

Delta Framework Sustainability Indicators



ICAC



better
cotton



GLOBAL COFFEE
PLATFORM
for a sustainable coffee world



INTERNATIONAL
COFFEE
ORGANIZATION



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO



Delta
Framework



Delta Framework Sustainability Indicators

Environmental dimension

#1 USE OF HIGHLY HAZARDOUS PESTICIDES

*KG ACTIVE INGREDIENT (A.I.) OF HIGHLY
HAZARDOUS PESTICIDES (HHPs) APPLIED
PER HECTARE OF HARVESTED LAND*



DATA POINTS

- ✓ Kg of HHPs active ingredients
- ✓ Harvested area (ha)
- ✓ Time-bound phase-out plan



DATA SOURCES

- ✓ Farm records or surveys
- ✓ Photos of pesticide containers

RATIONALE

Highly Hazardous Pesticides 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 intentional exposure to pesticides is common.*

REPORTING EXAMPLE



2 ZERO
HUNGER



2.4.1



Target

0%

- Exclusion criterion for sustainability standards
- A clear time-bound, phase-out plan needs to be in place.

* FAO/WHO Guidelines on Highly Hazardous Pesticides, 2016



Delta Framework Sustainability Indicators

Environmental dimension

#2 PESTICIDE RISK INDICATOR

*SPECIFIC MODEL SCORES PER
HA OF HARVESTED LAND*



DATA POINTS

- ✓ Quantity in kg of pesticide active ingredients applied
- ✓ Harvested area (ha)



DATA SOURCES

- ✓ Farm records or surveys
- ✓ Farmer interviews

RATIONALE

Sustainable farming systems embrace the key principles of ecological pest management and have an Integrated Pest Management (IPM) in place to drive a reduction in pesticide use and risk.

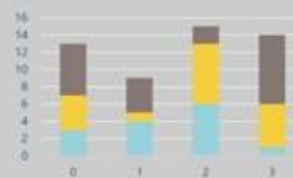
Pesticide risk indicators are tools, based on modelling or actual data from monitoring studies or surveys, which predict the potential risk from the use of pesticides to human health and the environment in pesticide risk reduction.

REPORTING EXAMPLE

10%

DECREASE IN THE
TOXICITY (score) to
BEES, or ALGA, or
FISH, or BIRDS

TOXICITY SCORE



REPORTING PERIOD: 3 YEARS

2 ZERO
HUNGER



2.4.1



Target

- Continuous reduction of risk to human health and the environment (expressed in model scores variations)



Delta Framework Sustainability Indicators

Environmental dimension

#3.1 WATER EXTRACTED FOR IRRIGATION

MEGA LITRES (BLUE WATER) PER HECTARE OF HARVESTED LAND



DATA POINTS

- ✓ Water extracted for irrigation
- ✓ Irrigated harvested areas (ha)



DATA SOURCES

- ✓ Farm records or surveys
- ✓ Farmer interviews

RATIONALE

Water extracted for irrigation provides a measure of the total amount of water used to grow the crop in the field. This indicator does not take into account the use efficiency: either in terms of the actual production of marketable produce associated with that water use, or in terms of water losses between the point of extraction and delivery to the crop.

REPORTING EXAMPLE



REPORTING PERIOD: 3 YEARS

6 CLEAN WATER AND SANITATION



6.4.1



Target

➤ Targets are locally specific



Delta Framework Sustainability Indicators

Environmental dimension

#3.2 IRRIGATION EFFICIENCY

*THE RATIO OF WATER ACTUALLY
REQUIRED FOR IRRIGATION OVER WATER
EXTRACTED FOR IRRIGATION (%)*



DATA POINTS

- ✓ Beneficially consumed water (ET_c)
- ✓ Rainfall or effective rainfall
- ✓ Water extracted for irrigation



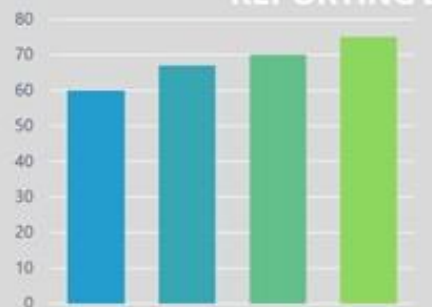
DATA SOURCES

- ✓ Farm measurements
- ✓ Rainfall records

RATIONALE

Irrigation efficiency (%) is the ratio of water actually required for irrigation over the total water diverted or extracted (blue water). Water required for irrigation (the numerator of this index) is defined as the water beneficially consumed that is not delivered by rainfall, or in other words, the shortfall in crop water requirements after accounting for rainfall.

REPORTING EXAMPLE



Reporting period: 3 years



15%

INCREASE IN WATER USE
EFFICIENCY OVER 4 YEARS

6 CLEAN WATER
AND SANITATION



6.4.1



Target

- Targets are locally specific
- Increased irrigation efficiency



Delta Framework Sustainability Indicators

Environmental dimension

#3.3 WATER PRODUCTIVITY

*KG COTTON LINT OR GBE PER M3
WATER CONSUMED PER HECTARE OF
HARVESTED LAND [KG/M3]*



DATA POINTS

- ✓ Cotton yield or GBE in tonne
- ✓ Water extracted for irrigation
- ✓ Rainfall
- ✓ Soil moisture change (optional)



DATA SOURCES

- ✓ Farm records or surveys
- ✓ Farmer interviews

RATIONALE

Water Productivity in terms of water beneficially consumed (WP lint/ET) is the generally favoured definition of Water Productivity internationally. The rationale is that by focusing on the water actually consumed by the crop (ET) it explains the potential trade-offs and reallocation of water uses and users in a water scarce basin when increases in agricultural production are propagated separately.

REPORTING EXAMPLE



6 CLEAN WATER
AND SANITATION



6.4.1



Target

- Targets are locally specific
- Increased Water Productivity



Delta Framework Sustainability Indicators

Environmental dimension

#4 TOP SOIL CARBON

*GRAMS OF ORGANIC CARBON PER
TONNE SOIL FOR HECTARE OF
HARVESTED LAND*



DATA POINTS

- ✓ Soil carbon content (SOC)
- ✓ Soil bulk density
- ✓ Harvested area in ha



DATA SOURCES

- ✓ Visual or spectrometric assessments
- ✓ Laboratory test results

RATIONALE

Soil Organic Carbon (SOC) is the main component of Soil Organic Matter (SOM), in the top layer of the soil (0-10/30 cm). SOM is increasingly being recognised for its contribution to nutrient cycling, water retention, biological function and crop growth. 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.

REPORTING EXAMPLE



15.3.1



Target

- **Stable or higher
SOC over time**



Delta Framework Sustainability Indicators

Environmental dimension

#5 QUANTITY OF FERTILIZER USE BY TYPE AND NITROGEN USE EFFICIENCY

KG ACTIVE INGREDIENTS OF N,P,K PER
HECTARE OF HARVESTED LAND



DATA POINTS

- ✓ Quantity in kg of fertilizer used
- ✓ Harvested area (ha)
- ✓ Crop residue management practices
- ✓ Conversion factors*



DATA SOURCES

- ✓ Farm records or surveys
- ✓ Farmer interviews

RATIONALE

This indicator provides data on inorganic fertilizers, in terms of nutrient content, for the three crop nutrients: Nitrogen (N), Phosphorus (P) and Potassium (K). In addition to fertilizer use, Nitrogen Use Efficiency (NUE) is a useful metric to understand the relationships between the total nitrogen input compared to the nitrogen output and optimize the fertilization regime.

FERTILIZER USE KG/ha

REPORTING EXAMPLE



2 ZERO
HUNGER



2.4.1



Target

- Increased Nitrogen Use Efficiency
- Optimisation of NPK use
- Reduction of environmental risks associated with fertilizer use

* IFA Fertilizer converter



Delta Framework Sustainability Indicators

Environmental dimension

#6 FOREST, WETLAND AND GRASSLAND CONVERTED

HA OF FOREST, WETLAND OR GRASSLAND CONVERTED TO CROP PRODUCTION



DATA POINTS

- ✓ Land area (in ha) converted from natural land
- ✓ Converted land geolocation data



DATA SOURCES

- ✓ Farmers' interviews
- ✓ Secondary data
- ✓ GPS maps

RATIONALE

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. 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 impacts of climate change.

REPORTING EXAMPLE



90%



DECREASE IN
FOREST
CONVERSION

REPORTING PERIOD: 5 YEARS



15.1



Target

0%

- Exclusion criterion for sustainability standards



Delta Framework Sustainability Indicators

Environmental dimension

#7 GREENHOUSE GAS EMISSIONS

KG CO₂E / KG SEED COTTON OR COFFEE CHERRIES

KG CO₂E / KG COTTON LINT OR GBE
GBE: GREEN BEAN EQUIVALENT



DATA POINTS

✓ See next slide



DATA SOURCES

- ✓ Farm records or surveys
- ✓ Secondary data
- ✓ Calculation tools (e.g., Cool Farm tool, geoFootprint)

RATIONALE

This indicator is defined as the ratio between CO₂ equivalent emissions from agricultural activities and the marketable biomass produced: cotton lint or Green Coffee Beans (GBE).

The scope of the indicators include direct and indirect emissions (1.2 and 3) including all emissions occurring upstream and at the farm from cotton production and until the ginning process. Soil carbon sequestration is not included at this stage.

REPORTING EXAMPLE



13.2.2



Target
Carbon
neutral

- Intermediate milestones
- A clear time-bound plan to reduce emissions needs to be in place



Delta Framework Sustainability Indicators

Environmental dimension

#7 GREENHOUSE GAS EMISSIONS



DATA POINTS

- | | |
|---------------------------------------|--|
| ✓ Kg of fertilizer products used/ha | ✓ Rainfall |
| ✓ Kg of pesticide products applied/ha | ✓ Temperature: minimum, average, maximum |
| ✓ # of pesticide applications | ✓ Total water use |
| ✓ Soil Organic Matter | ✓ Irrigation system |
| ✓ Soil Ph | ✓ Soil draining capacity (good or poor) |
| ✓ Soil type: clay, silt, sand % | ✓ Land conversion |
| ✓ Energy use (kWh and fuel) used/ha | ✓ Tillage |
| ✓ Transport of inputs | ✓ Cover crops |
| | ✓ Tree biomass |



Delta Framework Sustainability Indicators

Economic dimension

#8 AVERAGE YIELD

*KG COTTON LINT OR GBE PER HECTARE
OF HARVESTED LAND*



DATA POINTS

- ✓ Kg of cotton lint or GBE harvested
- ✓ Harvested area (ha)
- ✓ Conversion factors*



DATA SOURCES

- ✓ Farm cash records
- ✓ Farmer interviews

RATIONALE

High land 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.

REPORTING EXAMPLE

X0 kg/ha



INCREASE IN
YIELD

REPORTING PERIOD: 3 YEARS



2.4.1



Target

➤ Increased or stabilized
yield

* COFFEE: ICO conversion factors
COTTON: ICAC COTTON DATA BOOK



Delta Framework Sustainability Indicators

Economic dimension

#9 GROSS MARGIN

*USD/ HECTARE OF HARVESTED
SEED COTTON OR GBE*



DATA POINTS

- ✓ Gross income from seed cotton and GBE
- ✓ Cost of cultivation
- ✓ Harvested area
- ✓ Currency conversion rates



DATA SOURCES

- ✓ Farm cash records
- ✓ Farmer interviews

RATIONALE

This indicator tracks the crop profitability as an important dimension of its economic sustainability. The indicator calculates the average gross margin from seed cotton or coffee minus the cost of production. The indicator therefore measures the net operating income generated by cotton or coffee, as distinct from the total income of the farming household, which can also include remittances and off-farm income.

REPORTING EXAMPLE



1



Target

➤ Increased returns
over time



Delta Framework Sustainability Indicators

Economic dimension

#10 PRICE

LOCAL CURRENCY AND/OR USD
PER TONNE OF SEED COTTON OR
COFFEE (GBE)



DATA POINTS

- ✓ Average price for the year
- ✓ Total revenue
- ✓ Total volume sold
- ✓ Exchange rates



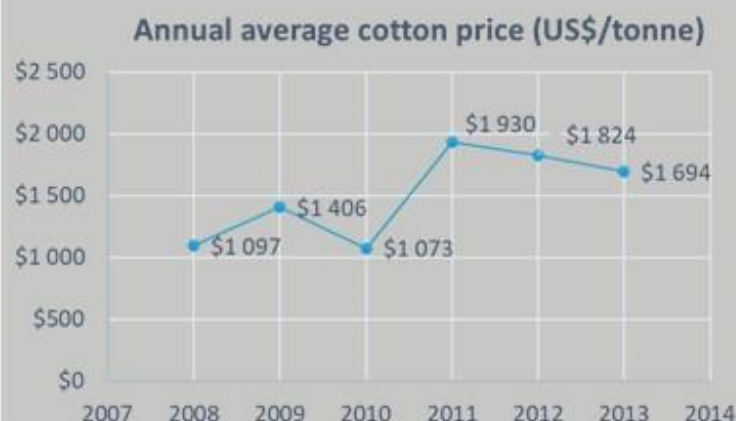
DATA SOURCES

- ✓ Farm cash records
- ✓ Farmer interviews
- ✓ Ginning mills records (cotton)
- ✓ Traders and buyers' records

RATIONALE

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.

REPORTING EXAMPLE



1



Target

➤ Increased price stability

*IMF exchange rates



Delta Framework Sustainability Indicators

Economic dimension

#11 PROPORTION OF WORKERS EARNING A LEGAL MINIMUM WAGE BY SEX & AGE

PERCENTAGE (%)



DATA POINTS

- ✓ # of hired workers
- ✓ Total labour cost
- ✓ # of days worked
- ✓ National minimum wages
- ✓ Currency conversion rates



DATA SOURCES

- ✓ Farm cash records
- ✓ Work contracts
- ✓ Workers interviews
- ✓ Farmer interviews

RATIONALE

The wages paid are an indication of the economic risk faced by unskilled workers in terms of remuneration received.

All wages of all workers and employees should be equal or above existing official national minimum wages or sector agreements, whichever is higher.

REPORTING EXAMPLE



8 DECENT WORK AND ECONOMIC GROWTH



8.5.1



Target

100%

➤ Entry criterion for sustainability standards



Delta Framework Sustainability Indicators

Social dimension

#12 INCIDENCE OF CHILD LABOUR

NUMBER OF CHILDREN AGED 5–17 YEARS ENGAGED IN CHILD LABOUR BY GENDER AND AGE



DATA POINTS

- ✓ Age and sex of the child
- ✓ Hazardous working tasks
- ✓ Working hours per day/week
- ✓ Hazard associated



DATA SOURCES

- ✓ Audits result (for standards)
- ✓ Secondary data on Child Labour (if existing)
- ✓ Interviews
- ✓ Direct field observations

RATIONALE

Child labour is “work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development”.

Not all work carried out by children is considered child labour. However, many child labourers in agriculture are trapped in hazardous work.

REPORTING EXAMPLE



8.7.1



Target
0%

➤ Exclusion criterion for sustainability standards



Delta Framework Sustainability Indicators

Social dimension

#13 INCIDENCE OF FORCED LABOUR

NUMBER OF PEOPLE, OVER 17 YEARS OF AGE, ENGAGED IN FORCED LABOUR BY GENDER AND AGE



DATA POINTS

- ✓ Country risk maps
- ✓ Farm vulnerability level
- ✓ Audit results (for sustainability standards)



DATA SOURCES

- ✓ Audits
- ✓ Risk assessments
- ✓ Participatory data collection

RATIONALE

Forced Labour remains an issue in many parts of the world, including in countries where cotton and coffee are grown.

Forced labour includes all work or service which is not voluntary, and which is exacted under the menace of a penalty.

REPORTING EXAMPLE



90%

DECREASE IN
FORCED
LABOUR

REPORTING PERIOD: 5 YEARS

8 DECENT WORK AND ECONOMIC GROWTH



8.7.1



Target
0%

➤ Exclusion criterion for sustainability standards



Delta Framework Sustainability Indicators

Social dimension

#14 WOMEN'S EMPOWERMENT

WOMEN'S EMPOWERMENT SCORE



DATA POINTS

- ✓ Self-efficacy
- ✓ Communication and negotiation skills
- ✓ Collective action
- ✓ Input into productive decisions
- ✓ Control of productive assets
- ✓ Gender equitable attitudes



DATA SOURCES

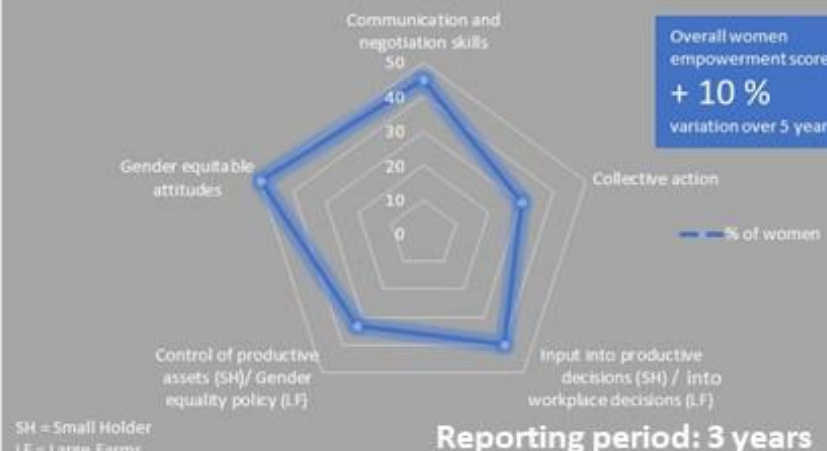
- ✓ Smallholder farms: household interviews
- ✓ Large farms: Employees interviews

RATIONALE

Women's Empowerment is the combined effect of changes in a women's own knowledge, skills and abilities (*agency*) as well as in relationships through which she negotiates her path (*relations*) and the society norms, customs, institutions and policies that shape her choices and life (*structures*).

REPORTING EXAMPLE

Women Empowerment score
(% of women achieving maximum score)



5.5



Target

➤ Increased Women's Empowerment score



Delta Framework Sustainability Indicators

Social dimension

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

PERCENTAGE (%)



DATA POINTS

- ✓ # of farmers and workers
- ✓ # of fatal accidents
- ✓ # of non-fatal injuries requiring at least 2 days of lost time



DATA SOURCES

- ✓ Administrative records
- ✓ Health statistics
- ✓ Farmer interviews

RATIONALE

The Worker health and safety refers to the principle that workers should be protected from sickness, disease and injury arising from their employment. In the case of cotton and coffee production, a specific type of non-fatalities that deserve close monitoring are acute and chronic effect of pesticide exposure.

REPORTING EXAMPLE



90%

DECREASE IN FATALITIES

REPORTING PERIOD: 5 YEARS

8 DECENT WORK AND ECONOMIC GROWTH



8.8.1



Target

0%

- 0% fatalities
- Decrease in non-fatalities



Do you want to test or provide
feedback on the indicators?

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