Delta Framework

Desktop Research to Inform the Development of the Delta Sustainability Framework

Desk-Study Report by Francesca Mancini,
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better cotton™
ICAC INTERNATIONAL COTTON ADVISORY COMMITTEE
INTERNATIONAL COFFEE ORGANIZATION
GLOBAL COFFEE PLATFORM for a sustainable coffee world

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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.

Contents

1. Introduction to the Delta Framework **4**
1.1 Introduction 4
1.2 Scope, intended uses and expected benefits 4
1.3 Process to develop the Delta Sustainability Framework 5
2. Alignment with the Sustainable Development Goals **5**
3. Objective and Approach of the Desk-top Research on Sustainability Initiatives **8**
4. Inventory of Sustainability Frameworks **8**
5. Proposed Sustainability Impact Focus Areas and Sub-areas **11**
6. Options for Indicators **18**

Sources 21
Annex 1 23
Annex 2 26
Annex 3 35

Introduction to the Delta Framework

1.1. Introduction

The Delta Project is a joint effort of Better Cotton, the Global Coffee Platform (GCP), the International Coffee Organisation (ICO) and the International Cotton Advisory Committee (ICAC), supported by the ISEAL Innovation Fund. It aims at developing a cross-commodity framework for sustainability monitoring and reporting. Notwithstanding the diversity in the commodity sector, and although each sustainability standard has its own specificity, there is a growing area of overlap between the objectives and implementation frameworks of different standards. The indicators used to measure progress towards these common goals are however different, and mainly geared towards output and outreach. This overlay in the purpose of the frameworks provides a solid basis and justification for initiatives aimed at building convergence on measuring progress towards common goals.

The Delta Sustainability Framework will propose a common set of cross-commodity indicators to measure and report sustainability improvements that contribute to sector-wide transparency and learning for cotton and coffee. The set will have a limited number of indicators (possibly around 10-15) to keep it easily usable by both companies and governments, covering social, economic and environmental dimensions of sustainability. As far as possible and feasible, the indicators will relate to outcome and impact. Where short- to medium-term attribution might be more difficult, output indicators will be proposed. The predominant scope of the indicators shall be farmer level, i.e. the information shall be attributable to a single farm, regardless of their aggregation or source of information.

The adoption of this set of standardized and digitized indicators is expected to enhance clarity and transparency in reporting and ultimately to increase the sustainability of the agricultural sector as a whole (see the Theory of Change document).

1.2. Scope, intended uses and expected benefits

The Delta Sustainability Framework is intended to apply worldwide to any cotton and coffee farming system, and it bears the potential to be expanded to other (agricultural) commodities over time, such as cocoa, soy, palm oil, sugar.

The development and adoption of the framework is expected to strengthen collaboration within and across sectors and facilitate more coordinated efforts to mainstream sustainability in agriculture; to increase credibility and transparency of standards; improve data quality while reducing the effort and cost of data collection; and ultimately to accelerate sustainability mainstreaming in the private and public sectors.

Potential intended uses of the impact data generated though its implementation include:

- national reporting on the commitments set by the Sustainable Development Goals (SDGs) and the ratification of other relevant international conventions on chemicals, biodiversity, labour rights;

- help governments and industries monitor and manage the impacts of agricultural commodity production on the environment and society;
- evidence-based recommendations to streamline sustainability in agricultural policies;
- upgrading extension and other services to support continuous improvement at farm level;
- improve transparency and communication with consumers on the actual value of sustainably produced goods;
- strengthen business opportunities for sustainable value chains.

1.3. Process to develop the Delta Sustainability Framework

The Delta Sustainability Framework will build on the work already done by several commodity platforms and initiatives to define and harmonise sector-wide sustainability priorities and indicators. This desk-top research on successful sustainability frameworks is the first step in assessing what common ground already exists in terms of impact focus areas and related indicators across and within the two sectors.

The outcomes of this research study will provide the basis for a series of individual and multi-stakeholder consultations aimed at reaching a consensus on the final set of cross-commodity indicators. Specifically, consultations are being planned for the remaining months of 2019 with:

- cotton and coffee production standards;
- relevant brands and retailers;
- ICAC;
- ICO;
- the Global Coffee Platform (GCP);
- ISEAL members;
- international organisations (FAO, WHO, ILO, OECD, UN Environment);
- other commodity boards (banana, sugar, cocoa).

The set of indicators will be field tested in 2020 in two countries and eventually refined integrating the feedback from the field.

Alignment with the Sustainable Development Goals

The 17 SDGs established by the United Nations in 2015 set priorities and aspirations for global actions towards reduced poverty and increased environmental sustainability by 2030. Governments worldwide have committed to aligning national targets for sustainable development to the SDGs, including the financial resources needed to achieve these. As a result, the SDGs represent an opportunity for standards and businesses to, among others:

- adopt a language and a purpose that is shared across sectors, which in turn can help form new strategic partnerships, strengthen engagement with customers and employees and avoid reputational risks;
- identify new business opportunities, as increased financing to meet global goals results in potential new markets for innovative companies that can deliver on agreed sustainability goals.

Orienting sustainability measures across the public and private sector towards the priorities endorsed and established by the SDGs will enhance the opportunities to achieve the common goal of a sustainable global agricultural sector. A non-exhaustive list of SDGs indicators relevant to sustainability in coffee and cotton production systems—and in turn to which the two sectors can contribute includes:

SDG 1: End poverty in all its forms everywhere

Most of the world's poorest live in rural areas; shifting agricultural sectors towards increased environmental, social and economic sustainability can safeguard the existence of thriving production systems over the long term, which in turn can help maintain agricultural jobs, thus contributing to rural dwellers' livelihoods.

SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Sustainable agricultural systems, founded on practices that permit the achievement of productivity targets while also promoting environmental restoration, are essential to sustain production and thus ensure that food and nutrition security goals are met.

SDG 3: Ensure healthy lives and promote well-being for all at all ages

Malnutrition is recognised as one of the world's key public health challenges of the 21st century. Agricultural systems have a key role to play in ensuring sustained production of safe, nutritious and affordable food.

SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Across all production sectors, child labour is mostly found in agriculture. Child labour limits children's possibility to receive adequate education, which in turn perpetuates a cycle of poverty. Ensuring that social standards in agriculture are met is crucial to prevent and reduce child labour.

SDG 5: Achieve gender equality and empower all women and girls

In many agricultural production systems, it is difficult for women to access and control land, productive assets, credit, and the income deriving from the sale of produce. Addressing this gender gap in agriculture is crucial to ensure that the potential of productive systems is harnessed to the fullest.

SDG 6: Ensure availability and sustainable management of water and sanitation for all

The agricultural sector accounts for 70 percent of all water withdrawals, and the share is predicted to rise as increased amounts of food will be in the coming decades. In addition, runoff of nutrients and chemicals from agriculture is a major source of water pollution. Improving water use efficiency in agricultural production and reducing the negative environmental impact from the sector on water bodies are key targets to ensure a sustainable, food secure future.

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all

Intensively mechanised agriculture relies on energy-dense fossil fuels, which also happen to be the primary source of greenhouse gas emissions Agriculture can accelerate the transition to an affordable, reliable and sustainable energy system by prioritizing energy efficient practices, and adopting clean energy technologies and infrastructure.

SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Globally, agriculture is the sector that employs the most people; at the same time, it is often the case that jobs in the sector offer precarious, poorly regulated conditions. To achieve sustained, inclusive economic growth, it is essential to promote better working conditions and to increase access to decent jobs in rural areas.

SDG 10: Reduce inequalities within and among countries

While substantial efforts have been made to lift people out of poverty, worldwide inequality persists, both within and between countries. In the agricultural sector, certain groups—including women, the youth, indigenous people—are often marginalised in terms of access to productive resources. Reducing inequalities in the sector can help boost its productivity, while at the same time improving the livelihoods of smallholder producers.

SDG 12: Ensure sustainable consumption and production patterns

Promoting systemic change in agricultural systems is needed to achieve sustainable consumption and production patterns globally.

SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

The runoff and poor management of agricultural chemicals and wastes represent a major source of pollution of water bodies worldwide. Promoting sustainable practices in agriculture—for example, non-chemical practices to manage soils and pests—can help reduce and revert significantly the degradation of water resources.

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Agricultural production is recognised as a key driver of environmental degradation and biodiversity loss. At the same time, if managed appropriately, through practices that enhance, rather than deplete, natural ecosystems, agricultural systems can contribute to environmental conservation and restoration targets.

The list of targets and indicators associated with relevant SDGs is provided in Annex 1.

Objective and Approach of the Desk-top Research on Sustainability Initiatives

This report seeks to provide a basis for the two sectors to consult on the key sustainability common goals they aim to contribute to. Sustainability is multi-dimensional, and includes economic, environmental, human, social, and political dimensions. Higher incomes are part of the picture, but equally important are control over resources, quality of life, and empowerment.

This study was therefore carried out to identify, as a first step:

- the common sustainability impact focus areas (impact priorities) where improvements are required and expected to increase the sustainability of the two sectors (e.g. water management);
- the sustainability sub-areas where improvements can be attained, monitored and reported on (sub-areas e.g. water use and water quality);
- options for the selection of the core set of indicators to measure these improvements (e.g. water use efficiency).

Inventory of Sustainability Frameworks

An inventory of the initiatives targeting sustainability across one or more of its three pillars (economic, social and environmental) was carried out, focusing on coffee- and cotton-specific initiatives, as well as on generic agricultural frameworks.

The sources consulted to identify the initiatives included:

- web searches based on combinations of keywords (e.g. sustainability AND agriculture AND framework OR initiative OR indicators);
- grey literature (e.g. reports, working and position papers);
- websites of selected international organisations and initiatives (e.g. Global Coffee Platform, Better Cotton Initiative, ITC Sustainability Map) and related databases of members/partners/associated initiatives;
- existing sectoral study, e.g. Cotton 2040; FAO's "Measuring sustainability in cotton farming systems", the Coffee Sustainability Catalogue 2016;
- consultations with project partners and thematic experts.

As a result, a total of 27 initiatives (Annex 2) were identified. All initiatives specific to the two crops were initially considered, as well as significant general frameworks that target agricultural systems. The desk review started from data publicly available online and aimed to identify common ground in terms of approach to sustainability measurement and impact focus areas between initiatives.
Each initiative among the initial selection was reviewed for their:

- **Scope**: what stage of the supply chain the initiative targets e.g. the whole supply chain vs. production vs. processing and manufacturing or others. Initiatives targeting only stages of the supply chain other than production were excluded. Conversely, initiatives targeting both production and other stages of the supply chain were included, although these latter stages were not considered in the following mapping of impact focus areas and sub-areas. This distinction reflects the scope of the Delta project to focus only on production-related indicators;
- **Sustainability dimensions covered**: whether the initiative targets one or more of the pillars considered in this desk study, i.e. environment, economic and social. All initiatives targeting at least one of the pillars directly were retained in the analysis;
- **Geographical coverage**: whether the initiative is global in focus or targets specific countries and/or regions;
- **Use of measurable indicators**: whether the initiative uses (based on information publicly available on its website) measurable indicators to track production standards across the three pillars considered. Initiatives that would only refer to generic end-goals (e.g. "improved environmental sustainability"; "better working conditions") were discarded.

Of the 27 initiatives reviewed, 11 were identified as being appropriate for inclusion in the proposed draft list, based on the publicly accessible information used to review impact focus areas against the criteria detailed above (Table 1).

Table 1. Sustainability initiatives reviewed for the identification of impact priorities and indicators

Initiative	Description	Focus	Aspects reviewed
4C Association	The Association has established a Common Code for the Coffee Community (4C) based on economic, social and environmental principles to be respected in coffee production and processing systems.		27 principles
Better Cotton	Multi-stakeholder initiative targeting cotton production system and the three pillars of sustainability. The Better Standards System focuses both on best agricultural practices that preserve natural ecosystems, and on decent work conditions for farmers. Better Cotton has 8 results indicators.		8 result indicators
Cotton Connect/REEL Code	The REEL code of conduct is based on principles covering environmental and social standards. Principles include: developing management skills; plant, soil, pest, water and waste management; ecosystem protection; and institutional grouping. REEL Code of Conduct_ Version 1.0		30 production criteria

Cotton Made in Africa (CMiA)	CMiA trains rainfed farmers on best practices for sustainable cotton growing in Africa. Also supports a platform of international textile companies who purchase CmiA raw materials. A set of exclusion criteria, including environmental and socio-economic considerations, determines whether farmers can join as members.		12 exclusion criteria
Fairtrade Foundation	Focuses on reducing poverty through decent work and decent income. The certification promotes socio-economic and environmental sustainability among cotton growers, by providing incentives (in the form of a premium to farmers) for adoption of environmental standards; and by banning work exploitative practices, Detailed production standards are provided for small scale farming.		16 production criteria
Global Coffee Platform/Coffee Data Standard	The Global Coffee Platform is a membership organisation that brings together stakeholders involved in the coffee industry (producers, international roasters, governments, traders, donors, and NGOs) to work collectively towards increasing sustainability of the sector. In 2015 has released the Coffee Data Standard (see box)		15 core indicators
International Federation of Organic Agriculture Movements (IFOAM) Organic 3.0*	IFOAM's Organic 3.0 is the latest framework for action on organic agriculture developed by the organisation in collaboration with partners in the organic agriculture movement. Focuses on broad environmental goals such as mitigation and climate change adaption; biodiversity conservation; protection of genetic diversity.		5 Common Objectives and Requirements
ISEAL Common Core Indicators*	Targets sustainability standard systems by offering a common list of indicators that ISEAL members can track as part of the monitoring, evaluation and assurance of their systems. Has several indicators, each associated with specific metrics and mapped against SDGs.		50 core indicators
MyBMP/ Cotton Australia	A voluntary farm and environmental management systems that provides Australian cotton growers with information on best practices to improve, among others, sustainable management of natural resources.		15 core indicators
Rainforest Alliance	Among its aims are the promotion of climate-smart agriculture, to increase farmers' resilience to climate change and reduce emissions from the sector; as well as the protection of biodiversity and natural ecosystems. Certifies several commodities based on a Sustainable Agriculture Standard. It does not cover cotton.		23 core criteria

SEEP Expert Panel/ Guidance Framework	Multi-stakeholder platform focused on engaging stakeholders in production systems, bringing them together to ultimately promote new standards of practice. Has several thematic areas, one of which is agriculture and food security, and a well-established set of indicators across the three thematic pillars.		68 indicators

Proposed Sustainability Impact Focus Areas and Sub-areas

As a first step to develop a cross-commodity framework, the desk-top research analysed the sustainability priorities set by the SEEP framework and the Coffee Data Standard, reflecting the fact that, following extensive review and discussion, these priorities were already endorsed by stakeholders within the cotton and coffee sectors. The two sets of impact focus areas were first mapped one against the other to check for existing convergences between the two sectors.

The **Expert Panel on the Social, Environmental and Economic Performance of Cotton** (SEEP) is an advisory body of the International Cotton Advisory Committee (ICAC). SEEP is tasked with collecting and reviewing scientific evidence on the positive and negative economic, social and environmental externalities connected with the cotton sector; gather information to assess the impact of cotton production on labourers, in socio-economic terms; and provide recommendations to improve sustainability. In 2014, SEEP has co-published with FAO the ***"Measuring Sustainability in Cotton Farming Systems: Towards a Guidance Framework"*** which proposes a comprehensive set of 68 monitoring and impact indicators available at: http://www.fao.org/3/a-i4170e.pdf.

The Global Coffee Platform (GCP) in collaboration with the Committee on Sustainability Assessment (COSA), Rainforest Alliance and Waterwatch Cooperative have developed the ***"Coffee Data Standards"***. The standard, through a broad consensus of key stakeholders, delivers a common language for all coffee supply chain actors through the identification of fifteen (15) common indicators for farm-level coffee sustainability. An online tool is under development to assist stakeholders monitoring progress for the sector in achieving the Sustainable Development Goals.

Selection of impact focus areas and sub-areas started from a full mapping of the production criteria associated with the certification standards, or principles, governing each of the other nine initiatives pre-selected. The analysis of available principles was limited to those targeting the production phase,

while measures targeting other stages of the cotton supply chain, such as the ginning and manufacturing stages, were not considered.

As a result, **15 impact focus areas** across the three sustainability pillars emerged as common, core aspects of sustainability in the production of cotton and coffee (Table 2).

Table 2. Impact focus areas and sub-areas derived from the initiatives mapping exercise

SDGs	Pillar	Impact focus area	Impact focus sub-area
12, 3, 6, 13, 15	**Environment**	Pest and Pesticide Management	Pesticide management Pest Management
		Water Management	Water quality Water use
		Soil Management	Soil conservation Soil erosion Fertilizer use
		Biodiversity and Land Use	Land conversion Biodiversity conservation
		Climate Change and energy use	Energy use/ emissions Farmers' adaptation
1, 10	**Economic**	Economic Viability	Income Profit Productivity Price
		Economic resilience	Debts Asset Yield volatility Price volatility Payments Credits
		Poverty line	Poverty reduction
		Living conditions	Access to drinking water, electricity, sanitation
		Food security	Access to food Nutrition
2, 8, 10	**Social**	Decent work	Wages Pensions Social protection
		Child labour	Child labour/forced labour Children at school
		Worker Health and Safety	Fatalities and non -fatal accidents Health care facilities Water/sanitation
		Equity and Gender	Women empowerment Indigenous people No discrimination
		Labour rights	Democratic organisations Freedom of association

Pesticide management means the regulatory and technical control of all aspects of the pesticide life cycle, including production (manufacture and formulation), authorization, import, distribution, sale, supply, transport, storage, handling, application and disposal of pesticides and their containers to ensure safety and efficacy and to minimize adverse health and environmental effects and human and animal exposure. While there is considerable variation in pesticides use across different types of cotton and coffee farming systems (for example, between large-scale plantation and smallholder farms), both sectors rely to a great extent on the use of chemicals to manage pests (in 2014, cotton production was estimated to account for 11 percent of total pesticides use worldwide, and 50 percent of insecticides use in developing countries). Highly hazardous pesticides are still used on several global commodities. These products are primarily, but not only, old, off-patent chemicals no longer authorized in many high-income countries because of the unacceptable risks they pose to human health and the environment. Residues have been detected in air, water, soil, animals and humans. Increased sustainability in the two sectors, in terms of reduced need for chemicals, coupled with higher efficiency and appropriate handling is thus a priority to contribute to decreasing the negative externalities associated with chemicals use in agricultural production worldwide.
Source: FAO 2014; FAO & WHO, 2014.

Water management refers to the planned development, distribution and use of water resources, in accordance with predetermined objectives and with respect to both quantity and quality of the water resources. Management of water employed in agricultural production systems targets several objectives, including water quality, management of irrigation systems and water use efficiency, wastewater treatment and reuse, water harvesting and storage, water governance. Cotton production is estimated to account for 3 percent of irrigation water used worldwide; while cotton production systems differ, the majority of irrigated cotton is grown using surface irrigation methods, which are generally associated with high water loss. Similarly, some coffee production systems are highly beneficial to water resources, particularly those that grow coffee crops in the shade of trees. However, non-shade-grown coffee, and coffee grown using supplemental irrigation water can have detrimental impact on soil health, which in turn results in increased water pressure and pollution.
Source: FAOTERM; http://www.fao.org/land-water/water/water-management/en/ ; FAO, 2014; SCA, 2018a.

Soil management refers to the set of interventions aimed to enhance the soil quality for the land use selected (be it agricultural or otherwise). The soil sustains most living organisms, being the ultimate source of their mineral nutrients. Good management of soils assures that mineral elements do not become deficient or toxic to plants, and that appropriate mineral elements enter the food chain. Specific soil management practices are needed to protect and conserve the soil resources. Specific interventions also exist to enhance the carbon content in soils in order to mitigate climate change. Depending on the type of farming system, both cotton and coffee production can negatively impact soil health, particularly in the case of large-scale monocultures, for the former; and of non-shade-grown systems for the latter. Soil degradation in these cases results from several factors, such as reduced soil biodiversity and increased erosion, which results in lower fertility and increased risk of pest outbreak.
Source: http://www.fao.org/soils-portal/about/all-definitions/en/ FAO, 2014; SCA, 2018a

Biological diversity (often referred to as biodiversity) is defined as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species

and of ecosystems (*Convention on Biological Diversity. Article 2*). **Agricultural biodiversity** is a subcategory of biodiversity taken for the purposes of this report to correspond to the variety and variability of animals, plants and micro-organisms at the genetic, species and ecosystem levels that sustain the ecosystem structures, functions and processes in and around production systems, and that provide food and non-food agricultural products.
Land use, and thus land management practices and planning, can impact greatly biodiversity, for example due to conversion of forest land to agricultural land. Cotton and coffee growing—as with other commodities production systems—are associated with numerous direct and indirect drivers of biodiversity loss, particularly in the case of large-scale, monoculture plantations. These include land-use change, including through deforestation, which threatens natural habitats and the biodiversity they host; and misuse of agrochemicals, which contributes to soil and water resources degradation, impacting the organisms that are depending on these resources.
Source: FAO 2014; 2019; SCA, 2018a

Climate Change. There is no internationally agreed definition of the term **climate change**. Climate change can refer to: (i) long-term changes in average weather conditions (World Meteorological Organization usage); (ii) all changes in the climate system, including the drivers of change, the changes themselves and their effects (Global Climate Observing System usage); or (iii) only human-induced changes in the climate system (United Nations Framework Convention on Climate Change usage). Climate change has both direct and indirect effects on agricultural productivity including changing rainfall patterns, drought, flooding and the geographical redistribution of pests and diseases. It is expected that some changes in climatic conditions will be potentially beneficial to agricultural production—higher CO2 levels could increase yields, and higher temperature can mean longer growing season in some regions. Nevertheless, as with other crops, cotton and coffee production will face severe challenges related to climate change in the coming decades, including potential loss of fruits due to higher temperature, higher water needs due to reduced, or erratic rainfall patterns, and shrinking of suitable growing areas across regions.
Source: http://www.fao.org/forestry/15538-079b31d45081fe9c3dbc6ff34de4807e4.pdf FAO, 2014; SCA, 2018b

Energy, agriculture and climate change, are intricately linked. Energy is required at each step of the food value chain to produce food and to meet the growing demand for food. Agricultural food systems currently rely heavily on fossil fuels to operate. The increasing use of fossil energy in agriculture leads to increasing GHG emissions from the sector, which in turn impacts agricultural production itself. At the same time, access to modern energy is inadequate in many parts of agri-food chains in developing countries. As is the case with other commodities, coffee and cotton production systems contribute to GHG emissions worldwide, including through direct emissions from fertilizers and fuels used in machinery; and indirectly, because of inputs used along the supply chain, for example to process, package and distribute products. Change is possible through improving access to energy, more efficient use of energy, and increased use of renewable energy in agriculture, including sustainable bioenergy from agri-food systems. This can have the dual benefit of providing sustainable energy input to agriculture thereby increasing productivity while limiting contributions to climate change.
Source: http://www.fao.org/3/i6382en/I6382EN.pdf ; FAO 2014;

Economic viability refers to the economic benefits of a commercial activity, when assessed taking into account its impact on society as a whole. A commercial activity or a project are considered economically viable when their economic benefits match or exceed its costs, taking also into account the positive and negative externalities deriving from it.
Source: https://pppknowledgelab.org/guide/sections/50-assessing-project-feasibility-and-economic-viability

Poverty reduction. People living below a poverty line don't have enough to meet their basic needs. Countries typically define national poverty lines, and we use the lines of a group of the poorest countries to define the international extreme poverty line of $1.90 per day. Cotton and coffee are small-holder crops grown in many developing countries and with a high potential for poverty alleviation, this potential is however highly dependent on world price. The downwards trend on coffee prices experienced since 2016 has already had significant negative impacts on coffee-producing households.
Source: http://www.worldbank.org/en/news/video/2017/04/14/what-are-poverty-lines

Economic Risk Management. Refers to the collection of practices that allow business owners or investors to minimize risk they are not willing to bear. These include, for example, insurance and diversification strategies.
Source: https://www.economist.com/economics-a-to-z/r#node-21529726

Decent (rural) employment refers to any activity, occupation, work, business or service performed by women and men, adults and youth, in rural areas that:

- Respects the core labour standards as defined in International Labour Organization Conventions, and therefore:
    - Is not child labour;
    - Is not forced labour;
    - Guarantees freedom of association and the right to collective bargaining and promotes organization of rural workers;
    - Does not entail discrimination at work on the basis of race, colour, sex, religion, political opinion, national extraction, social origin or other.
- Provides an adequate living income;
- Entails an adequate degree of employment security and stability;
- Adopts minimum occupational safety and health (OSH) measures, which are adapted to address sector-specific risks and hazards;
- Avoids excessive working hours and allows sufficient time for rest;
- Promotes access to adapted technical and vocational training.

Source: http://www.fao.org/3/a-av092e.pdf

Child labour is defined as "work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development". It should be emphasized that not all work carried out by children is considered child labour. Some activities may help children acquire important livelihood skills and contribute to their survival and food security. However, much of the work children do in agriculture is not age-appropriate, is likely to be hazardous or interferes with children's education. For instance, a child under the minimum age for employment who is hired to herd cattle, a child applying pesticides, and a child who works all night on a fishing boat and is too tired to go to school the next day would all be considered child labour. Child labour in cotton and coffee production has been reported/documented in several countries, primarily as a consequence of the low prices.
Sources: http://libguides.ilo.org/child-labour-en and http://www.fao.org/3/a-av092e.pdf

Worker health and safety refers as the principle that workers should be protected from sickness, disease and injury arising from their employment. The ILO's Safety and Health in Agriculture Convention, 2001 regulates specific risks to workers in the agricultural sector, relating for example to machinery safety and ergonomics, handling and transport of materials, sound management of chemicals, animal handling, protection against biological risks, and welfare and accommodation facilities.
Source: http://www.fao-ilo.org/more/fao-ilo-safety/en/.

Gender equality is a state in which all people enjoy equal rights, opportunities and rewards, regardless of whether they were born female or male. Gender equity means fairness and impartiality in the treatment of women and men, according to their respective needs. Rural women and girls, in particular, are recognized as major agents of change. Yet the gender gap in food and agriculture is extensive.
Source: http://www.fao.org/gender/background/en/

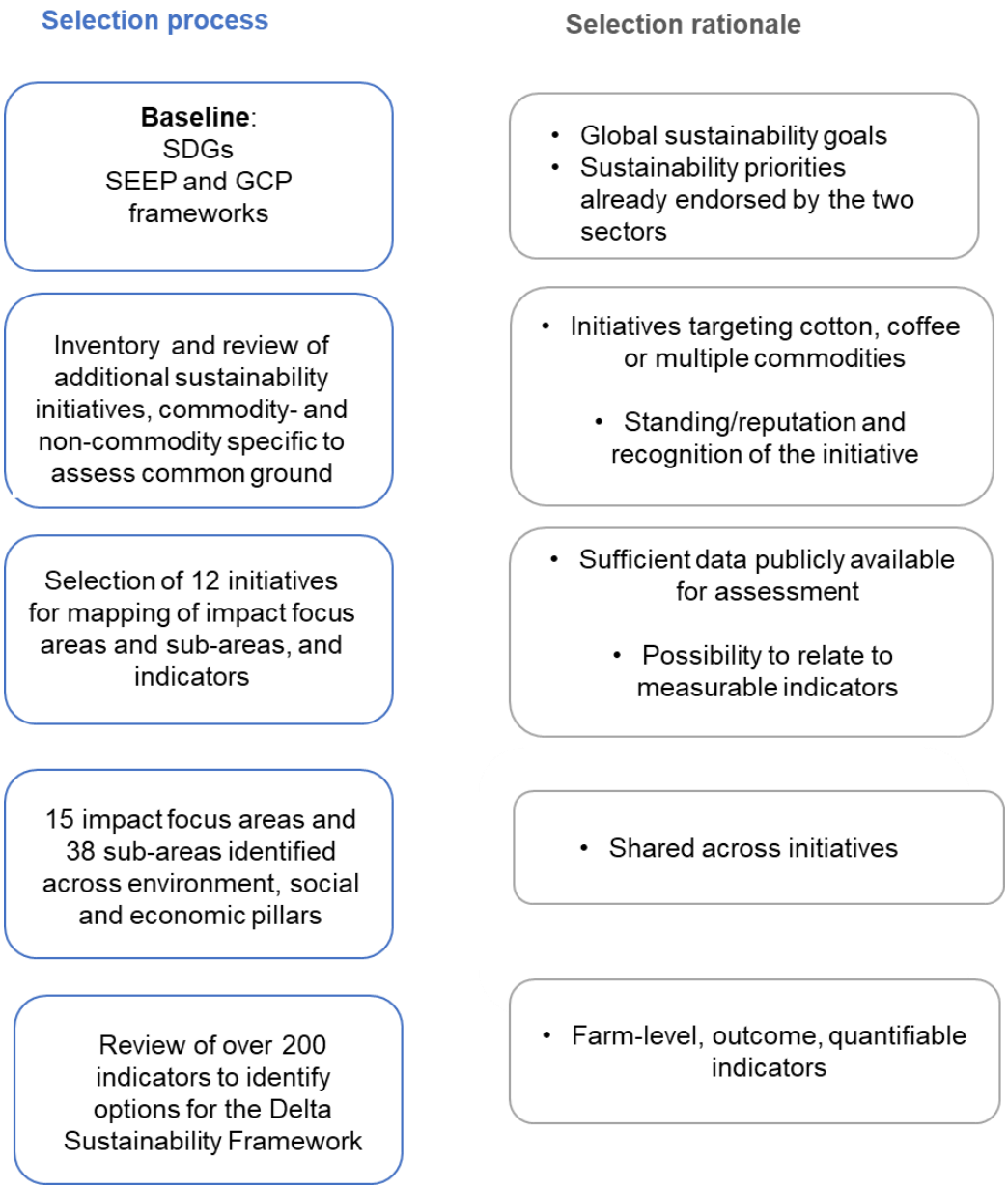
Living conditions. In the framework of the proposed themes for the Delta project indicators, those employed in cotton and coffee systems that are socially-sustainable should be able to meet **decent living conditions**, including for example in terms of income, access to basic household infrastructure such as water and sanitation, infrastructure, electricity and cooking facilities.
Source: http://www.fao.org/3/a-i1240e.pdf

Farmers employed in cotton production systems that are socially-sustainable should have freedom of association and participation to **farmer organisations**.

Food security. According to a widely accepted definition, food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.
Source: http://www.fao.org/economic/ess/ess-fs/en/

Finally, the 15 themes were broken down in 38 sub-themes, each one associated with measurable indicators drawn from the selected sustainability initiatives (Table 2).

Figure 1. Process and rationale followed in the selection of the initiatives to include in the desk-top study



Options for Indicators

While all the principles, criteria and indicators used by the selected initiatives were reviewed, only the farm-level, primarily outcome indicators were retained and grouped under each relevant impact focus sub-areas. Indicators need to be clearly measurable as opposed to more broadly-defined goals to be included.

Indicators intended to monitor the same sustainability aspect (e.g. soil conservation) but using different measurement units (e.g. number of farmers adopting soil conservation practices, number of soil conservation practices adopted or area under soil conservation practices) were, for the purpose of this study, grouped together.

In identifying the indicator options, the following aspects were taken into consideration:

- prioritize SDG indicators when available in view of their global relevance and acceptance;
- Include SEEP and GCP indicators, if SDGs indicators are not feasible, in virtue of their previous endorsement by the two industries;
- integrate recommendations from the ISEAL Common Core Indicators;
- build on learning from Rainforest Alliance's Supporting Evidence Framework project and focus on producers' support and continuous improvement;
- choose indicators shared by more than one initiative;
- value the degree to which a specific indicator is comprehensive and cutting across different sub-areas (i.e. pesticide use relevant to natural resource contamination, human health, impact on).

A summary table presenting the indicators analysed against the above criteria is provided in Annex 3, whereas all the relevant farm-level indicators used by the initiatives included in this study are as an Appendix to this study organised by impact focus sub-area.

The proposed set of indicators in Table 3 will form the basis for multiple stakeholders' consultation and will be modified to integrate the outcomes of these discussions.

Table 3. Options for indicators for the Delta Sustainability Framework

Impact area	Indicators options	SDG	Notes
Pesticide use	Pesticide used per type (kg active ingredients/ha)		Quantity of highly hazardous pesticides applied can provide an indication of the negative impact on water quality, human health and biodiversity. It can be derived from the quantity of pesticide used per type which is being collected by most of the initiatives.
	Use of highly hazardous pesticides (kg a.i./ha) - derived		
	% of cropped area under Integrated Pest Management (IPM)		Additional option
Water use	Water use efficiency for irrigated farms	6.4.1	When used with country-specific benchmarks, irrigation use efficiency may provide an indication of the relative performance.
	Quantity of water used for irrigation (m3/ha) OR (L/kg)		
Soil	Practices for the prevention of soil erosion and loss of fertility		Units in use: area, number or % of practices, number of farmers applying practices; Need to define the list of practices including various forms of soil conservation, crop residue management, conservation agriculture, agroforestry, landscape management.
	Fertilizer used by type (kg/ha)		Relevant to water quality, energy use and climate change, biodiversity.
Biodiversity	Biodiversity		Need for further consultations on specific aspects that the sectors would like to cover, such as: - natural vegetation/forest converted for cotton or coffee production (ha); - Impact on flag species (insects, birds, bees, wild life); - risks and impact on ecosystem services: soil health, pollination, pest control.
Climate change	CO2 emission (kg CO2e / kg lint or GBE) SDG 9.4.1		

	Farmers climate adaptation activities		Additional option
Waste management	Waste management	12.4.2	Need to define which waste (hazardous, all solid waste)
Yields	Average yields		Yield is a determinant of production efficiency and the economic viability of cotton production systems
Income	Average income	2.3.2	Need to agree on which income: farmer, farm, household
Price	Price at farmgate (per tonne of cotton lint/kg of coffee)		Need to discuss price volatility as an important aspect of economic sustainability and resilience
Poverty	Proportion of households living below the national or international poverty line	1.1.1/1.2.1 modified	Need to discuss national versus international poverty line
Food security	Total No. and % of household members food insecure (with calories intake below the international norm)	2.1.1	Food Insecurity Experience Scale (FIES)
Child labour	Proportion and number of children engaged by sex and age	8.7.1	
Education	Proportion of children receiving proper education	4.1.1	
Gender	Proportion of women in managerial/leadership roles	5.5.2	
Labour	Compliance with labour rights, including wages	8.2.2	List of practices to be agreed including minimum wage, no discrimination, freedom of association, bargaining
Work safety	Number of fatalities and non-fatalities		

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Annex 1. Sustainable Development Goals (SDGs), targets and indicators relevant to the production of coffee and cotton

SELECTED SDGs	RELEVANT TARGETS	RELEVANT INDICATORS
End poverty in all its forms everywhere	1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)
	1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	1.2.1 Proportion of population living below the national poverty line, by sex and age
		1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
	1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.1 Proportion of population living in households with access to basic services
End hunger, achieve food security and improved nutrition and promote sustainable agriculture	2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	2.1.1 Prevalence of undernourishment
		2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	2.3.2 Average income of small-scale food producers, by sex and indigenous status
	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	2.4.1 Proportion of agricultural area under productive and sustainable agriculture
Ensure healthy lives and promote well-being for all at all ages	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	3.9.1 Mortality rate attributed to household and ambient air pollution
		3.9.3 Mortality rate attributed to unintentional poisoning

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
Achieve gender equality and empower all women and girls	5.A Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws	5.A.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure
		5.5.2 Proportion of women in managerial positions
Ensure availability and sustainable management of water and sanitation for all	6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	6.3.2 Proportion of bodies of water with good ambient water quality
	6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1 Change in water-use efficiency over time
		6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
	6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management implementation (0–100)
	6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time
	6.B Support and strengthen the participation of local communities in improving water and sanitation management	6.B.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management
Ensure access to affordable, reliable, sustainable and modern energy for all	7.3 By 2030, double the global rate of improvement in energy efficiency	
Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities
		8.5.2 Unemployment rate, by sex, age and persons with disabilities
	8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms	8.7.1 Proportion and number of children aged 5–17 years engaged in child labour, by sex and age

	8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment	8.8.1 Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status
		8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status
10. Reduce inequalities within and among countries	10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality	10.4.1 Labour share of GDP, comprising wages and social protection transfers
12. Ensure sustainable consumption and production patterns	12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	14.1.1 Index of coastal eutrophication and floating plastic debris density
Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	15.1.1 Forest area as a proportion of total land area
		15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
	15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world	15.3.1 Proportion of land that is degraded over total land area

Annex 2. Overview of the sustainability initiatives included in the desk-top analysis (* marks those whose impact focus areas were analysed)

Initiative	Focus	Geographical scope	Pillars covered by the Standard	Description	Indicators
4C Association*	Production	Global	Env, Soc, Eco	A code of conduct developed in a participatory way by stakeholders within the coffee industry, aiming to increase sustainability of coffee production and processing globally.	The 4C certification includes 27 indicators across the three pillars of economic, social and environment, based on good management practices and existing, recognised guidelines and conventions in the coffee production sector. The certification also considers 10 “unacceptable practices”, that must be excluded from production before applying.
Better Cotton Initiative*	Production	Global	Env, Soc	Multi-stakeholder initiative seeking to improve the sustainability of global cotton production against social, economic and environmental indicators.	Better Standards System based on 6 pillars, one of which outlines "Principles and Criteria" for sustainable cotton, which include: focus on alternatives to agro-chemicals (including IPM), soil and water management, biodiversity and land use, cotton quality, decent work and equity.
Committee on Sustainability Assessment (COSA)	Production	Global	Env, Soc, Eco	Initiative seeking to develop a standard set of indicators and facilitate their adoption across sectors. Aligned with several international instruments including the CBD, CITES, UNCCD.	Indicators include household socio-economic characteristics; social (trading relationships, human rights, equity, living and working condition); environmental (soil and water quality; natural resources management, biodiversity and climate change); and economic (farmers’ livelihoods, risk mitigation, producer organisations).
Cotton Australia – MyBMP*	Production	Australia	Env	MyBMP is "a voluntary farm and environmental management system which provides self-assessment mechanisms, practical tools and auditing processes to ensure that Australian cotton is produced according to best practice."	Progress in terms of sustainability is tracked across 11 areas of on-farm operations: pest and disease control; biotechnology; energy and input efficiency; fibre quality;

					human resources and work health safety; Integrated Pest Management; natural assets; pesticide management, storage and use; petrochemical storage and handling; soil health; water management.
Cotton Connect / REEL code	Production, supply chain	China, India, Pakistan, Peru	Env, Social	Offers services related to 1) Supply chain optimisation (including sustainable procurement) for companies in the textile industry; 2) training on agro-ecological practices for cotton farmers in the four target countries; and 3) broader social training programmes for farmers and their communities.	Training on sustainable farming practices is provided to partner farmers through the REEL Cotton Programme whose founding code of conduct was developed in collaboration with FLOCERT, based on principles covering environmental and social standards. Principles include: developing management skills; plant, soil, pest, water and waste management; ecosystem protection; and institutional grouping. End-to-end supply chain transparency and accountability checks are performed through dedicated traceability tool (TraceBale)
Cotton LEADS	Production	US, Australia	Env, Soc, Eco	Partnership between the US and Australia cotton industries. Focus: connect textile manufacturers, brands and retailers with opportunities to support our cotton growers' sustainability efforts and to share data, resources and technologies globally for the benefit of improving cotton around the world. Ensures sustainability of cotton to buyers "whether it's organically or conventionally produced".	For the US: FDA, USDA and EPA standards and regulations (conventional); USDA's National Organic Programme (NOP) (organic). Standards cover: social (labour regulations, child protection and workplace safety, consumer and food safety); and environmental indicators (pesticides regulation, water stewardship and conservation programmes) For Australia: Local laws and regulations and cotton industry's MyBMP standards. MyBMP standards cover social (employment conditions and safety) and environmental (water management; pesticides use and storage; use of transgenic traits; management of native vegetation and risk to endangered species).

Cotton Made in Africa (CmiA) & CmiA Organic*	Production, processing	sub-Saharan Africa	Env, Eco, Soc	Provides agricultural training on best practices for sustainable cotton growing, and in parallel establishes a platform of international textile companies who purchase CmiA raw materials, paying a fee that gets reinvested in projects across the region.	Applies a two-stage set of criteria. First exclusion criteria to check whether a potential producer can join CmiA. Eligible farmers must managed between 1-3 hectares of land, must rely on rainfed production, cannot clear primary forest nor expand onto natural reserve areas, cannot employ child and forced labour and must promote equity among labourers; cannot use certain types of pesticides and genetically-modified seeds.
Fairtrade Foundation (Certified Cotton Mark) And Fairtrade Coffee*	Production, supply chain	Global	Env, Eco, Social	Focus on consumer: "Provides physical traceability of the cotton from a labelled end garment back to the farmers who grew it, with the assurance to consumers that all cotton in a finished product is Fairtrade certified"	Certification and indicators focused on socio-economic and environmental aspects. Provides incentives (in the form of a premium to farmers) for adoption of environmental standards e.g. in relation to pesticide and water management; and checks against social standards e.g. prohibits child labour and discrimination within certified organisations.
Fairtrade Foundation (Fairtrade Cotton Sourcing Program™)	Production, supply chain	Global	Env, Eco, Soc	Focus on businesses: "Provides flexibility and scalability to businesses to achieve their sourcing commitments to sustainable cotton volumes on Fairtrade terms. It is in line with their CSR goals with options for corporate and consumer communications."	Same as above.
Forum for the Future - Cotton 2040	Production, supply chain	Global	Env, Soc, Eco	Action on three fronts: 1) sustaining uptake of sustainable cotton by retailers and brands; 2) facilitating the traceability of cotton and the comparison across different standards (e.g. Organic, Fair Trade, Better Cotton); 3) farmer trainings to increase their knowledge on, and facilitate adoption of sustainable farming practices	Does not have own indicators, but rather facilitates uptake of existing certifications such as Organic, Fair trade and Better Cotton.

Global Coffee Platform/ Coffee Data Standard*	Production, supply chain	Global	Env, Soc, Eco	Multi-stakeholder platform bringing together some 350 members including coffee producers, governments and other stakeholders, with the ultimate goal to collectively work towards increased sustainability in coffee production systems.	Several well-established and developed indicators across the three pillars of social, economic and environmental sustainability.
Global Organic Textile Standard (GOTS)	Production, supply chain	Global	Env, Soc	One of two existing independent organic certification that follows cotton from production throughout the supply chain, farm to brand/retailer.	Allows certification for products deriving from raw natural fibres certified as organic by existing standards, which in turn must be accredited by either ISO 17065, NOP, IFOAM or IFOAM Global Organic System. In addition, sets out a detailed list of input prohibited at all stages of production (omitted here are those that refer to production phases other than on farm raw material production), including: exclusion of GM and derivate products; prohibited use of inputs that "are classified with specific hazard statements / risk phrases related to environmental hazards" and to "health hazards", according to the UN's Global Harmonised System (GHS); inputs which are bio-accumulative and not rapidly degradable. Other very specific requirements are listed, e.g. in relation to limits of active ingredients in preparations used and in residues in finished products. Further provisions made for wastewater treatment, storage, packaging and transport. Compared to the OCS, GOTS adds considerations for social and environmental standards to be respected in the production of cotton. Also, only products that contain at least 70% organic can become certified.
HERproject™ by BSR	Production	Global, currently projects in Africa and Asia	Soc, Eco	Initiative focused on women in global supply chains that "brings together global brands, their suppliers, and local partners to create and implement workplace-based interventions on health, financial inclusion, and gender equality."	Does not seem to have specific standards/indicators. Focus is on women training in specific supply chains (agriculture, textile, clothing) and encouraging businesses to implement workplace-based training programmes on e.g. health, financial inclusion, gender equality.
IFOAM Organic 3.0*	Production	Global	Env, Eco, Soc	IFOAM's Organic 3.0 is the latest framework for action on organic agriculture developed by IFOAM in collaboration with several partners in the organic agriculture movement.	Does not seem to have specific standards/indicators. It is a framework for future action and design of Organic 3.0 initiatives, with an expanded scope in terms of sustainability of production, also based on lessons learned from the previous years of implementation and advocating for organic agriculture. Some

					examples of "Organic 3.0 outcomes" are mitigation and climate change adaption; biodiversity conservation; protection of genetic diversity; reduction of dependency on non-renewable resources; improving human health through wholesome nutrition and food safety; socio-economic: fair and decent livelihoods, gender equality, cultural diversity.
ISEAL Common Core Indicators*	Production	Global	Env, Soc, Eco	Primarily target standard systems. "Common list of indicators that ISEAL members track as part of the monitoring, evaluation and assurance of their systems. Data collected on these indicators can be used to analyse the scope of a standards system, monitor the performance of certified entities, and assess the impact of the system."	Has several indicators and differentiates between "Reach and characteristic" and "Outcome" metrics; mapped against SDGs; some indicators still under development (including all those for soil, water, biodiversity and resource management); metrics available on website for each indicator.
Living Income Community of Practice	Production	Global	Soc, Eco	Community of practice focused on improving wages for smallholders across agricultural supply chains.	Measurements and indicators refer to actual and living income, with the target to understand, and reduce the gap between the two. Calculates a benchmark for "living income" in different areas based on a set of indicators, which relate to the basic necessities the living income should cover. Living income is calculated as: (Cost of nutritious low-cost diet + Cost of basic acceptable housing + other essential expenses +margin for unexpected events) * family size
Organic Cotton Accelerator	Production	Global (India)	Env, Eco, Soc	Platform of retailers, NGOs and others. Focus on knowledge sharing among partners; investments into non-GM, organic cotton seed breeding.	N/A or not disclosed on website

Organimark	Production, supply chain, textile	Global	Env	Supply-chain and business focused. Seeks to give businesses and their stakeholder information on "true cost" along the value chain and support to achieve CSR goals. Key areas of action are 1) Virtual value chain integration through an Integrated Value Chain Programme model, which allows businesses to track sustainability compliance from production to point of sale. 2) Acting as a sourcing and trading platform, helping retailers to source ethically-sourced raw materials (e.g. helping to assess compliance with determined standards).	N/A or Not disclosed on website
Rainforest Alliance – UTZ*	Production	Global	Env, Soc, Eco	Rainforest Alliance – UTZ is an international NGO working to improve sustainability, among others, in agricultural production systems, with the ultimate goal to strengthen biodiversity conservation while also improving smallholders' livelihoods worldwide.	Rainforest Alliance (now merged with UTZ) implements a Sustainable Agriculture Standard, based on 5 principles: effective planning and management system; biodiversity conservation; natural resources conservation; improved livelihoods and human wellbeing; sustainable cattle production.
Responsible Brazilian Cotton (ABR)	Production	Brazil	Env, Soc, Eco	Union of Brazilian cotton growers to increase sustainability in the country's sector.	Three pillars: social, environmental and economic each with broadly defined themes/standards rather than specific indicators. Social: fair work contracts, wages etc.; safety measures; no child labour and discrimination; freedom of association Environmental: protection of water sources, rivers, reservoirs; preservation of soil and biomes; air, water, soil quality Economic: focuses on benefits to businesses of following a sustainability-driven model, e.g. in relation to reduced expenditures thanks to formal contracts, health and safety measures, and overall higher morale of workers due to fair treatment.

Responsible Sourcing Network (RSN)'s YESS (Yarn Ethically and Sustainably Sourced) Cotton Lint Standard	Production	Global	Soc	Focuses on removing cotton produced through forced labour from the global cotton supply chain. Some mentions to "sustainably produced cotton" but no indication of whether environmental standards are taken into account.	The standard evaluates risk that sourced cotton is produced through forced labour based on macro level criteria and micro level criteria. Macro level criteria include e.g. "severity and scale of forced labour" in a country that is considered at high risk for forced labour in the cotton supply chain; micro level criteria include information on the specific business, tracking of the supply chain, in person visits and assessments.
Sedex and Sustainable Agriculture Initiative (SAI) Collaboration	Production	Global	Soc, Eco	Partnership between Sedex and SAI geared towards increasing the availability of supply chain data. Collaboration seeks to use existing information and tools (e.g. integration of SAI Platform's Farm Sustainability Assessment (FSA) questionnaire and Sedex Self-Assessment Questionnaire, which Sedex members use to share their initial supply chain data), and also to collaborate on development of new data collection tools.	Standards, indicators and methods under development
SEEP Expert Panel *	Production,	Global	Soc, Eco, Env	Multi-stakeholder platform focused on providing opportunities for stakeholders to interact, and ultimately promote new standards of practice. Has several thematic areas, one of which is agriculture and food security.	A set of 68 indicators across the three pillars was drawn from the monitoring and evaluation systems of five cotton-specific programmes and four broader programmes on sustainable agriculture. The environmental pillar comprises five themes: Pest and Pesticide Management, Water Management, Soil Management, Biodiversity and Land Use, and Climate Change. The economic pillar comprises two major themes: Economic Viability, Poverty Reduction and Food Security, and Economic Risk Management. Finally, the social pillar comprises four themes: Labour Rights and Standards, Worker Health and Safety, Equity and Gender, and Farmer Organization. The framework was endorsed by ICAC members in 2013.

Sustainable Agriculture Network (SAN) project on forced labour alignment	Production	Guatemala, India, Kenya	Soc	SAN's project "Integrating new data to improve risk assessments and detection of forced labour in agricultural supply chains" seeks to "support standards systems as well as companies and organizations that are working to assess forced labour in their agricultural supply chains." The project "aims to improve the assessment and detection of forced labour in agricultural supply chains by designing a methodology to better use existing knowledge and information and collect and integrate new data."	Methodology (and related indicators) seem to be work-in-progress.
Sustainable Coffee Challenge (SCC)	Supply chain	Global	Soc, Eco, Env	The Sustainable Coffee Challenge is a collaborative effort of companies, governments, NGOs, research institutions and others to transition the coffee sector to be fully sustainable. Challenge partners are urgently working together to increase transparency, align around a common vision for sustainability and collaborate to accelerate progress toward those goals.	The SCC together with the GCP has developed a framework that consists of five key components: a common definition of success, a guiding compass, 15 intervention pathways, common impacts and outcomes and a common theory of change showing how the pieces add up to a collective whole. The framework has 15 impact focus areas and corresponding intervention guidelines.
Textile Exchange - Organic Content Standards (OCS)	Supply chain	Global	Env, Soc	Textile Exchange's OCS is one of two existing independent organic certification that follows cotton from production throughout the supply chain, farm to brand/retailer. OCS oversees the supply chain of raw cotton certified as organic (based on existing accreditation bodies) throughout its phases of production, to the final process.	Does not have its own indicators; oversees the supply chain of products already certified by recognised international organic certification standards. Admits percentage indication of organic cotton contained in final product (5-100%). OCS "does not address the use of chemicals or any social or environmental aspects of production beyond the integrity of the organic material." The OCS is not exclusive to cotton and is also used to certify other materials e.g. wool and down.

World Fair Trade Organization (Asia)	Production	Asia	Soc, Eco, Env	The Asia branch of WFTO has launched an online platform to allow consumers and businesses to connect with those member organizations who are Fair Trade suppliers of raw materials	Participatory guarantee scheme--not a product certification tool but rather focuses on the supply chain, to guarantee that products respect Fair Trade standards at all steps of production to supply 10 "Fair Trade Principles", each associated with examples of conduct, varying from broadly defined to more specific indicators. Largely targets socio-economic aspects, but also environmental considerations, including preference for organic and low-input methods for those member producers involved in agriculture.

Annex 3. Summary table of indicators used by the initiatives included in the study:

ENVIRONMENT							
Farm-level Indicators	**SDG**	**SEEP**	**GDS**	**ISEAL**	**RA**	**Others***	**Note**
Pesticide management							
Quantity of active ingredients of pesticides used (kg/ha)							Cross-cutting with water and soil pollution, biodiversity, and health and safety
Quantity of active ingredients/use of highly hazardous pesticides used (kg/ha)	1						
Pest Management							
% of cotton area under IPM / % of IPM practices employed on the farm							
Water quality							
% of water contamination prevention practices used on the farm							
No. of farmers applying water quality conservation practices							
Water use							
Water use efficiency							Cross-cutting with biodiversity conservation
Quantity of water used for irrigation (m3/ha)							
Water use per unit of product (Lt/kg)							
% of applicable water conservation practices used on the farm							
No. of farmers applying water conservation or water use reduction practices							

% reduction in water use in comparison to year before (per kg of product)							
Soil erosion and soil conservation							
Prevalence of soil degradation/ erosion, loss of fertility observed	*						
% of area under OR % of practices used for OR strategies in place OR No. farmers applying - soil erosion control and conservation tillage practices							Focus on adoption of practices, although measured in different ways
Soil health							at this stage not better defined
Fertilizer management							
Management of fertilizers							cross-cutting with water and soil pollution, biodiversity
Fertilizer used by type (kg/ha)							
Whether a professional assessment or advice was used to determine fertilizer needs on the farm							
Efficiency of fertilizer use							
Land conversation							
Land area and proportion of the farm that was converted from natural land							cross cutting with conservation of biodiversity ecosystem services
Biodiversity							
Areas in conservation management or set asides							
Ecosystems/ ecosystem services management and restoration							
% of forest and ecosystem protection practices used on the farm							
Procedures in place to prevent and/or remediate deforestation							
GHG emissions and energy use							
CO2 emission per unit of value added							
Reduced dependence on non-renewable energy sources							
Farmers climate adaptation activities							
Waste management							
Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment							
Waste management							

ECONOMIC							
Income							
Average income of small-scale (food) producers, by sex and indigenous status							Net or gross Income?
Profit							
Coffee Profit/ revenue-costs (Reported in USD/ha of coffee productive area.)							
Productivity							
Productivity yield (tonne of cotton lint OR kg of coffee GBE harvested/ha)							
Price							
Price received per tonne of cotton lint/kg of coffee at farmgate							
Price volatility							
Risk mitigation mechanisms							
% of farmers with measures in place to manage price risks by type							
Poverty reduction							
Proportion of population living below the nat. /int. poverty line, by sex and age							National versus international poverty line
No. and % of household members living below the national Poverty Line							
Comparison of total household revenue to int. Poverty Line							
Multidimensional poverty index / livelihood index							
Living conditions							
Access to electricity, water, sanitation							
Access to food							
Total No. and % of household members with calories intake below the international norm							
No. of days in past year that any member of household cut food consumption due to lack of food							
Months and days of inadequate access to food							Need to define “inadequate “

SOCIAL							
Wages							
Daily average earnings for farm labour compared to (rural) minimum wage							
Lowest weekly wage							
% of workers with written formal contracts							
Workers understanding the wages received							
Child labour and minimum age, worst form of child labour							
Proportion and No. of children engaged in child labour***, by sex and age – ILO 138, ILO 182							
Education							
Proportion of children and young people* achieving at least a minimum proficiency level at appropriate grade level of school							
% of school-age household members attending and completing appropriate grade level of school for their age (by gender)							
No. of children at grade level under 12							
Occupational Fatalities and non-fatal accidents							
Frequency rates of fatal and non-fatal occupational injuries (total, % by age, gender)							
Women empowerment							
Proportion of women in managerial positions/% of leadership roles held by women							
Labour rights							
% of good labour practices adopted (of those listed)							
Collective Bargaining (ILO 98)							
Freedom of association (ILO 87)							
No discrimination at work (ILO 111) – including by gender							
* Include in at least one of the 6 frameworks: SDGs, SEEP, GCP. ISEAL, Rainforest Alliance, and others: 4C, CmiA, COSA, Fairtrade, Organic, myBMP 1 SDG 4.2.1 Indicator – sub-indicator on pesticide management							

Initiatives included:

- Sustainable Development Goals (SDGs)
- Expert Panel on the Social, Environmental and Economic Performance of Cotton (SEEP)
- Coffee Data Standard (developed by the Global Coffee Platform, Committee on Sustainability Assessment (COSA), Rainforest Alliance and Waterwatch Cooperative)
- ISEAL core indicators
- Rainforest Alliance
- 4C Code of Conduct
- Cotton made in Africa
- Fairtrade
- Organic
- myBMP
- REEL Code

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