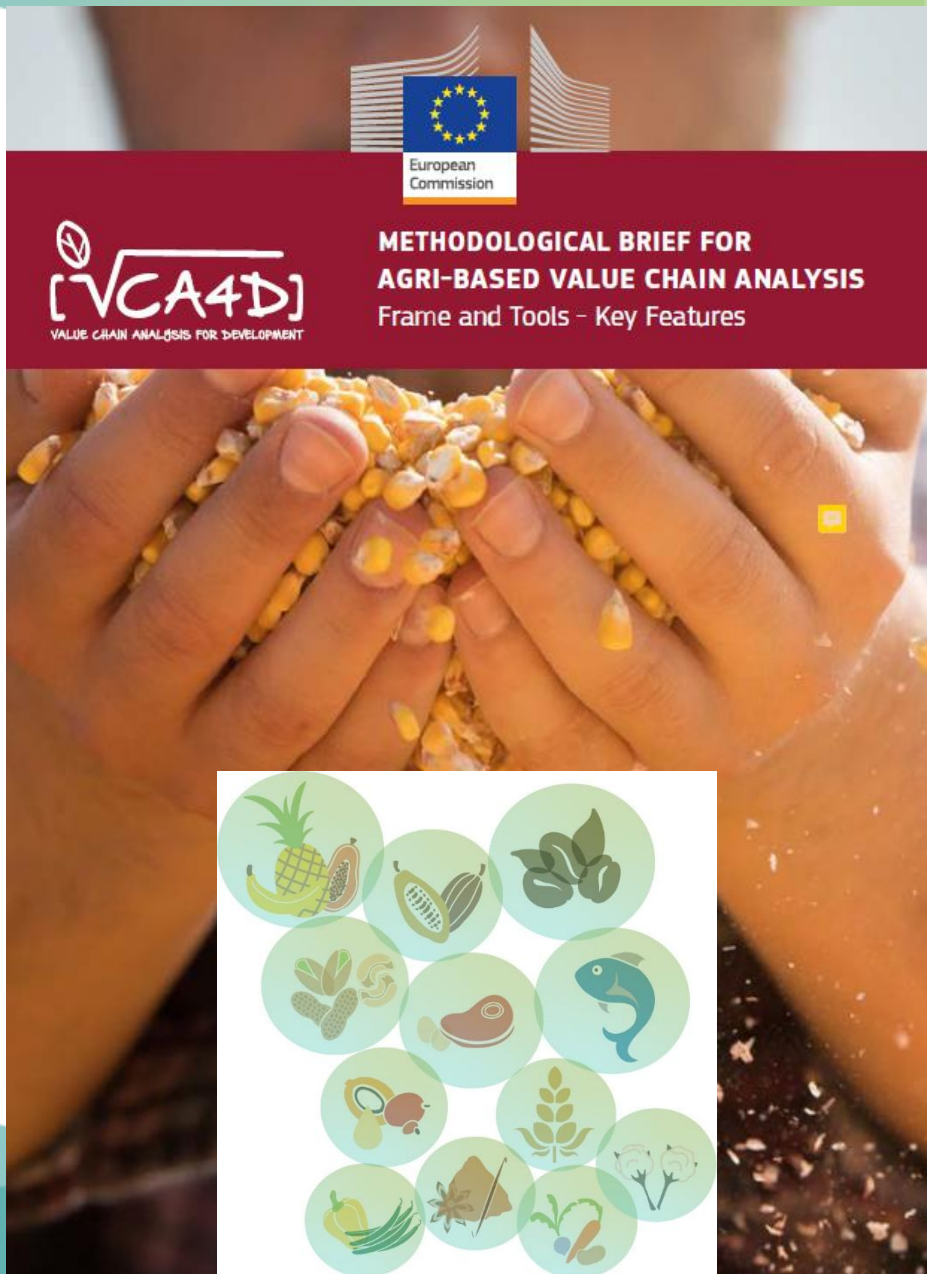
VCA4D

VALUE CHAIN ANALYSIS FOR DEVELOPMENT

FUNCTIONAL ANALYSIS

agrinatura for European Commission



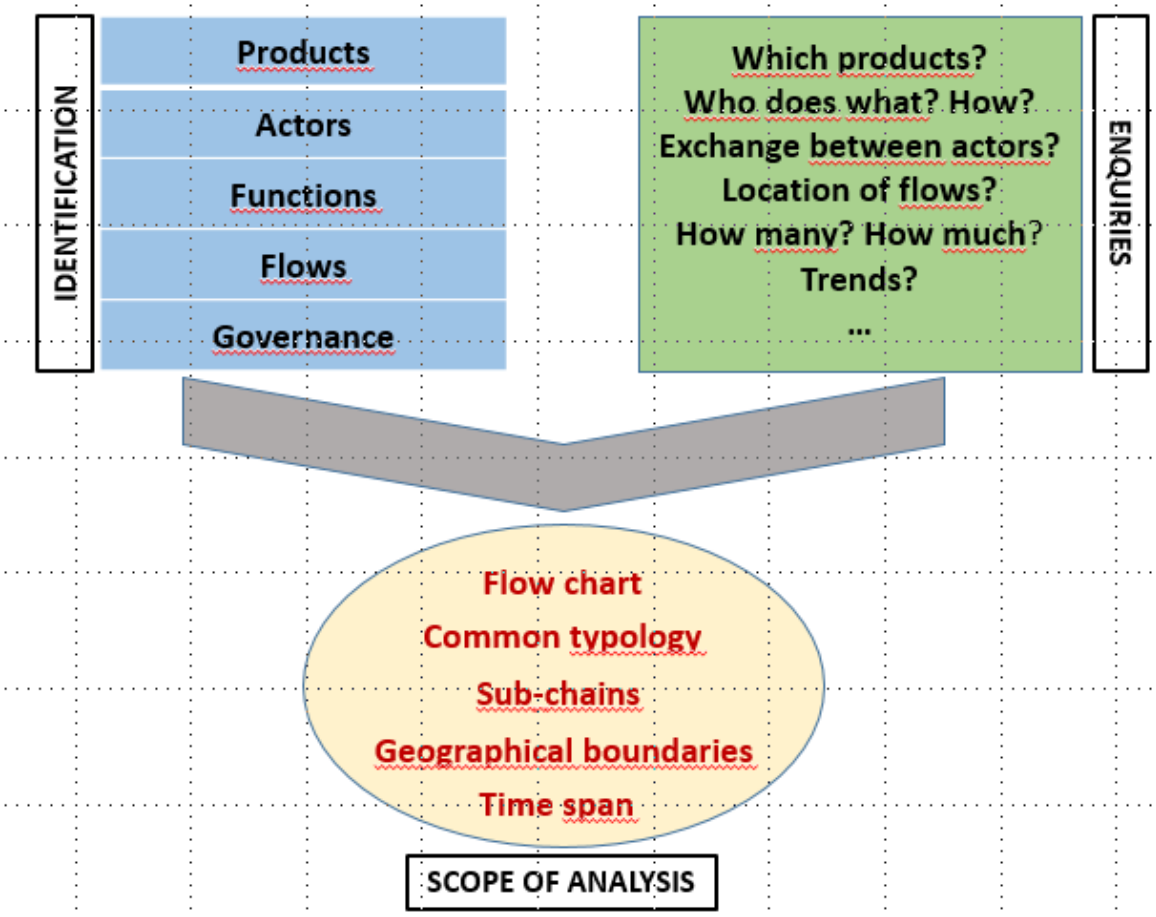
Objectives

Overall description of the VC system

- main actors and stakeholders involved
- how it works
- main strategic development challenges

Common understanding/ picture of the VC operations through harmonising the various experts' perspectives

Key components



Main elements = basis to answer the framing questions

FUNDAMENTALS

The construction of the common interdisciplinary framework for the VC encompasses a wide range of information, quantitative data and qualitative assessments. It proceeds by:

- Exposing the main features of the chain
- Reviewing the main technical processes and practices
- Examining the VC organisation and governance, overall and at every level

Exposing the main features of the VC

The **building blocks portraying the VC** include :

- the series of **product(s)** along the chain from farms to end-markets (domestic and port of exports)
- the succession of **steps** from the initial (agricultural) production to the final in-country consumption market or point of export
- the **actors** involved at each stage
- the **geographical location** of the activities and operations
- the main material, financial and information **flows** among actors and between stages of the VC

Exposing the main features of the chain

The building blocks of the VC description

KEY ELEMENTS	USUAL INDICATORS & TOOLS
Main products	
• E.g. cocoa, beef, banana, fish, tomato concentrate, ready meals, clothes... • Product at various stages: cotton/thread/clothes, paddy/white rice... • Co-products, by-products: oil/oil cake, rice bran, leather... • Varying quality level (top/bottom of the range) and standards	• List, with main quality features
Functions & Steps	
• 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.	• **Matrix of functional relations** • **Resources and utilisation table**

Exposing the main features of the chain

The building blocks of the VC description

Actors	

• Operators directly involved in the production chain and important input and service providers: activity, size, number.
• Technical practices of different types of farmers, processors, sellers, providers… including existing diagnosis (e.g. agronomic diagnosis of farming systems and studies on environmental degradation).
• Business organization of each type of actors:
  ◦ number of units, locations, equipment sharing…
  ◦ relative importance of the VC production in the overall activity of the actors
  ◦ internal decision making (Who? How?…)
	• Description: activity, capital, volumes…
	• Relative value of the various farm products
	• Number of people and/or enterprises

Exposing the main features of the chain

The building blocks of the VC description

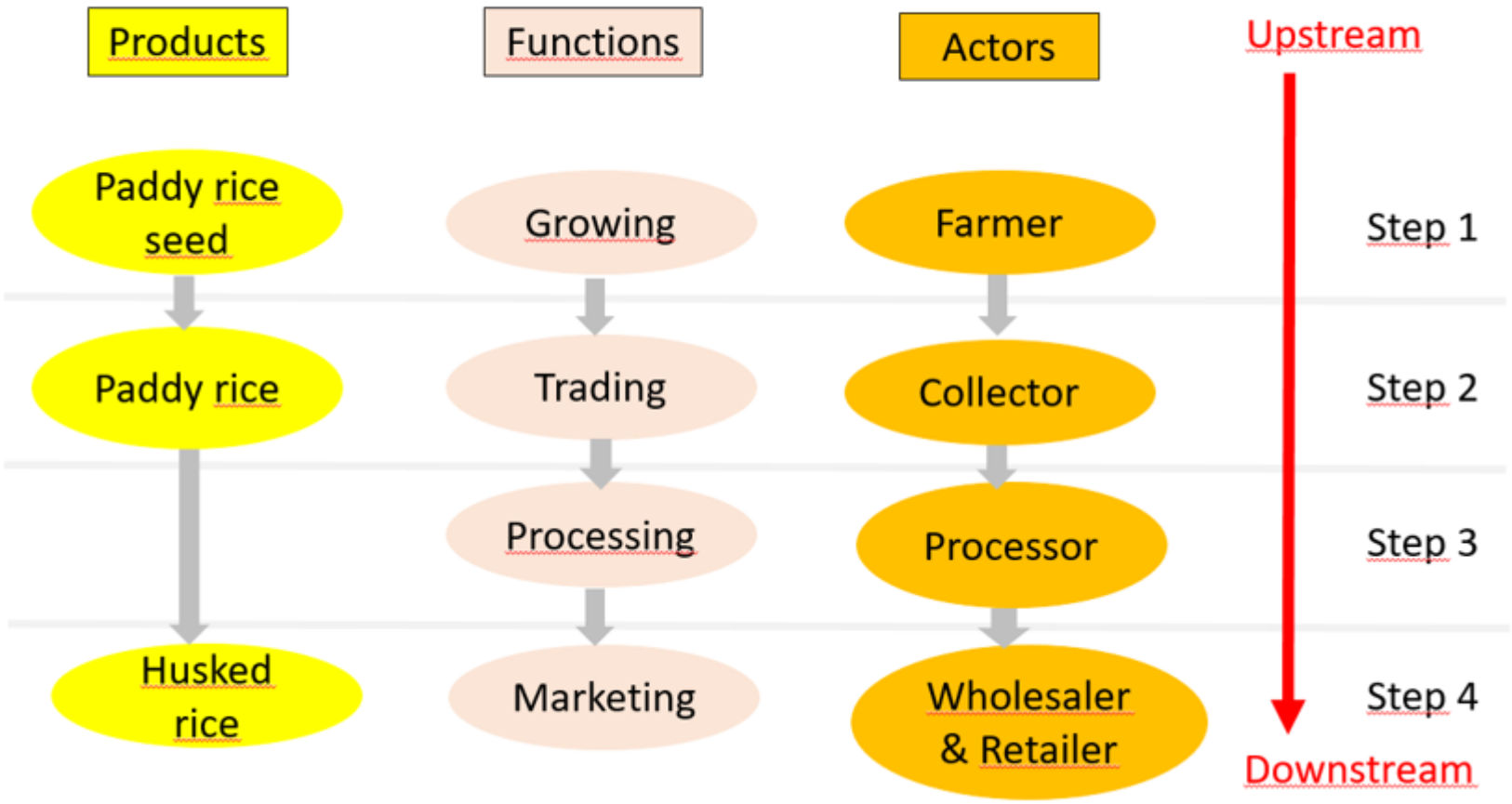
Location of activities	
• Areas of production, sites of marketing, places of consumption… • Ports of import and export • Exports: place of final consumption	• **Map (actors, flows)**
Flows of product(s)	
• Physical transfers of products between actors • Marketing networks and distribution channels • Imports: actors involved, volumes, time seasonality, quality • Exports: channels and typology of exporter, logistics, regulatory framework	• **Flow chart** • **Matrix of flows and exchanges** (physical, financial…) • Matrix of relationships • Diagram of information flows • Maps

New !

COLEACP will develop for each VCA4D team a market analysis to bring complementary elements to the VCA4D functional analysis and give an in-depth and overall perspective on the markets.

- *market trends on national, regional and international markets, combining analysis of publicly available data and own market insights;*
- *the main data sources;*
- *useful complementary elements or sources.*

Illustration 1. Founding elements of the functional analysis, example of a rice value chain



Reviewing the main technical process

Technologies used at every step of the VC, **categories of activity**, **technical coefficients and productivity ratios**, benchmarks, and main **physical constraints**.

Does not carry out a thorough technical investigation

Particular attention to: (i) **seasonality** of activities, (ii) diversity of **quality** of products, (iii) use of **sub-products and losses**

Descriptive elements derive mainly from **secondary sources**, complemented if needed by specific economic and environmental **data collection** undertaken by the team

All experts refer to the **same technical data and elements** for a coherent analysis.

Table 3. Technical processes and practices

COMPONENTS/ ELEMENTS	TYPICAL INFORMATION	USUAL INDICATORS & TOOLS
Agricultural Production	• Natural and physical environment • Agronomic/aquacultural practices, inputs (seeds, chemicals…), water and soil management, husbandry… • Associated crops • Cropping seasons • Cropped areas • Labour force: quantity, origin • Volume of production • Prices	• Farm typology • Yields (area, water, labour…)
Services and agrodealers	• Input supply • Access to and use of counselling and extension services • Access to and use of financial services • Prices	• Typology
Farm equipment & infrastructures	• Inventory: type, age, state, condition of use, management modalities • Maintenance and rehabilitation needs (and cost) • Irrigation schemes	• Tables, maps
On-farm post-harvest	• Stocks, on-farm processing, transport • Product quality • Physical yields and loss	• Technical yields and labour productivity. • Level of loss
Downstream processing	• Physical facilities: type, age, state… • Management modalities: ownership, conditions of use... • Management of stocks • Physical yields and loss • Prices	• Typology • Technical yields • Labour productivity • Level of loss
Marketing and trade	• Farmers' market access • Transport • Types of traders • Physical facilities: type, age, state… • Ways and means of collection • Management of stocks • Physical yields and loss • Prices	• Typology • Technical productivity • Production cost • Level of loss
Regional infrastructures	• Type (roads, dams...), state • Capacity and needs	• Matrix, tables, maps

Examining the VC organisation and governance, overall and at all levels

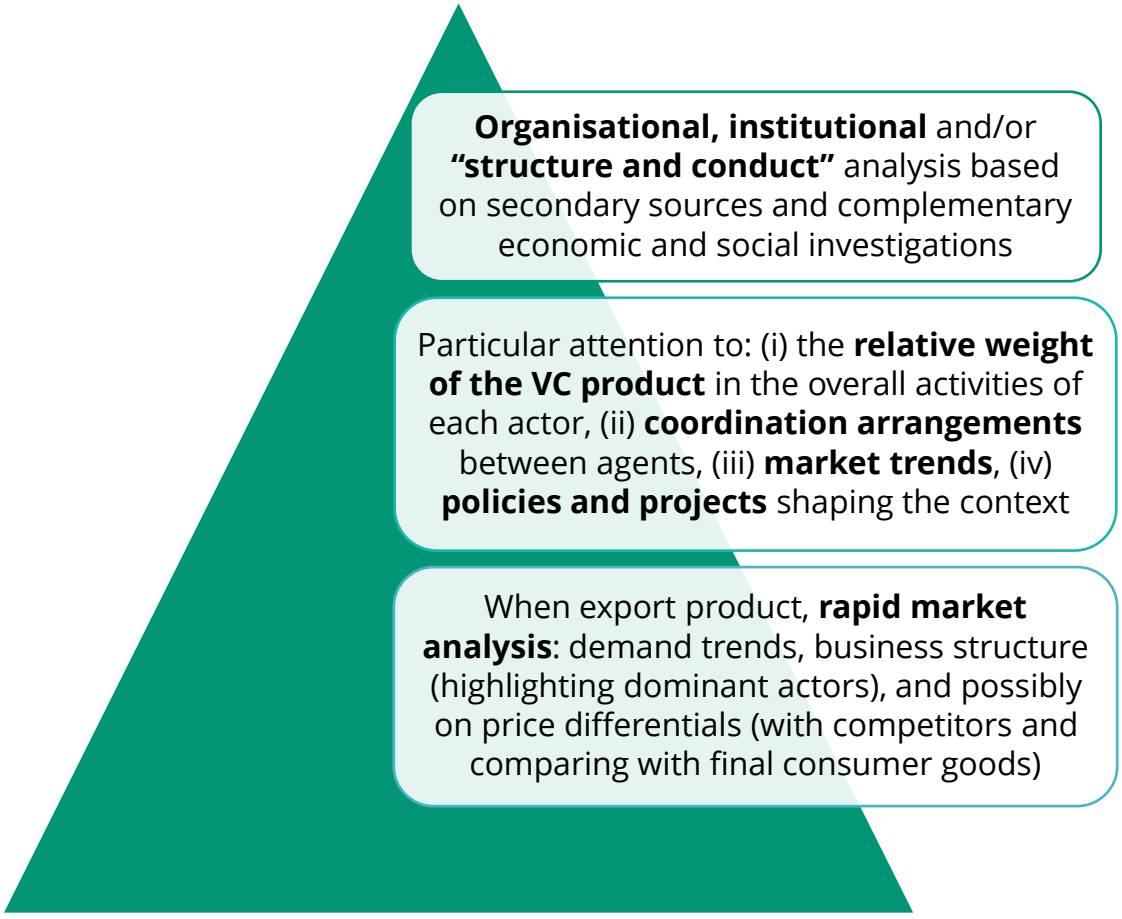


Table 4. Organisation and governance

COMPONENTS/ ELEMENTS	TYPICAL INFORMATION	USUAL INDICATORS & TOOLS
Marketing networks and **distribution channels**	• Production/supply area, agents involved, terms of trade, stock management • Network structure (system nodes, bottlenecks, clusters…) • Changes in actors involved (in and out the network) • Information channels and flows on product availability, accessibility, collection, prices) • Competitors	• Flow diagram • Matrix of relationships and information flows • Maps
Stakeholders strategies (particularly farmers' strategies)	• Dependence of the agents to the VC activities: economic, access to services and inputs… • Importance of the VC product(s) among farmers' crops • Internal decision making (Who? How? ...)	• Description • Relative value of the various farm products • Risk analysis matrix
Horizontal coordination between VC agents with the same function	• Agents involved in the VC, with their specialization and size differentiation • Associations of actors: function, number, volume of flows, internal relations and competition • Conditions for entry (« barriers ») • Organization and management of strategic functions and services (water, labour, stocks…)	• Matrix of actors' relationships • Diagram of information flows • VC maps
Vertical coordination between VC agents in demand-Supply relationship	•) Structure (leverage points…) and competition (monopoly, oligopoly…) • Circulation of information: origin, channels, content, organization… • "Contractual" terms: types of arrangement, conditions, nature of engagement… • Market supplies over time, seasonal variability, long run demand trend • Export: price differential with competitors and final good • Public support and regulatory services	• Matrix of relationships • VC maps • Diagram of information flows • Calendar of activity
Business environment	• Regulatory background (permit, authorizations, terms of use...) • Certification and standard setting • Public service and infrastructure provision • Vocational training • Public-private dialogue	• Description • Chronograms, tables
Policy framework	• Fiscal (taxes, subsidies…) • Financial (credit…) • Trade (liberalization, tariffs...) • Territorial (decentralization…) • ...	• Description • Chronograms, tables
Governance systems of the VC	• Formal and informal rules (overall and at various VC stages) • Dominant coordination arrangements: market, modular, relational, captive or hierarchical • Export: international business structure	• Description and diagram

Illustration 2. Matrix of relationships, example of a cocoa value chain

Types of actors	Wet bean farmer	Certified wet bean farmer	Dry bean small farmer	Dry bean medium farmer	Wet bean fermentary	Certified wet bean fermentary
Wet bean fermentary	Open market					
Certified wet bean fermentary	Open market	Contract				
Dry bean exporter		Open market	Open market		Contract	
Certified dry bean exporter				Vertical integration		Contrat

Assessment

Use of a **wide range of quantitative data:** volumes, number of people/ enterprises, prices at different stages, etc.

Coming from **official statistics**, **secondary data**, **surveys** and **interviews**

Inform in a tangible way on the **reality** of the elements put forward and on their **representativeness**

Using the **tools** proposed in the following tables. Data quality must be carefully assessed

LAYING THE FOUNDATION OF THE WHOLE ANALYSIS

What is the defined scope for the analysis?

Are there specific activities, actors or production systems to focus on?

The FA unveils possible options for carrying out the ECO, SOC and ENV analyses. The team set the priority elements to review, the subsequent data collection and the overall strategy by answering the questions:

What is the common typology of actors to be used by all experts?

What are the relevant sub-chains that will sharpen the analyses?

What is the defined scope for the study?

Actors involved and identified channels

Timeframe (year, period, season…)

Geographic scope (areas, regions…)

Are there specific activities, actors or production systems to focus on?

Particular context (technical, environmental, social, policy-related…)

Issues raised by key actors (local decision-makers, private sector, EU Delegations…) may point at special study needs

What is the common typology of actors to be used by all experts?

The common typology allows for describing and assessing the **diversity of situations**, **benefits and drawbacks** in the VC, and the **foreseeable evolutions**

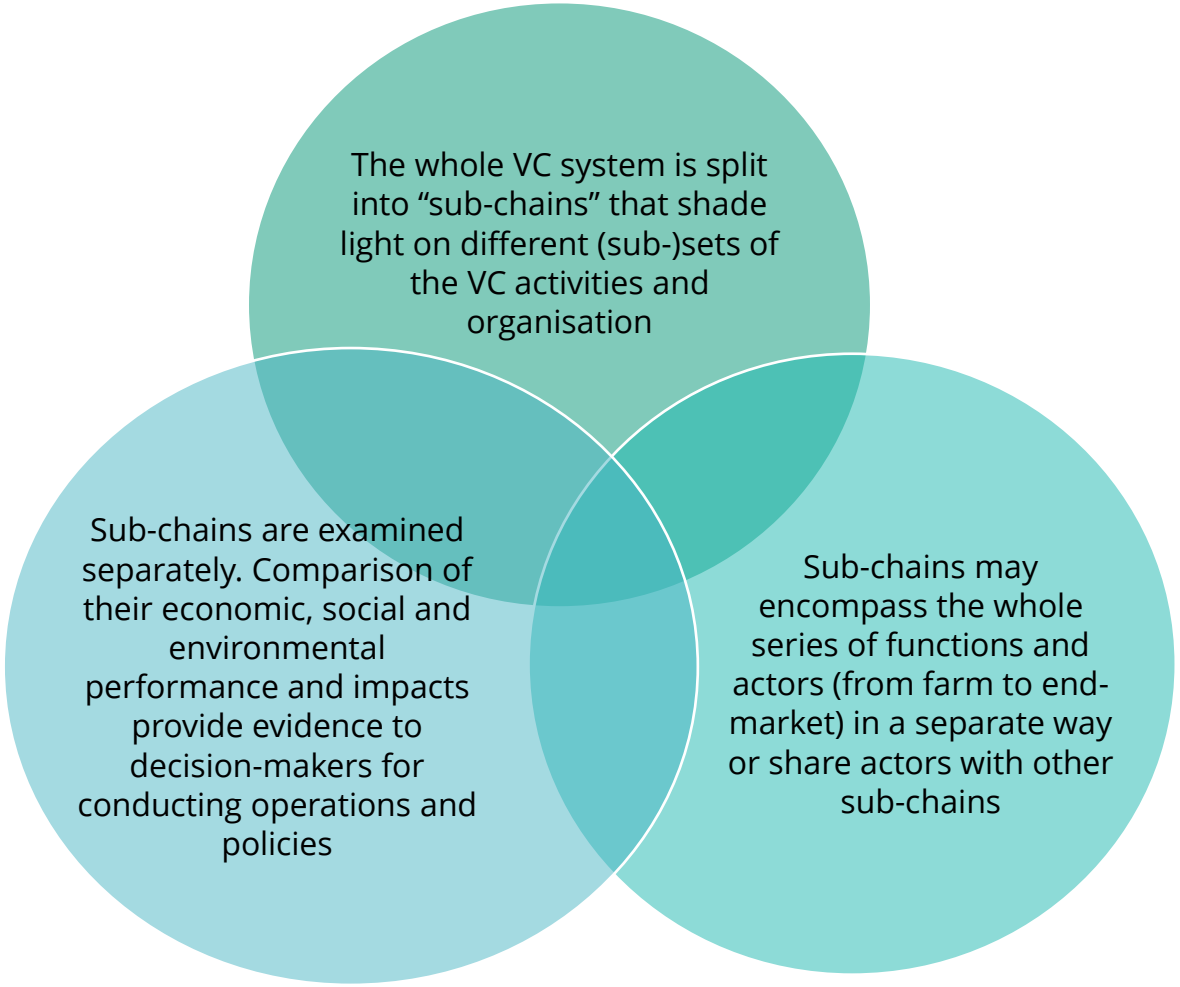
Must be determined and agreed upon through an **interdisciplinary process** by the whole team

Key variables used for shaping the typology **are contextual**: the quality of produce, the size of the business, the equipment and capital, the technological processes, the geographic zones, etc.

The **performance** and **impact** for each type of actors are evidenced by the ECO, SOC and ENV analyses

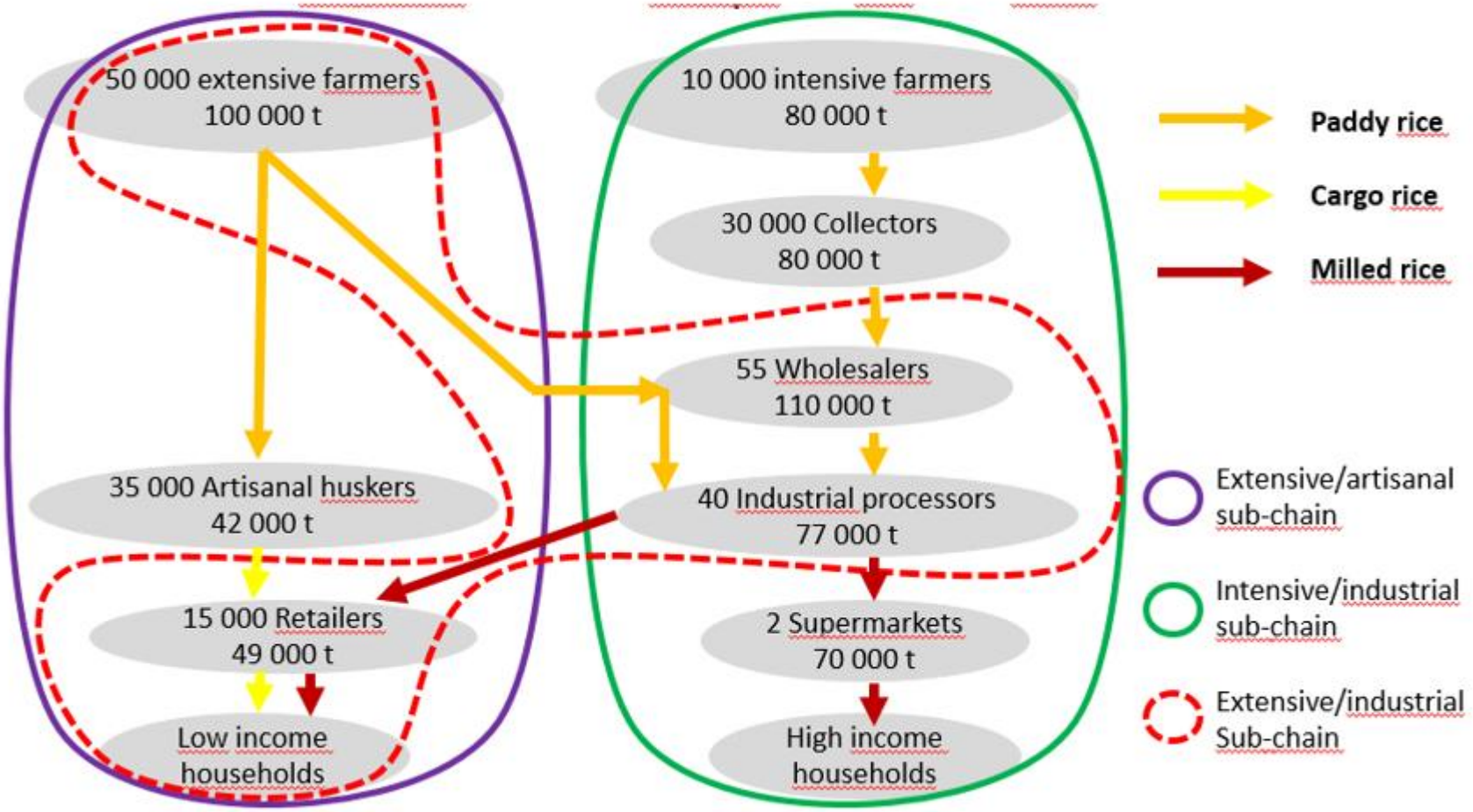
What are the relevant sub-chains that will sharpen the analyses?

New !



New !

Illustration 3. Sub-chains flow chart, example of a rice value chain



Warning

- *In view of preparing for further work, the team must keep in mind that the higher the level of detail (e.g. a detailed typology of the actors), the greater the amount of data needed (on the technological processes, quality of the product, costs, flows, etc.) and the ensuing level of resources required (time, logistic support…).*

- *VCA4D studies examine the operations of the VC only within the country, even when (part of) the VC production is exported.*
  Systematically applying ***the same methodological format to*** *all studies, allows for comparisons and better clarity for national decision makers. It also makes it possible to remain within the resources available for the studies (time and cost).*
  However, when deemed necessary, the experts may complement the economic and environmental analyses of the in-country segments of the VC with a rapid investigation on the foreign segments. These elements then serve as a complement to the standard analysis.

A STRATEGIC EXAMINATION OF THE VALUE CHAIN

New !

The analysis of the technical characteristics and organisational features of the VC and of the general environment in which it operates provides the essential elements needed to outline the VC strategic position.

Determining the main Strengths, Weaknesses, Opportunities, and Threats (SWOT) regarding the VC helps to grasp a full strategic picture and to explain past performance and potential development of the VC.

The SWOT matrix is a synthetic tool that helps to combine the main findings of the FA and the drivers stemming from the ECO, SOC and ENV investigations done for answering the FQ

Illustration 4. SWOT analysis matrix, example of a rice value chain

	Positive	Negative
Internal	**STRENGTHS** • Experience • Processors' know-how • Reputation of products • Flourishing domestic market • Coordination & social capital	**WEAKNESSES** • Difficult access to land • Physical access to production zones • Low productivity • Low wages in the processing sector • Lack of information on prices • Future policies uncertainty
External	**OPPORTUNITIES** • New trends in consumption • New emerging actors • Opening of external markets • Policy changes	**THREATS** • Land pressure (reduction of fallow) • Rural insecurity • Rising transport cost • Decrease of the international price • Environmental protection standards • Increasing competition

New !

The functional analysis deliverables

In the team's conclusive deliverables, the functional analysis must provide a multidisciplinary structured presentation of the VC including:

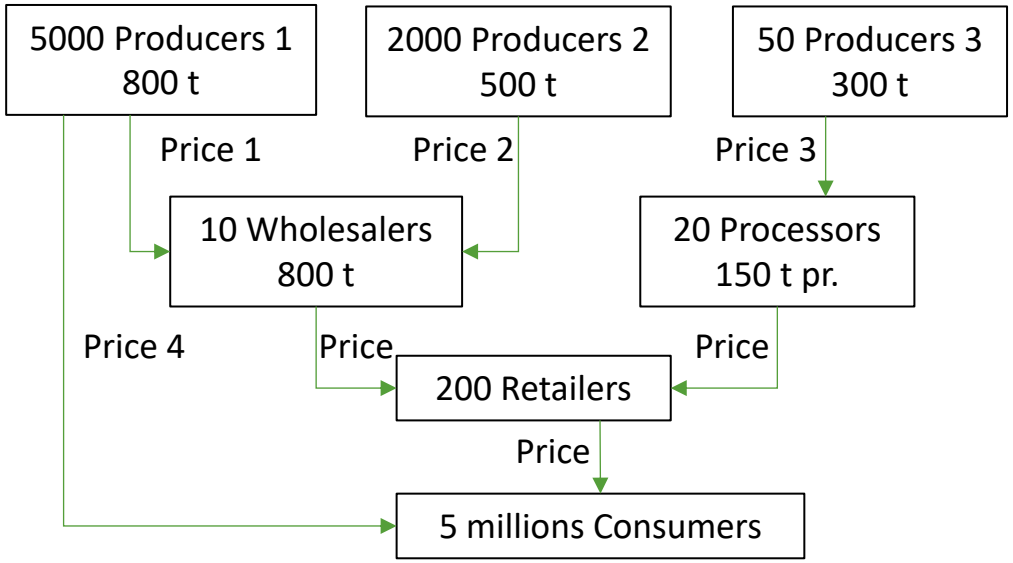
- A general description of the products, stages and technical processes.
- The types of actors, their main features and practices.
- The input dealers and support services.
- The flows, their volumes, with a clear view of end-markets considered and geographic distribution.
- The organisation and governance.
- A description of the business environment, policies, institutional and societal context.
- The major market trends.
- An overview of the strategic importance and trends of the VC for the actors and for the country as a whole.
- A SWOT matrix highlighting the main advantages, challenges and shortcomings deriving from all these elements.

In order to quickly check consistency and facilitate reading, the experts are encouraged to use visual presentation tools such as:

- Matrix of functional relations.
- Resource and utilisation table.
- Matrix of flows and exchanges.
- Flow diagram and mapping (including relevant indicators of volumes, numbers, prices, sales, revenues…), showing relevant sub-chains.
- SWOT matrix.

Matrice of functional relations

Function	Actors	Products
Production	Productors 1	Fresh
Production	Productors 2	Fresh
Production	Productors 3	Fresh
Processing	Processors	Processed
Trade	Wholesalers	Fresh
Trade	Retailers	Fresh and processed



Flow diagram and mapping

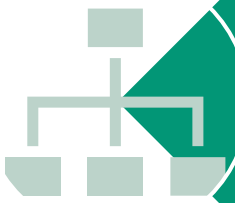
Matrix of flows and exchanges

	Prod. 1	Prod. 2	Prod. 3	Proces.	Whole.	Retail.
Prod.1						
Prod.2						
Prod.3						
Process.			300t Contract			
Whole.	300t Advance	500t Contract				
Retailers				150t pr. Outsourcing	800t Spot	
Consum.	500 t Spot					1300t fr. 150t pr.

Resource (suppliers)	Utilisation (buyers)
800 t Producers 1	800 t Wholesalers
500 t Producers 2	300 t Processors
300 t Producers 3	
800 t Wholesalers	800 t + 150 t pr. Retailers
150 t pr. Processors	
800 t + 150 t pr. Retailers	1300 t + 150 t pr. Consumers

Resource and utilisation table

Using the AFA software for functional and economic analysis



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.

Particularly useful **for ensuring the coherence and consistency of the data** (physical flows, costs and prices used...).

Needs to be **complemented by relevant analysis** of the governing coordination mechanisms.