biodiversity, gender equality/women's empowerment, and
- Labour rights;
- Evidence-based recommendations to streamline sustainability in agricultural policies;
- Upgrading of extension services to support continuous improvement at farm level;

3 SEEP is an expert panel of the International Cotton Advisory Committee (ICAC) established in 2006: https://www.icac.org/CommitteesandNetworks/

- Farm management plans to ensure an environmentally and financially sustainable agricultural operation;
- Transparent communication with consumers on the actual benefits of goods produced more
- sustainably; Identification of business opportunities leveraging sustainable value chains.

The Delta Sustainability Indicator Set

The Delta Framework is the result of a 3-year consultation process that started in 2019 and engaged sustainability standards, retailers, donors, research institutes, national committees and international organisations from the agricultural sector.

The Delta Framework comprises a core set of **15 farm-level, outcome/impact indicators across the social, economic, and environmental dimensions of sustainability.**

Considering the interdependences between the three sustainability dimensions, the set of common indicators needs to be seen as a whole, while the relative priority of each indicator may vary from country to country. While the 15 indicators selected address sustainability issues of global relevance, several additional indicators might be required to monitor specific aspects of sustainability in local contexts. For instance, soil erosion might in some farming contexts be the primary cause for the deterioration of soil health and the loss of soil organic content.

DELTA SUSTAINABILITY INDICATORS

1. Use of Highly Hazardous Pesticides (HHPs)
2. Pesticide risk indicator
3. Water management (in irrigated farms)
   3.1 Water extracted for irrigation
   3.2 Irrigation Efficiency
   3.3 Water Productivity (WP)
4. Topsoil carbon content
5. Quantity of fertilizers used by type and Nitrogen Use Efficiency (NUE)
6. Forest, wetland and grassland converted for crop production
7. Greenhouse Gas Emissions (GHGs)
8. Yield (average)
9. Gross margin from crop production (Living income in future)
10. Price (at farmgate)
11. Proportion of workers earning a legal minimum wage (or above) by sex and by age
12. Incidence of the child labour
13. Incidence of forced labour
14. Women's Empowerment
15. Number of fatalities and non-fatalities on the farm by sex

Brief Description of the Indicators

1. USE OF HIGHLY HAZARDOUS PESTICIDES

Unit: Kg active ingredient (a.i.) of Highly Hazardous Pesticides (HHPs) applied per ha of harvested land
Target: 0% - A clear, time-bound plan needs to be in place to phase out the use of HHPs
Not relevant to organic farms

This indicator measures the use of HHPs in cotton and coffee production. HHPs are of particular concern due to the severe adverse effects they can cause to human health and the environment, especially in developing countries where protective personal equipment is mostly unavailable, costly and uncomfortable, where pesticides and application equipment are stored in homes, and where accidental or unintentional exposure to pesticides is common.

Highly Hazardous Pesticides are pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or environment according to internationally accepted classification systems such as the World Health Organization (WHO) or the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) or their listing in relevant binding international agreements or conventions. In addition, pesticides that appear to cause severe or irreversible harm to health or the environment under conditions of use in a country may be considered to be and treated as highly hazardous (FAO/WHO International Code of Conduct on Pesticide Management, 2014).

2. PESTICIDE RISK INDICATOR

Unit: Specific model scores/ha, e.g., Toxic Load Indicator or Environmental Toxic Load scores/ha
Target: Continuous reduction of risk to human health and the environment

This indicator aims to monitor improvement in the pesticide hazard/risk profile of the farms as an indication and a diagnostic tool that effective and ecological pest management practices have been adopted. The existence of an Integrated Pest Management (IPM) plan is a pre-requisite to drive a reduction in pesticide use and risk. Pesticide use can be reduced by the adoption of agroecologically-based alternatives, including farm and landscape management measures aimed at preventing pest outbreaks. These measures focus on the preservation of ecosystem services, including natural pest control and soil health (fertility, biological activity, structure, etc) and include for instance the management of riparian areas and natural habitats to augment the population of beneficial insects.

3. WATER MANAGEMENT (IN IRRIGATED FARMS)

3.1 WATER EXTRACTED FOR IRRIGATION

Unit: water extracted for irrigation (blue water) expressed as ML[4] per hectare of harvested land (ML/ha)

3.2 IRRIGATION EFFICIENCY

Unit: (%) - the ratio of water actually required for irrigation over water extracted for irrigation

3.3 WATER PRODUCTIVITY

Unit yield (kilograms of cotton lint or Green Bean Equivalent (GBE[5]) per cubic metre of water consumed per hectare of harvested land (kg/m3)

Target: Locally specific – Increase efficiency over time

This suite of indicators provides an indication of how effectively irrigation water is used on the farm. It includes the total irrigation water used, the efficiency in supplying the water used (water withdrawn or diverted from its sources versus water used) and the amount of marketable biomass produced in relation to the irrigation water used. Sustainable agriculture requires that the level of use of freshwater for irrigation does not affect water reserves. This indicator sub-set was selected from a range of options currently in use to monitor sustainable water use for their relevance and feasibility. While these indicators do not directly address the issue of water depletion, increasing water use efficiency is a key aspect of ensuring sustainable withdrawals and supply of freshwater. Irrigation systems in cotton and coffee differ from drip irrigation to surface irrigation methods. In most cases, there are opportunities to improve efficiency by reducing water losses.

4. TOPSOIL CARBON CONTENT

Unit: Grams of organic carbon per tonne soil per ha of harvested area
Target: Stable or higher Soil Organic Carbon (SOC) over time

This indicator measures the Soil Organic Carbon (SOC), which is the main component of the Soil Organic Matter (SOM), in the top layer of the soil (0 - 10/30 cm) over time. SOM is increasingly being recognised for its contribution to nutrient cycling, water retention, biological function, and optimising crop growth. It is the foundation of soil health, which is the ability of the soil to sustain the productivity, diversity, and environmental services of terrestrial ecosystems. SOM is however hard to measure directly, and it is therefore generally estimated based on SOC values.

4 Megalitre is equivalent 1000 cubic meter

5 GBE: green bean equivalent. Green coffee means all coffee in the naked bean form before roasting.

Sustainable agricultural systems integrate practices aimed at conserving soil resources and enhancing soil carbon content. On the contrary, large-scale monocultures, if not properly managed, can negatively impact soil health as a result of reduced soil biodiversity and increased erosion. The last Intergovernmental Panel on Climate Change (IPCC) report on climate change and land considers SOC management as one of the most cost-effective options for climate change adaptation and mitigation. Countries signatories of the United Nations Framework Convention on Climate Change (UNFCCC) are committed to monitor and report SOC stock changes.

5. FERTILIZER USE BY TYPE (NITROGEN USE EFFICIENCY IN FUTURE)

Unit: Kg active ingredients of types of fertilizer (N,P,K) per ha of harvested land
Target: Increased Nitrogen Use Efficiency (suggested measure yield (kg/ ha) /kg of fertiliser N)
Optimisation of NPK use
Reduction of environmental risks associated with fertilizer use
Not relevant to organic farms

This indicator requires data on inorganic fertilizers, in terms of nutrient content, for the three crop nutrients: Nitrogen (N), Phosphorus (P) and Potassium (K). An accounting of synthetic fertilizer types and quantities represents a proxy for understanding soil management practices and quality. It is a relevant measure for improving productivity and for pollution prevention strategies. This indicator does not include organic fertilizers.

6. FOREST, WETLAND AND GRASSLAND CONVERTED FOR CROP PRODUCTION

Unit: Ha of forest, wetland or grassland converted to cotton or coffee production
Target: 0%. 0% - Exclusion criterion for sustainability standards

This indicator measures the conversion of any natural land (e.g., forest, wetland, grassland) to land used for cotton or coffee production. The term "forests" refers to both primary and naturally regenerating forests. The degradation and conversion of forests to alternative land uses, such as agriculture, is one of the leading causes of biodiversity loss. Most of the forest loss takes place in tropical forests which host at least two-thirds of the terrestrial species. Stopping deforestation contributes to reducing the impacts of climate change as forests absorb carbon dioxide from the atmosphere and store it as biomass.

7. GREENHOUSE GAS EMISSIONS

Unit: Kg CO2e / kg seed cotton or coffee cherries
Kg CO2e / kg cotton lint or GBE
Target: Carbon neutral
Intermediate milestones (X% reduction by year XXXX) as defined by countries, organisations, or sustainability initiatives

This indicator is defined as the ratio between CO2 equivalent (CO2e) emissions from agricultural activities and the marketable biomass produced: e.g., cotton lint or GBE. The scope of this indicator includes direct and indirect emissions (1, 2 and 3) including all emissions occurring upstream and at the farm from cotton/coffee production; when the reporting is calculated per cotton lint or GBE, the calculation shall also include the ginning process for cotton or wet/dry processing for coffee.

8. YIELD (AVERAGE)

Unit: Kg cotton lint or coffee GBE per ha of harvested land
Target: Increased or stabilized yield over time

High productivity (yield) is likely to lead to better economic returns and to reduce pressure on increasingly scarce land resources, commonly linked to deforestation and associated losses of ecosystem services and biodiversity.

9. GROSS MARGIN FROM CROP PRODUCTION (LIVING INCOME IN FUTURE)

Unit: USD/ ha seed cotton or GBE
Target: increasing returns over time

This indicator measures the Gross Margin (GM) from cotton or coffee production. GM is the average gross income from seed cotton or coffee minus the cost of production (variable costs). GM analysis represents the most widespread basis for farm planning of the next year's production, and it should be calculated for each crop that contributes to a farm's aggregate profit. In the context of this framework, however, the indicator refers specifically to the GM generated by the production of cotton or coffee as a measure of the profitability and economic viability of these commodities.

10. PRICE (AT FARMGATE)

Unit: local currency and/or USD per tonne of seed cotton or coffee (GBE)
Target: Price stability (tentative)
Relevant to premium-based standards.

This indicator refers to the average price received per tonne of seed cotton or coffee (GBE). Price is an important measure of the economic health of the commodity sector. Price trends over time can provide, together with other economic variables, an insight into price stability, as well as the level of inflation or deflation.

11. PROPORTION OF WORKERS EARNING A LEGAL MINIMUM WAGE (OR ABOVE) BY SEX AND BY AGE

Unit: Proportion (%) of workers earning a legal minimum wage (or above) over the total number of workers working on the farm by sex and age
Target: 100% compliance - Entry criterion for sustainability standards

This indicator provides information on the earnings that workers receive in exchange for their work, and therefore an indication of their purchasing power and living standards. Wages of all workers, including parttime and seasonal workers, should be equal to or above existing legal national minimum wages or sector agreements, whichever is higher.

The analysis of this indicator, together with the economic indicators, can illustrate the extent to which economic growth and labour productivity translate into gains for workers. Trends in employees' earnings over time bring to light improvements or deteriorations of working conditions. In addition, statistics on earnings disaggregated by sex can reveal the existence of eventual gender disparities in workers' retribution (gender gap pay).

12. INCIDENCE OF T CHILD LABOUR

Unit: Number of children aged 5–17 years engaged in child labour, by sex and age (during the reference period
Target: 0% - Exclusion criterion for sustainability standard

This indicator tracks the employment of children below the age of 18 or under the age defined by local law, whichever is higher. Child labour is work that deprives children of their childhood, their potential and their dignity, that is harmful to physical and mental development and interferes with their ability to attend regular school. Not all work carried out by children is considered child labour. Some agricultural tasks may help children acquire important livelihood skills and contribute to their survival and food security. Whether or not particular forms of "work" can be called "child labour" depends on several factors, and especially on the child's age, the type and hours of work performed, and the conditions under which it is performed.

Furthermore, the worst forms of child labour include children being exposed to serious hazards such as pesticides. Child labour in cotton and coffee production has been reported in several countries, primarily as a consequence of the low farm income.

13. INCIDENCE OF FORCED LABOUR

Unit: Number of people, over 17 years of age, engaged in forced labour, by sex and age
Target: 0%. Exclusion criterion for sustainability standards

This indicator tracks the systematic or individual use of forced labour in cotton and coffee production. Forced Labour remains an issue in many parts of the world, including in countries were cotton and coffee are grown.

14. WOMEN'S EMPOWERMENT

Unit: Women's Empowerment scores
Target: Increased women's empowerment

This composite indicator for Women's Empowerment, developed in partnership with CARE International UK with reference to the IFPRI Women's Empowerment in Agriculture Index[6], is made up of 6 tried and tested sub-indicators across three domains: i) leadership, ii) decision-making, and iii) control of economic assets (for smallholder farms) or gender equality in the workplace (for large farms)

15. RATE OF FATALITIES AND NON-FATALITIES ON THE FARM BY SEX

Unit: number of incidents per 1 million people
Taget: 0% fatalities – Decrease in non-fatalitie

This indicator tracks the number of fatalities and non-fatal occupational injuries occurring on the farm while working on the cotton or coffee crop. Worker health and safety refers to the principle that workers should be protected from sickness, disease, and injury arising from their employment. A safe and sound work environment ensuring occupational safety and health at work is at the core of decent work. In the case of cotton and coffee production, a specific type of occupational hazard that deserves close monitoring is acute pesticide poisoning. This indicator can also be useful to plan preventive measures and to estimate the economic consequences of occupational injuries, particularly in terms of days lost or costs.

6 www.ifpri.org/project/weai

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