

## METHODOLOGICAL BRIEF

### Frame and Tools

Key features of the experts' work

## FRAMING QUESTIONS

- What is the contribution of the value chain to economic growth?
- Is this economic growth inclusive?
- Is the value chain socially sustainable?
- Is the value chain environmentally sustainable?

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# 1. PURPOSE

Past development operations have often focused on increasing agricultural production, whilst often ignoring the market and livelihood drivers involved. Production activities are part of a wider network of interdependent businesses and it is therefore essential to examine them within **the value chain (VC) as a whole**.

Development interventions in agriculture to date have paid little attention to the related environmental and social impacts. However, value chain activities are developed in a **social and environmental context** that must be considered.

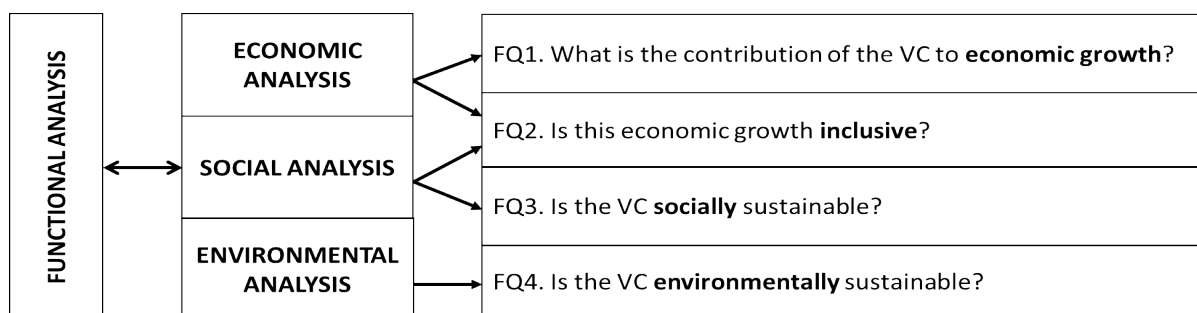
EC/DEVCO is committed to **supporting investment projects** in agriculture and **policy dialogue** (through budget support or other assistance schemes) to enhance development. In order to achieve the overarching goal of sustainable development, support to agri-based VCs requires that social, economic and environmental dimensions be thoroughly considered. By setting out the many effects of the VCs operations, the likelihood of unintended consequences will be reduced.

Value chains are a **major channel for agricultural development** due to their trans-sectorial capacity to create economic value and employment in an inclusive and sustainable way. They represent an operational framework for engaging with farmers and businesses.

- The analysis is intended to deliver select information on the impacts of the VC activities inside the country, not a full study on all aspects of the VC. Orders of magnitude are often more important (and easier to capture) than very precise figures.
- When deemed necessary an analysis of so-me activities beyond the borders of the country may be added as an informative supplement.
- In their conclusion the experts may call for future complements on relevant issues (e.g. technological benchmarking at some stages of the chain, or further understanding of the stakeholders' action on issues such as climate change) to be done additionally and independently.

Value chain analysis can help in decision making by assessing appropriate indicators, setting up **baselines** or informing on the **changing situation of the actors** related to the intervention.

- Updates of value chain analyses may be planned regularly so as to assess the evolution of the situation in the various domains.



Analysing VCs allows an understanding of relevant impact pathways, and identifies at which stages of the chain, and for which actors, investment and support could create advantages and eliminate constraints and bottlenecks. This enables the tracking of how development actions contribute to Sustainable Development Goals and EC/DEVCOs strategic objectives.

The purpose of value chain analysis (VCA) is to provide decision-makers with evidence-based information that relates to sustainable development strategies. It is directed to all policy makers and stakeholders, in accordance with the needs of the EC as an aid provider.

## 1.1 ANALYTICAL PROCESS IN A NUTSHELL

The goal of the methodology is to provide evidence-based elements (i.e. supported by indicators measured quantitatively or based on explicit expert assessment) to answer the **four framing questions** (FQ) above.

The analytical process to answer these four framing questions is based on four types of analysis: functional, economic, environmental & social analysis.

**Functional analysis is the common starting point** and is refined throughout the study by the whole team, benefiting to and from the other forms of analyses.



FRAMING AND CORE QUESTIONS		
Economic Analysis	Social Analysis	Environmental Analysis
FQ1. What is the contribution of the VC to economic growth?	FQ3. Is the VC socially sustainable?	FQ4. Is the VC environmentally sustainable?
CQ1.1. Are the VC activities <b>profitable for the entities</b> involved? CQ1.2. What is the <b>contribution</b> of the VC to the <b>GDP</b> ? CQ1.3. What is the <b>contribution</b> of the VC to the <b>agriculture sector GDP</b> ? CQ1.4. What is the contribution of the VC to the <b>public finances</b> ? CQ1.5. What is the contribution of the VC to the <b>balance of trade</b> ? CQ1.6. Is the VC <b>viable in the international economy</b> ?	CQ3.1. Are <b>working conditions</b> throughout the VC socially acceptable and sustainable? CQ3.2. Are <b>land and water rights</b> socially acceptable and sustainable? CQ3.3. Is <b>gender equality</b> throughout the VC acknowledged, accepted and enhanced? CQ3.4. Are <b>food and nutrition conditions</b> acceptable and secure? CQ3.5. Is <b>social capital</b> enhanced and equitably distributed throughout the VC? CQ3.6. To what extent are major social infrastructures and services acceptable? Do the VC operations contribute to their improvement?	CQ4.1. What is the potential impact of the VC on <b>resources depletion</b> ? CQ4.2. What is the potential impact of VC on <b>ecosystem quality</b> ? CQ4.3. What is the potential impact of the VC on <b>human health</b> ?
FQ2. Is this economic growth inclusive?		
CQ2.1. How is <b>income distributed</b> across actors of the VC? CQ2.2. What is the <b>impact of the governance systems on income distribution</b> ? CQ2.3. How is <b>employment distributed</b> across the VC?		
Addressing the 4 Framing Questions		
Cross-cutting CQ. Which <b>risks</b> may affect the performance of the VC?		

The three other types of analyses are run in parallel by each expert, with important common elements (e.g. data collection shared by the economic and environmental specialists on production levels, input quantities...; or analysis shared by the economic and social specialists on identification of marginalised groups, income and job distribution...).

The report will inform on **19 core questions** (CQ) that shed light on actual dimensions of impact and provide answers to the four framing questions.

The methodology does not deliberately aggregate the knowledge elements into one global appraisal or a single indicator. Informing decision-makers on each of the four framing questions will allow them to make their own judgement. In addition, the team should deliver its views and recommendations for the VC, building on these elements with a comprehensive and systemic perspective on the VC.

## 1.2 PLANNING THE ANALYSIS

All studies start with an discussion engaging the team of experts, EC/DEVCO, the EU Delegation in order to clarify the specific questions and expectations of decision-makers, policy-makers and stakeholders, paying close attention to the EC involvement in the VC. It is in fact crucial to understand

the context, motivations and needs that led to the request. As a result of this discussion the experts can determine the initial workplan and define the scope of the analysis: product(s), geographical limits, precision of analysis at the various stages, period considered, etc. They will refine the delineation of the VC system during their initial field work.

- The experts time is limited (45 days per each of the four experts, usually over a period of four to six months). They must carefully decide which data is most important so as to focus on the aspects most relevant to decision-makers (not to lose time collecting information that will not significantly improve the results.).
- The experts have to quickly appraise the status of the secondary data, statistics and other information; collect information during missions; if necessary, conduct additional surveys; if appropriate, identify and train those involved with this process (national expert, students, surveyors...).

The quality of analysis will eventually depend on data availability and robustness. Methods and tools applied to assess criteria will be selected jointly by the team. When relevant benchmarks exist, they should be mentioned and used.

## 2. FUNCTIONAL ANALYSIS

The functional analysis sets the **value chain system** by identifying the series of steps from the initial (agricultural) production to the final consumption (or export) and the actors involved at each stage. The activities/operations of these agents are geographically localised. They identify products, financial and information flows between actors and areas.

Understanding how the whole system works, lays the groundwork for undertaking the economic, social and environmental analyses.

The functional analysis allows the team to delimit the system to be studied: **the timeframe** (year, period, season...), **the geographic scope** (areas, regions...) and **the level of detail** (complex vs. simplified view). The higher the level of detail (e.g. a detailed typology of the actors), the greater the level of data required (techniques used, quality of the product, flows, etc.).

→ In order to retain a uniform methodological format, allowing comparisons and to stay within the limits of the budget, studies will focus primarily on the national segments of VCs. This may be a limitation in the case of export chains or for benchmarking importing chains. If deemed necessary, the experts may complete the economic and environmental analyses with a rapid investigation on the foreign segments of the VC. These elements will serve as a complement to the standard analysis.

The functional analysis entails options for the other types of analyses. These options may be linked with local policies, the involvement of the EC, and specific features of the value chain. The first step of the analysis enables the experts to decide, with the key actors and the EU Delegation, on which sub-chains and regions (and possibly types of producers) the analysis should focus on and where more detail is required (particularly important for data collection).

The functional analysis can use different tools, these will depend on the team's organization, but it should encompass:

- Description of main **functions** and **operations**,
- General mapping of **activities** and **actors**
- Identification of the relevant key features of the context
- Identification of (known) **constraints**,
- Deepening of relevant elements for all three pillars (economics, social, environment)
- Guidance for specific analyses within each of the three pillars.

A solid functional analysis may reveal the constraints to value

chain development and help determine the framework within which the analysis will bring answers to the four framing questions.

**3 main steps** (usually done in parallel):

1. General description of the value chain system
2. Elements of technical diagnosis
3. Governance analysis

### 2.1 GENERAL DESCRIPTION OF THE VC SYSTEM

This step is a functional and spatial mapping of the value chain, with quantitative data on **actors, flows and geographic distribution**, which depicts the overall framework of the value chain and defines the (sub-)chain(s) that will be analysed.

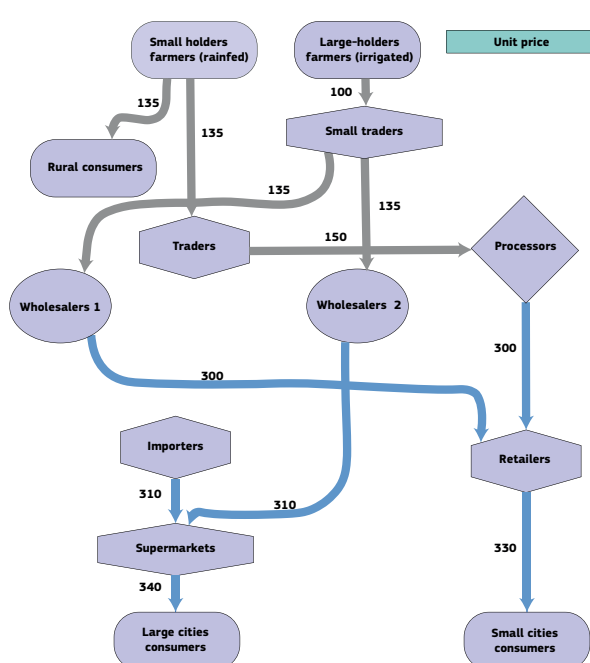
This allows for the identification of product(s) along the chain, of end-markets and of the main existing circuits (domestic and export markets). It also permits to define a common **typology of production systems**, which is shared and used in the other 3 types of analysis.



Vegetable garden in Burkina Faso © Marie-Hélène Dabat

COMPONENTS/ ELEMENTS	TYPE OF INFORMATION	USUAL INDICATORS & TOOLS
<b>Main products</b>	<ul style="list-style-type: none"> <li>Cocoa, beef, banana, fish, tomato concentrate, ready meals, clothes...</li> <li>Product at various stages: cotton/thread/clothes, paddy/white rice...</li> <li>Co-products, by-products: oil/oil cake, rice bran, leather...</li> <li>Varying quality level: top/bottom of the range</li> </ul>	<ul style="list-style-type: none"> <li>List, with main quality features</li> </ul>
<b>Functions</b>	<ul style="list-style-type: none"> <li>Sequence of technical and organisational functions along the chain (progressive elaboration of the end-product: nature, quality, place of delivery...), i.e. input supply, production, assembly, processing, wholesale, export, retail, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Functional analysis table</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>Operators directly involved in the production chain and important input and service providers: type of activity, size, number.</li> </ul>	<ul style="list-style-type: none"> <li>VC map (including sub-VCs)</li> </ul>
<b>Flows of product(s)</b>	<ul style="list-style-type: none"> <li>Physical transfers of products</li> </ul>	<ul style="list-style-type: none"> <li>Flow chart</li> </ul>
<b>Location of activities</b>	<ul style="list-style-type: none"> <li>Areas of production, sites of marketing, places of consumption...</li> <li>Ports of import and export trade...</li> </ul>	<ul style="list-style-type: none"> <li>Map (actors, flows)</li> </ul>
<b>Production systems and sub-chains</b>	<ul style="list-style-type: none"> <li>Types of operators at the various stages, based on relevant criteria (technical, economic, social, geographical...)</li> <li>Determining possible sub-VCs</li> </ul>	<ul style="list-style-type: none"> <li>Typology</li> <li>Flow chart</li> </ul>
<b>Quantification</b>	<ul style="list-style-type: none"> <li>Volumes, number of people and/or of enterprises involved, prices at different stages</li> </ul>	<ul style="list-style-type: none"> <li>Matrix of flows and exchange</li> <li>Resource and utilisation table</li> </ul>

Example of an AFA print-out



### Using the AgriFood Chain Analysis (AFA) software for functional analysis

The AFA software helps in designing the overall structure of the value chain (and sub-value chains), making sure the functions and operations of every actor or agent are well defined and all the flows are considered.

AFA is particularly useful for ensuring the coherence of the data (physical flows, costs and prices...). The use of the software must be complemented by relevant analysis of the governing coordination mechanisms.



Green beans packaging in Kenya © Claudine Basset-Mens





## 2.2 ELEMENTS OF TECHNICAL DIAGNOSIS

The analysis gathers **factual descriptive elements of technical processes and channels**, from secondary (and if needed primary) sources. Beyond this, it makes use of any existing diagnosis to get a gross understanding of the technical constraints and potential of all relevant levels: agronomic practices and technological processes, etc.

It deals with: typologies, technical coefficients, productivities, benchmarking and physical constraints, etc.

Deepening the technical diagnosis for some stages of the VC might be part of the final recommendations of the team.

Particular attention has to be given to:

- seasonality of activities,
- diversity of quality of products.

A quick benchmarking of practices may help.

COMPONENTS/ ELEMENTS	TYPE OF INFORMATION	USUAL INDICATORS & TOOLS
<b>Agricultural Production</b>	<ul style="list-style-type: none"><li>• Natural and physical environment</li><li>• Agronomic/aquacultural practices, inputs (seeds, chemicals...), water and soil management, husbandry...</li><li>• Associated crops</li><li>• Cropping seasons</li><li>• Cropped areas</li><li>• Labour force: quantity, origin</li><li>• Amount of production</li><li>• Marketing channels</li></ul>	<ul style="list-style-type: none"><li>• Farm typology</li><li>• Yields (area, water, labour...)</li></ul>
<b>Services and agrodealers</b>	<ul style="list-style-type: none"><li>• Input supply</li><li>• Access to and use of counselling and extension services</li><li>• Access to and use of financial services</li></ul>	<ul style="list-style-type: none"><li>• Typology</li></ul>
<b>Farm equipment &amp; infrastructures</b>	<ul style="list-style-type: none"><li>• Inventory: type, age, state, condition of use, management modalities</li><li>• Maintenance and rehabilitation needs (and cost).</li><li>• Irrigation schemes</li></ul>	<ul style="list-style-type: none"><li>• Tables, maps</li></ul>
<b>On-farm post-harvest</b>	<ul style="list-style-type: none"><li>• Stocks, on-farm processing, transport</li><li>• Product quality</li><li>• Physical yields and loss</li></ul>	<ul style="list-style-type: none"><li>• Technical yields and labour productivity.</li><li>• Level of loss</li></ul>
<b>Downstream processing</b>	<ul style="list-style-type: none"><li>• Physical facilities: type, age, state...</li><li>• Management modalities: ownership, conditions of use...</li><li>• Management of stocks</li><li>• Physical yields and loss</li></ul>	<ul style="list-style-type: none"><li>• Typology</li><li>• Technical yields</li><li>• Labour productivity</li><li>• Level of loss</li></ul>
<b>Marketing and trade</b>	<ul style="list-style-type: none"><li>• Farmers' market access</li><li>• Transport</li><li>• Types of traders</li><li>• Physical facilities: type, age, state...</li><li>• Ways and means of collection</li><li>• Management of stocks</li><li>• Physical yields and loss</li></ul>	<ul style="list-style-type: none"><li>• Typology</li><li>• Technical yields, production cost and labour productivity.</li><li>• Level of loss</li></ul>
<b>Regional infrastructures</b>	<ul style="list-style-type: none"><li>• Type (roads, dams...), state</li><li>• Capacity and needs</li></ul>	<ul style="list-style-type: none"><li>• Matrix, tables, maps</li></ul>
<b>Imports</b>	<ul style="list-style-type: none"><li>• Supply chain: actors involved, volumes, time seasonality, quality</li></ul>	<ul style="list-style-type: none"><li>• Flow diagram (mapping)</li></ul>
<b>Export</b>	<ul style="list-style-type: none"><li>• Logistics</li><li>• Channels and typology of exporter</li><li>• Regulatory Framework</li></ul>	<ul style="list-style-type: none"><li>• Typology</li><li>• Flow diagram</li></ul>

## 2.3 UNDERSTANDING THE GOVERNANCE

Governance analysis is based on organisational, institutional and/or structure and conduct analysis.

COMPONENTS/ ELEMENTS	TYPE OF INFORMATION	USUAL INDICATORS & TOOLS
<b>Marketing networks and distribution channels</b>	<ul style="list-style-type: none"> <li>Production/supply area, agents involved, terms of trade, stock management</li> <li>Changes in actors involved (in and out the network)</li> <li>Information channels and flows on product availability, accessibility, collection, price).</li> <li>Competitors</li> </ul>	<ul style="list-style-type: none"> <li>Flow diagram</li> <li>Matrix and diagram of relationships and information flows</li> <li>Maps</li> </ul>
<b>Stakeholders strategies</b> (particularly farmers' strategies)	<ul style="list-style-type: none"> <li>Relative importance of the value chain production in the overall economic activity of the agents</li> <li>Internal decision making (Who? How?...)</li> </ul>	<ul style="list-style-type: none"> <li>Description</li> <li>Relative value of the various farm products</li> <li>Risk analysis matrix</li> </ul>
<b>Horizontal coordination</b> between VC agents with the same function	<ul style="list-style-type: none"> <li>Identification of the agents involved in the VC, their specialization, and size differentiation</li> <li>Associations of actors: function, number, volume of flows, internal relations and competition</li> <li>Conditions for entry (« barriers »)</li> <li>Management of strategic functions (water, labour, stocks...)</li> </ul>	<ul style="list-style-type: none"> <li>Matrix of actors' relationships</li> <li>VC map</li> <li>Diagram of information flows</li> </ul>
<b>Vertical coordination</b> between VC agents in Demand-Supply relationship	<ul style="list-style-type: none"> <li>Market structures and competition</li> <li>Supply chain: system nodes, bottlenecks, clusters...</li> <li>Flows of information: origin, channels, content, organization...</li> <li>"Contractual" terms: types of arrangement, conditions, nature of engagement...</li> <li>Market supplies over time, seasonal variability, long run trend</li> <li>Public support and regulatory service for the VC</li> </ul>	<ul style="list-style-type: none"> <li>Matrix and table of relations and structure</li> <li>VC maps</li> <li>Diagram of information flows</li> <li>Calendar of activity</li> </ul>
<b>Regulatory and policy framework</b>	<ul style="list-style-type: none"> <li>Regulation (permit, authorizations, terms of use...)</li> <li>Policies (credit, taxes, subsidies, tariffs, liberalization...)</li> </ul>	<ul style="list-style-type: none"> <li>Description</li> <li>Chronograms</li> <li>Table</li> </ul>
<b>Governance systems of the VC</b>	<ul style="list-style-type: none"> <li>Formal and informal rules (overall and at various VC stages)</li> <li>Dominant coordination arrangements: market, modular, relational, captive or hierarchical</li> </ul>	<ul style="list-style-type: none"> <li>Description and diagram</li> </ul>



Cattle farming in Swaziland, © Fayçal Boureima

## 3. ECONOMIC ANALYSIS

Economic analysis helps to answer the two framing questions:

- **WHAT IS THE CONTRIBUTION OF THE VALUE CHAIN TO ECONOMIC GROWTH?**
- **IS THIS ECONOMIC GROWTH INCLUSIVE?**

### 4 MAIN STEPS

1. Undertaking the “financial analysis” of actors
2. Assessing the overall effects in the national economy
3. Analysing the sustainability and viability within the international economy
4. Assessing the growth inclusiveness

→ Data and computational precision: economic analysis must not focus heavily on measuring with an absolute precision. Decision-makers only use orders of magnitude. Tasks of collecting information and calculations must be organised to fit in the “always scarce time” available.

### 3.1 “FINANCIAL ANALYSIS”<sup>1</sup>

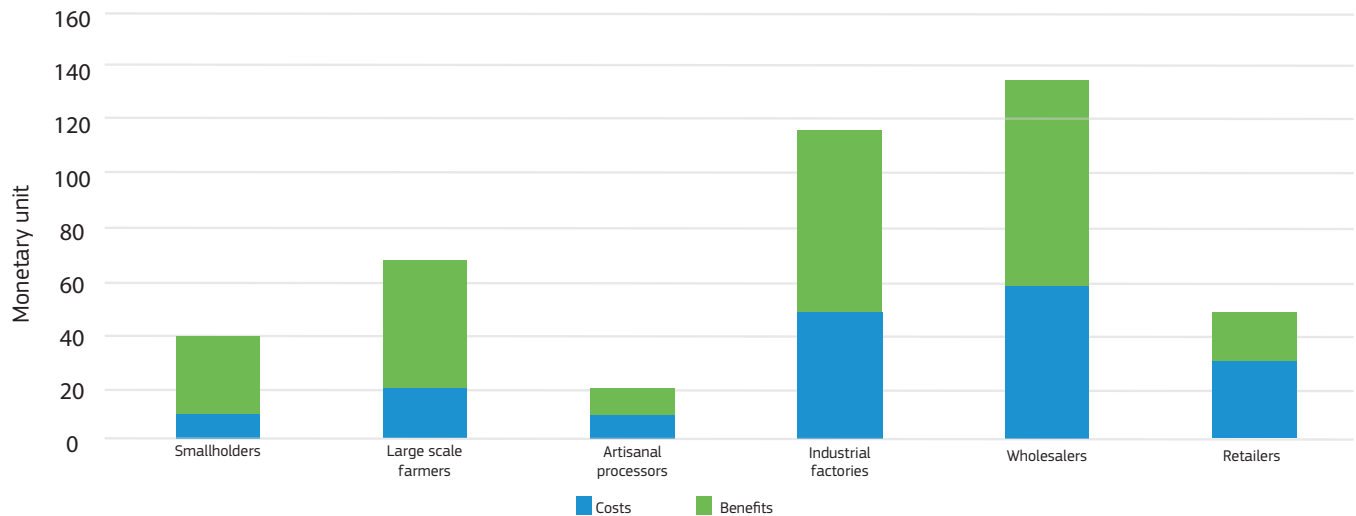
#### Viability for every type of actors

The main tool to be used is the **Operating Account** elaborated with actual market values, i.e. **valuing actual flows** at prices used, or if in kind, at actual market prices. Flows that do not constitute actual market exchange are not taken into account except for the farmers’ home consumption.

→ Farmers’ revenues in the operating account are based on actual flows (sales) to which the value of home consumption is added. Only actual costs are registered i.e. without adding a value for family labour (no opportunity cost, or other shadow prices). Analysis of farm income (i.e. operating profit) can then be done, and may include comparison with earnings from other job opportunities if any.

→ Benefits in kind to the external workforce (food, by-products...) are valued at the market price of these products.

Example of costs and benefits for the actors of a VC



### CORE QUESTIONS AND INDICATORS

Particular attention must be paid to the calculations of the indicators in bold

Framing Question 1: What is the contribution of the VC to economic growth?

CQ1.1

**How profitable and sustainable are the VC activities for the entities involved?**

**Indicators:** Operating Accounts, **Net Income by type of actor**, Return on turnover; Benefit/Cost ratio (net income/total cost); Estimates of Return on Investment (if relevant and available), **benchmark of farmers’ net income with minimum wage, livelihood needs and/or job opportunities.**

<sup>1</sup>“Financial analysis” is used here with its broad sense of analysis of individual businesses (types of farmers, of enterprises...).





## 3.2. EFFECTS WITHIN THE NATIONAL ECONOMY

### Consolidation of VC accounts

Consolidation consists of establishing the **Operating Account of the whole value chain system** by merging the individual operating accounts of all the value chain actors into one single account.

→ In the VC consolidated Operating Account:

- the consolidated Value Added (VA) is the sum of the VA of all the direct actors of each stage of the VC;
- the Intermediate Consumptions (IC) are those supplied to all direct VC actors by the agents outside of the VC.

### Computing growth generation

Growth is measured by GDP, i.e. **Total Value Added** produced by the VC. **Direct VA** is generated by the actors operating within the VC. **Indirect VA** results from activities induced by the use of intermediate goods and services supplied by actors outside the VC limits; it is estimated through backward linkages computation.

$$\text{Total VA} = \text{Direct VA (VC actors)} + \text{Indirect VA (suppliers external to the VC)}$$

**Imports** represent foreign exchange losses for the national economy. **Direct Imports** are generated by the actors operating within the limits of the VC.

**Indirect Imports** result from imports induced by the use of intermediate goods and services supplied by actors outside the VC limits; they are estimated through backward linkages computation.

$$\text{Total imports} = \text{Direct imports} + \text{Indirect imports}$$

→ Indirect Value Added and Indirect Imports are computed using suppliers' accounts or national accounts where available. However, such specific "backward linkage calculations" are only required for a very small number of important intermediate consumptions (IC): those amounting to a substantial share of the total production value that may therefore significantly affect the assessment of the Indirect VA. Undertaking calculations of Indirect VA incorporated in all ICs at all the stages of the VC would be useless as they will usually not change the order of magnitude of VA and Imports generated.

### Total effects (Direct + Indirect)

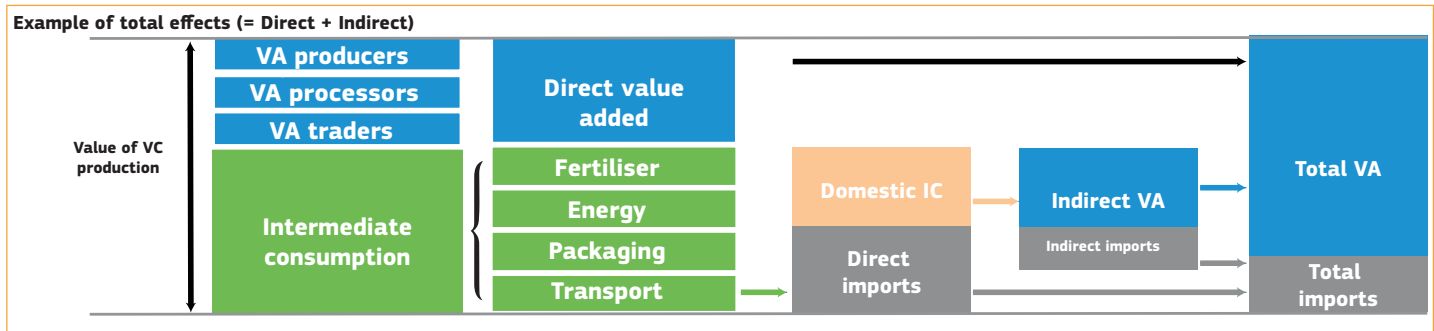
Total Value Added is the sum of its direct and indirect components: Wages, Operating Profits of farms and businesses, Taxes, and Financial Charges. These components depict the primary impact of the VC operations on income generation. Total VA informs on the **level of integration within the economy** of all the activities induced by the VC (Total VA/Production of the VC). Based on the market dynamics (Functional analysis), reflections on how these components could evolve in the future inform on the **potential impact on growth**.

## CORE QUESTIONS AND INDICATORS

Particular attention must be paid to the calculations of the indicators in bold

Framing Question 1: What is the contribution of the VC to economic growth?

CQ1.2	<b>What is the contribution of the VC to the GDP?</b>
	<b>Indicators:</b> Total value of production, Consolidated operating account, <b>Total Value Added and components</b> (Wages, Operating Profits (farms and other businesses), Taxes, and Financial Charges), <b>Value Added share of the GDP</b> , Total inputs by category, <b>Rate of Integration into the Economy (Total VA/VC Production)</b> .
CQ1.3	<b>What is the contribution of the VC to the agriculture sector GDP?</b>
	<b>Indicator:</b> Value Added share of the Agriculture sector GDP.
CQ1.4	<b>What is the contribution of the VC to the public finances?</b>
	<b>Indicators:</b> Taxes, subsidies and operating profits of public enterprises, Receipts and outlays of the government budget, <b>Public Funds Balance</b>
CQ1.5	<b>What is the contribution of the VC to the balance of trade?</b>
	<b>Indicators:</b> Total Imports, <b>VC Balance of trade</b> , Return on foreign currency (FC) outlays (FC net balance/FC outlays), <b>Total Imports/VC Production</b> .



### 3.3 SUSTAINABILITY AND VIABILITY WITHIN THE GLOBAL ECONOMY

Countries are part of the worldwide economy, and as such, domestic products somehow compete with those available on the international markets. Therefore, measuring the balance of the goods and services produced and consumed by the VC using relevant international prices (parity prices) gives an indication of the overall economic gain or loss for the national economy. It also gives an indication on the international competitiveness of the VC.

Viability within the global environment is assessed with the National Protection Coefficient (NPC) and the Domestic Resource Cost Ratio (DRC) simplified as follows:

$$\text{NPC} = \frac{\text{Production at market price}}{\text{Production at international price}}$$

→ The selected process consists of (i) eliminating transfers such as taxes, subsidies and financial flows, (ii) valuing tradeable goods and services using international parity prices, and (iii) using actual domestic market prices for other flows. No shadow pricing is to be applied on items such as wages, land and exchange rate.

**Non tradeable domestic factors  
at market price (without transfers)**

$$\text{DRC} = \frac{\text{Production at international price} - \text{Tradeable goods and services at international prices}}{\text{Non tradeable domestic factors at market price (without transfers)}}$$

#### CORE QUESTIONS AND INDICATORS

Particular attention must be paid to the calculations of the indicators in bold

Framing Question 1: What is the contribution of the VC to economic growth?

CQ1.6

**Is the VC viable in the international economy?**

**Indicators:** Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC), Domestic Resource Cost Ratio (DRC).

#### Using the AgriFood Chain Analysis (AFA) software for economic analysis

The AFA software gives support to calculation and analysis:

##### » Framing Question 1:

- Financial accounts by agent and/or by activity
- The consolidated VC operating account
- Total VA (created directly in the VC and indirectly through backwards linkages)
- Total imports (direct + indirect)
- Viability of the VC in the international economy: NPC, DCR

##### » Framing Question 2:

- Income flow
- Gini coefficient of the income distribution
- Employment distribution along the VC

It allows stocking data and results in a normalised database, thereby facilitating understanding of the results and allowing for comparison and simulation.



Fish wholesaler in Cambodia © Pierre Fabre

### 3.4. GROWTH INCLUSIVENESS

#### Income distribution and employment creation

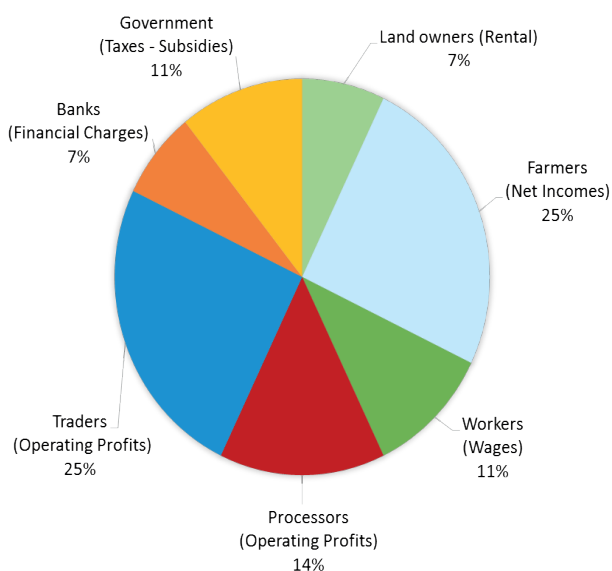
Analysis of how households and businesses benefit from the VC operations based on:

- **Farm Prices and Incomes** (smallholders' net revenue, share (%) of final price at farm gate ...), and Total Wages and Salaries in agriculture
- **Operating Profits and Wages of individual businesses** (MSMEs...) directly or indirectly involved in the VC
- **Social benefits** of all kinds bestowed by VC operators (plantations, cooperatives, firms...), valuing them
- **Operating Profits and Salaries in other activities** (formal firms, finance institutions...): downstream for processing and marketing, upstream through backward linkages.
- **Jobs and Self-Employment** generated at various stages of the value chain (full time or part-time, seasonal...).

Beyond computing mere indicators the analysis sheds light on how various sub-VCs perform differently for income distribution and how the VC governance may influence the setting of prices and revenues at the different stages. Contracts, organisations, policy measures and regulations, taxes or subsidies are among the ways and means that enable or limit the stakeholders bargaining position.

The study should provide sound indicators (on income, employment and social benefits) and evidence-based elements whenever **marginalised and vulnerable groups** are affected by the VC activities.

**Example of income distribution**



→ The definition of marginalised/vulnerable groups depends on the context (highlands producers, recent migrants, women...).

#### CORE QUESTIONS AND INDICATORS

Particular attention must be paid to the calculation of the indicators in bold

Framing Question 2: Is this economic growth inclusive?

See also 4. Social Analysis

CQ2.1	<b>How is income distributed across actors of the VC?</b> <b>Indicators:</b> Disaggregated Value Added, <b>Total Farm Income, share (%) final price at farm gate, Total Wages and salaries</b> (at every stage, all activities), Value of social benefits; Income accruing to marginalized and vulnerable groups, Income Gini Index.
	<b>CQ2.2</b> <b>What is the impact of the governance systems on income distribution?</b> <b>Indicators:</b> <b>Income distribution.</b>
	<b>CQ2.3</b> <b>How is employment distributed across the VC?</b> <b>Indicators:</b> <b>Number of jobs and self-employment at different stages (different types).</b>



## 4. SOCIAL ANALYSIS

Social analysis helps to answer the two framing questions:

- **IS THIS ECONOMIC GROWTH INCLUSIVE?**
- **IS THE VALUE CHAIN SOCIALLY SUSTAINABLE?**

The analysis of social sustainability and inclusiveness aims at assessing evidence-based **established and potential**

**impacts** related to the activities of the value chain. It allows for the identification of **benefits, opportunities, problems, constraints, risks and uncertainty**. It should also point at areas requiring more information or in-depth study.

Social scope can be analysed through many layers of people's life and livelihood, using different methods. The proposed framework attempts to elaborate an image of the main outcomes of the value chain activities in the six basic domains listed below:

### 1 WORKING CONDITIONS

- 1.1 Respect of labour rights
- 1.2 Child Labour
- 1.3 Job safety
- 1.4 Attractiveness

### 2 LAND & WATER RIGHTS

- 2.1 Adherence to VGGT
- 2.2 Transparency, participation and consultation
- 2.3 Equity, compensation and justice

### 3 GENDER EQUALITY

- 3.1 Economic activities
- 3.2 Access to resources and services
- 3.3 Decision making
- 3.4 Leadership and empowerment
- 3.5 Hardship and division of labour

### 4 FOOD AND NUTRITION SECURITY

- 4.1 Availability of food
- 4.2 Accessibility of food
- 4.3 Utilisation and nutritional adequacy
- 4.4 Stability

### 5 SOCIAL CAPITAL

- 5.1 Strength of producer organisations
- 5.2 Information and confidence
- 5.3 Social involvement

### 6 LIVING CONDITIONS

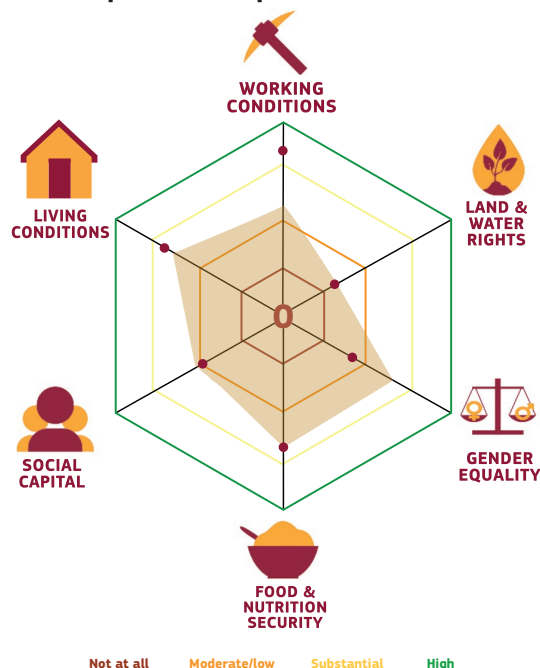
- 6.1 Health services
- 6.2 Housing
- 6.3 Education and training
- 6.4 Mobility

#### Using the Social Profile spreadsheet for social analysis

The Social Profile tool is based on a simple spreadsheet. It breaks down the 6 domains into 22 subsets and 63 questions for analysis and scoring. It is conceived as a way to reflect on important features and to assist the analyst in elaborating his/her understanding of the situation. It is meant to help the global analytical process and not to replace or limit the investigation to isolated answers.

Once completed the profile provides a graphic representation, in order to facilitate the communication of results to decision-makers. It will also serve to visualise the evolution of the situation in future studies of the same VC.

#### Example of a completed Social Profile



<sup>2</sup> Voluntary Guidelines on the responsible Governance of Tenure of land, fisheries, and forests in the context of national food security.



A list of 63 questions grouped in 6 domains **helps guide a reflective process** on the basis of key information and assessment (resulting from surveys, focus groups, interviews...). Questions are based on concerns decision-makers have in mind for appraising their action in various fields (strategic goals).

These questions do not substitute **an ad hoc analysis of the situation** based on the approach deemed appropriate by the social expert, but they complement it, ensuring that no important concern is left aside.

According to the context, some questions may not be relevant while others help shed light on the social impacts of the value chain activities. In this area, contextual investigations are definitely required. A global assessment of the **key social benefits** and **drawbacks** of the VC is expected. The contribution (direct or indirect, total or partial) of the activities of the value chain must be reviewed.

The expert analyses whether the operations of the value chain contribute to **improve or negatively affect the situation of the social groups** (e.g. access to infrastructures, social capital...).

- *The report should provide global analyses for every domain (at least relevant ones) rather than just answering to all 63 questions*
- *Questions may have to be reformulated to adjust to context.*

N.B: VCA4D support may include regular studies over time. In this case comparing the Social Profile graphic representation allows visualising the progress made.

## CORE QUESTIONS AND MAIN THEMES TO REVIEW

### Framing Question 2: Is this economic growth inclusive?

See the core questions and indicators in the economic analysis

- *Social analysis helps to determine key elements of the situation (e.g. defining a typology of actors comprehending vulnerable groups or understanding the governance and arrangements between actors) and an understanding how the VC operations contribute to inclusiveness as measured by the jobs and income indicators.*

### Framing Question 3: Is the VC socially sustainable?

CQ3.1	<b>Are working conditions throughout the VC socially acceptable and sustainable?</b> <b>Main themes:</b> Respect of international norms; Respect of contracts; Risk of discrimination and forced labour; Job Safety; Attractiveness; Child labour and education...
CQ3.2	<b>Are land and water rights socially acceptable and sustainable?</b> <b>Main themes:</b> Adherence to and application of VGGT; Equity and security of access to land/water resources; Transparency of procedures; Consultation; Arbitration procedures; Compensation procedures...
CQ3.3	<b>Is gender equality throughout the VC acknowledged, accepted and enhanced?</b> <b>Main themes:</b> Inclusion/Exclusion of women in certain activities; Access to resources, goods and services (land, credit, extension services, inputs...); Participation in decision making (on activities, organisation, income...); Responsibility and empowerment in collective processes; Arduous working conditions...
CQ3.4	<b>Are food and nutrition conditions acceptable and secure?</b> <b>Main themes:</b> Contribution of the VC to the availability, accessibility and stability of food resources; Food diversification; Nutritional quality; Price instability...
CQ3.5	<b>Is social capital enhanced and equitably distributed throughout the VC?</b> <b>Main themes:</b> Strength and representativeness of producers' organisations; Information sharing; Level of trust among actors; Participation in decisions and community activities; taking traditional practices into account...
CQ3.6	<b>To what extent are major social infrastructures and services acceptable? Do the VC operations contribute to their improvement?</b> <b>Main themes:</b> Access to infrastructures and services: health, education, training, housing, water and sanitation; Quality of these infrastructures and services...

## 5. ENVIRONMENTAL ANALYSIS

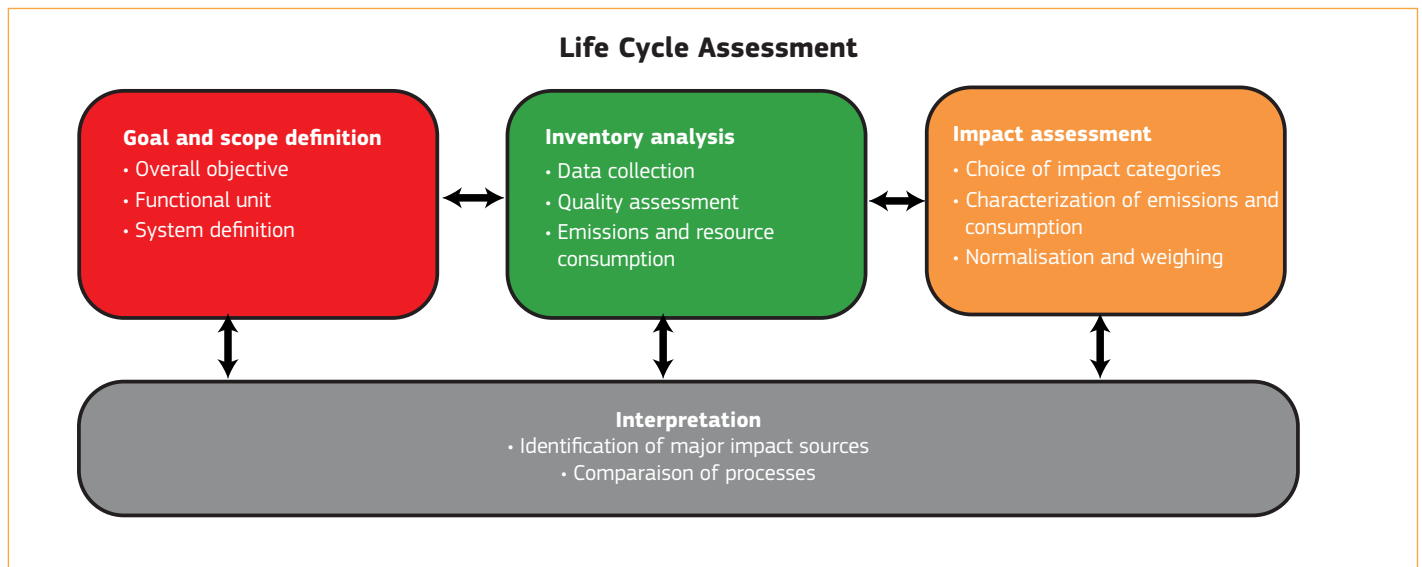
Environmental analysis helps to answer the framing question:

- **IS THE VALUE CHAIN ENVIRONMENTALLY SUSTAINABLE?**

The method selected to evaluate the environmental

sustainability of the value chain is the **Life Cycle Assessment (LCA)**. Over the last few decades, LCA has been normalised, promoted and used by various public and private actors. The upper level reference for this methodology is given by two ISO norms (ISO 14040:2006 and 14044:2006).

The LCA framework is shown in this graph:



### Main steps of LCA are:

- Selection of the **functional unit** (i.e. the unit of “final product” all computations are related to),
- Inventory of resources used and emissions produced,
- Data management, selecting most appropriate databases,
- Selection of environmental impact assessment model,
- Analysis of environmental impacts at the different steps,
- Results and identification of hot spots,
- Possible analysis of variability (e.g. with sensitivity analysis or Monte-Carlo method to explore uncertainty).

On the whole, LCA takes stock of flows regarding three areas (called “areas of protection”): **Resource depletion, Ecosystem quality and Human health.**

The inventory of resources used and substances emitted by the value chain operations at different steps is processed using factors of impact on different environmental categories in order to estimate how the **areas of protection** are affected.

At the agricultural stages the main challenges for doing this

quantitative inventory are:

- Accounting for the diversity and complexity of **farming systems**,
- Estimating farm fluxes in an appropriate way considering the local conditions of practice, soil and environment of the farm,
- Building a good **partnership** to access the best available data.

The existence of international **databases**, and **models** for analysis, leads the expert to organise his/her work on an ad hoc basis (country, product, ecosystem, market control of information...), taking into account in data sources availability and the time and data collection constraints.

Analysts should focus their work on the steps of the value chain that deserve more attention for evidencing impact, often the agricultural production stages.

Analysis should point to stages and activities with **major impact on the areas of protection**. In order to help decision-makers, it should stress **comparison between the results of the different sub-value chains or types of production systems** so that it sheds light on the “least harmful” ways of producing for the environment.



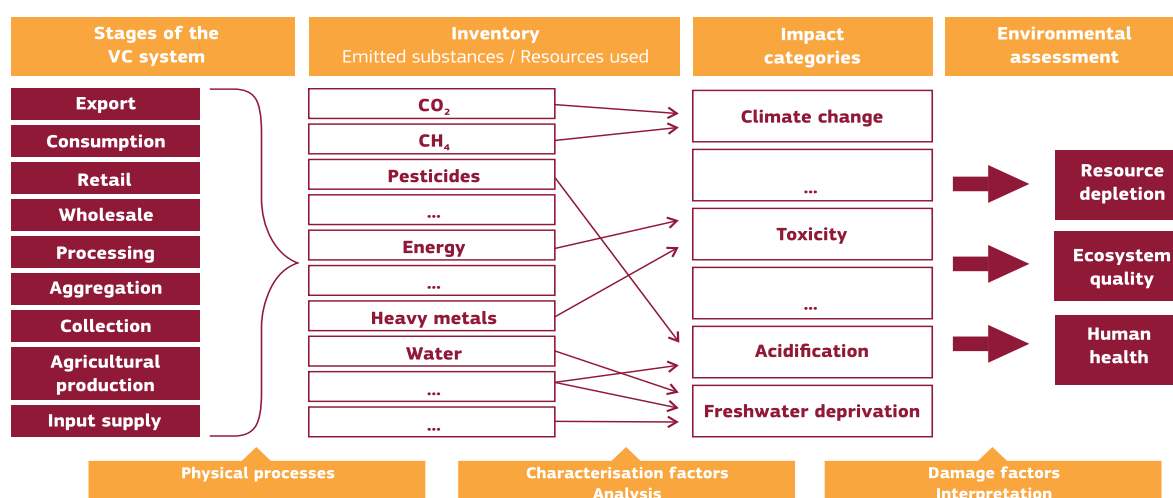
→ LCA is a method using a variety of components (quantitative indicators) presented in standard graphics that require explanation to non-specialists. Consequences of significant indicators and results on the three areas of protection must be clearly stated to help understand the environmental impact.

The analysis should provide information on the impacts linked to activities inside the borders of the country. In any case if the analysis goes beyond, the experts also present the results related to the domestic activities.

Agricultural-based value chain analytical process is shown in this graph:



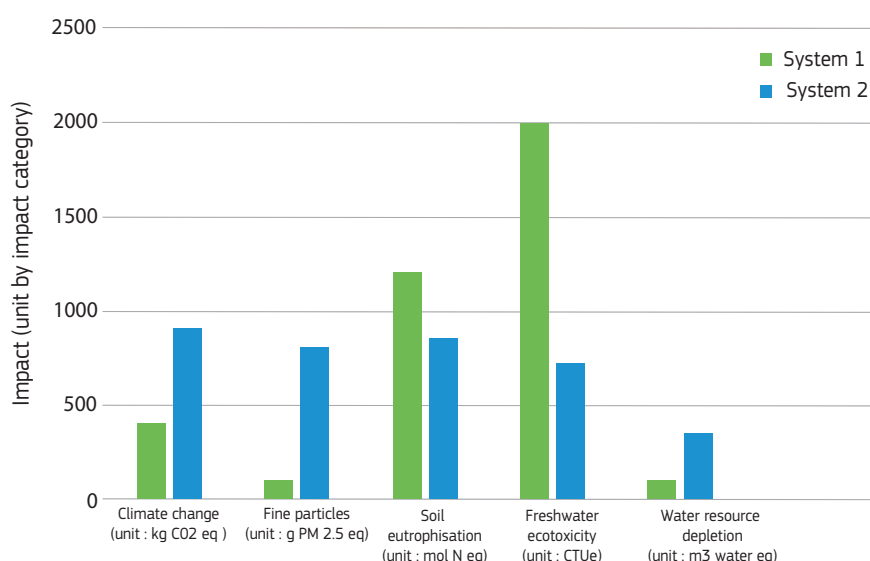
Green beans in Kenya © Claudine Basset-Mens



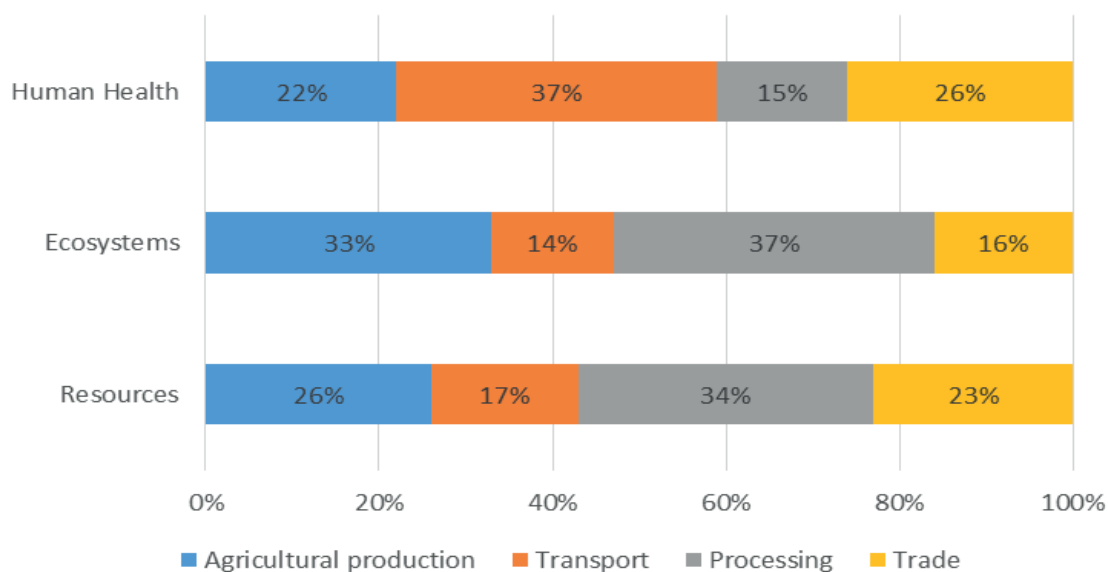
### Using LCA software for environmental analysis

Life Cycle Assessment is done by using specific software. The SimaPro software appears to be both convenient and largely shared among the community of LCA analysts in the tropical agriculture sector. It has thus been selected for use by the VCA4D teams but other software can be supplemented if compatible with the information system that will store data and results in a standardised way for future reference and comparison.

### Example of substances emitted and resources used



### Example of the impact of the three areas of protection



## CORE QUESTIONS AND INDICATORS

NB: Analysis will ultimately inform on the 3 areas of protection:

Framing Question 4: Is the VC environmentally sustainable?

CQ4.1

**What is the potential impact of the VC on resources depletion?**

**Indicators:** Resource uses (water, fuel...), absolute and comparing systems.

CQ4.2

**What is the potential impact of the VC on ecosystem quality?**

**Indicators:** Sizeable emissions of substance (CO<sub>2</sub>, NH<sub>3</sub>...), absolute and comparing systems; Significant Resource use; Potential deterioration of land quality, of biodiversity, etc.

CQ4.3

**What is the potential impact of the VC on human health?**

**Indicators:** Sizeable emissions of harmful substance, absolute and comparing systems; Potential deterioration of safety (potable water, working conditions, etc.).



Cassava processing in Ivory Coast © Victoria Bancal



## 6. SYNTHESIS & RECOMMENDATIONS

The experts' work should give a **clear picture of the operations of the VC in accessible language**, highlighting the main results, so as to be understood by all stakeholders and used by decision-makers. Comparing the various agricultural systems and/or sub-chains sheds light on the diversity of situations and the real potential for change.

A **synthetic presentation of the 4 analyses** (Functional, Economic, Social, Environmental) and the answers to the 4 framing questions will serve both as an executive summary and as a basis for an informative 6-page flyer to be widely distributed.

The **dynamics of the development of the VC** should be presented using a Risk Analysis Matrix and a SWOT (Strengths, Weaknesses, Opportunities, and Threats) table based on the integration of the 4 analyses:

- The **Risk Analysis Matrix** identifies and assesses how the results (on farm's performance, overall functioning of the VC, etc.) could be negatively affected by unfavourable events. For agricultural VCs, frequent main causes of risk to be considered are listed in the table below; any other relevant matter should also be considered. For every risk category, comments and indicators should help explain

the factors at work; an assessment of the probability (high, low...) and severity of damages (quantitatively or qualitatively defined) should allow for appraising the vulnerability of the VC and/or its actors.

- The **SWOT table** gives a broad view of the important factors (both internal and external to the VC) that are favorable or unfavorable to the VC development and its impact.

Both tools result from the team's integrated analytical work.

Eventually, the team is expected to give **recommendations** for:

- Deepening the knowledge on the VC by filling in important information gaps, e.g. technological or management diagnosis at a specific stage of the chain;
- Enhancing the development of the VC (potential to foster, drawbacks to diminish...);
- Avoiding major risks (as identified in the risk analysis);
- Proposing possible follow-up work to be undertaken within the framework of the DEVCO-Agrinatura partnership.

### Examples of risk analysis matrix

Risk Category	Comments	Relevant indicators	Probability	Severity
Price trends				
Price volatility				
Logistics and infrastructures				
Policies				
Social relations (including labour markets...)				
Food safety and (phyto)sanitary situation				
Weather and climate change				
Natural environment				



### Example of SWOT table

	Positive	Negative
Internal	<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>• Experience</li> <li>• Processors' know-how</li> <li>• Reputation of products</li> <li>• Flourishing domestic market</li> <li>• Coordination and social capital</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>• Difficult access to land</li> <li>• Physical access to production zones</li> <li>• Low productivity</li> <li>• Low wages in the processing sector</li> <li>• Lack of information on prices</li> </ul>
External	<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>• New trends in consumption</li> <li>• New actors emerging</li> <li>• Opening of external markets</li> <li>• Policy changes</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>• Land pressure (reduction of fallow)</li> <li>• Rising transport cost</li> <li>• Decrease of the international price</li> <li>• Environmental protection standards</li> <li>• Increasing competition</li> </ul>

### CORE QUESTIONS AND INDICATORS

Addressing the 4 Framing Questions

Cross-cutting CQ

**Which risks may affect the performance of the VC?**

**Indicators:** Risk causes; Probability; Intensity of damages; Strengths, weaknesses, opportunities, & threats.



Arabica coffee © AdobeStock

# Annex

## A special look at Fair and Ethical Trade and other Social and Environmental Voluntary standards

In some Value Chains, the existence of “Fair and Ethical Trade or other social and environmental voluntary standards” certifications, such as Fair Trade, UTZ, Rain Forest Alliance or organic, may substantiate the identification of a specific segment or sub-chain to be analysed (in the 4 types of analyses). This may result either from the importance of the volumes dealt with or because of particular impact in one or more of the analytical domains; it may also stem from a specific demand of the EC or other actors.

The certified sub-chain should be analysed using the overall methodological framework as any other sub-chain. The of economic, social and environmental results can then be aggregated to the overall indicators of the whole chain. This allows the team to respond more completely to the 4 framing questions for the entire VC and more specifically for this sub-chain. Beyond the specific contextual questions, the team should bear in mind the following issues:

1. How should the various certification schemes be taken into account for establishing the typology of actors and sub-chains? Selection criteria should take into account the type of contractual arrangements and the identification of the practices involved that may generate differential effects on the indicators, particularly those related to inclusiveness.
2. Are the productivity and technical performance of the certified farmers significantly different?
3. What are the supplementary costs and how much do they amount to (value, workload...)?
4. What are the actual individual, collective and territorial benefits drawn from being certified? Specifically, what differences does it make on the producers' direct income?
5. To which extent are all these performances and impacts really attributable to the certification system? Beware that a “bias” may be induced by the “selection process” of becoming a member, leading for instance the certified farmers to be among the most entrepreneurial, endowed or dynamic or advantageously geographically situated ones.
6. Are there particular risks entailed by adhering to the certification system? (e.g. vulnerability resulting from a unique crop-specialisation).



Certified products





Rice field in Asia © Adobe stock

**Value Chain Analysis for Development** is a tool funded by the European Commission / DEVCO and is implemented in partnership with Agrinatura. It uses a systematic methodological framework for analysing value chains in agriculture, livestock, fishery, aquaculture and agroforestry. More information can be found at: <https://europa.eu/capacity4dev/value-chain-analysis-for-development-vca4d->



**Agrinatura** (<https://agrinatura-eu.eu>) is the European Alliance of Universities and Research Centers involved in agricultural research and capacity building for development.



The information and knowledge produced through the value chain studies are intended to support **the Delegations of the European Union** and their partners in improving policy dialogue, investing in value chains and better understanding the changes linked to their actions

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Directorate General International Cooperation and Development – EuropeAid, Rue de la Loi 41, B-1049 Brussels; email: [europaaid-info@ec.europa.eu](mailto:europaaid-info@ec.europa.eu)

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