Working Document

Scoping study report on potential existing value chains in the North-West region of Tunisia

Scoping report

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The objective of this report is to select the main value chains with potential to integrate the agroecological principles in the Northwest of Tunisia. A descriptive analysis on the two governorates chosen was first made, then 4 focus group discussions were organized with local farmers associations. The VC assessment according to agroecological principles conducted with the main actors places the olive oil VC as the major value chain with agroecological character.

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List of acronyms

APIA	Agricultural Investment Promotion Agency
AVFA	Agricultural Extension and Training Agency
CEPEX	Center for the Promotion of Exports
CRDA	Regional Commissariat to the Agricultural Development
DGPA	Directorate-General for Agricultural Production
GIVLAIT	Interprofessional Grouping for Red Meats and Milk
GIZ	German Agency for International Cooperation
HA	Hectare
ICARDA	International Center for Agricultural Research in the Dry Areas
INRAT	National Institute of Agronomic Research of Tunis
MA	Ministry of Agriculture, Hydraulic Resources and Maritime Fishing
ODESYPANO	North West Development Sylvo-Pastoral Office
OEP	Office of Livestock and Pasture
ONH	National Office of Olive Oil
SMSA	Mutual Society for Agricultural Services
SWOT	Strengths Weaknesses Opportunities Threats
TND	Tunisian Dinar
VC	Value Chain

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Introduction

The objective of this report is to analyze potential value chains in the north-west of Tunisia that are favorable to upgrade to Agro ecological principles. Based on previous results of development projects led by ICRADA, two regions were chosen Siliana and Kef. The first task of this work was to build some knowledge about the descriptive statistics on both regions on the most practiced value chains. The second task was to meet the community, to identify and co design, which value chain can integrate the Agroecological principles in a participatory approach. In this context four focus group discussions were organized one in kef and three in Siliana. This report is organized in two sections: Section 1 provides an overview of the descriptive national statistics on kef and Siliana governorates. Section 2 presents the results obtained from the focus group discussion conducted at the living labs level.

1. Descriptive national statistics on kef and Siliana governorates

1.1.General characteristics on Kef governorate

Located in the north-west of the country, Kef governorate is an area between Tunisia and the Maghreb countries along the Algerian border, it covers an area of 5,081 square kilometers, representing 3.2% of the national area and about 30.7% of the northwest region (Figure1). The Kef governorate has a population of around 243,156 according to the 2014 census (2.2% of the country's total population). This population is also more rural (43.5%) than the Tunisian population as a whole with an average of 32.2% (RGPH, 2014).

The agricultural and fishing labour force represents about 14.6% of the total labour force (ODNO, 2017).Kef represents 10% of the national cereal production, 3.4% of milk and about 7% of red meat (ODNO, 2020)which makes the region an important contributor to national food security.

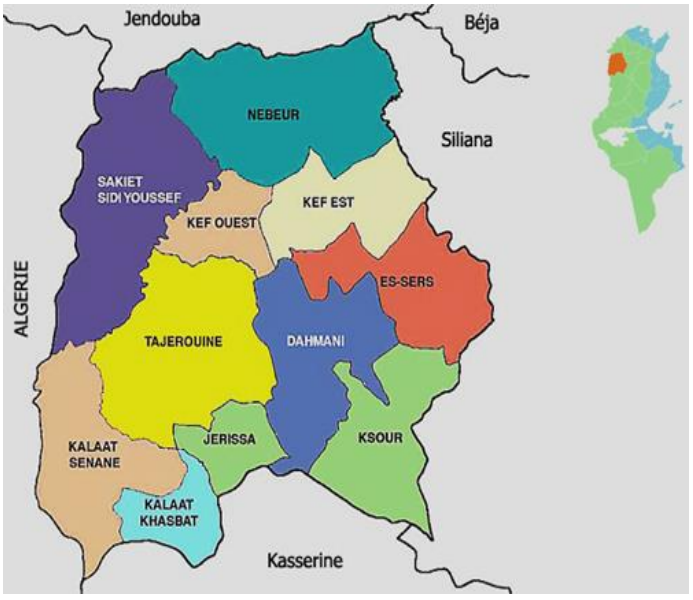

Figure 1. Kef Governorate and its delegations (CRDA, 2020)

The semi-arid climate of western and southwestern Kef is particularly dry. Annual precipitation is estimated to range between 300 and 600 mm (ODNO Kef, 2020), providing water to several dams, including the Meleg Dam and the Tessa river.

Kef governorate is a traditional agricultural region, starting from an extensive system integrating large crops and small ruminants, with an extension of the irrigated areas counting today around 16 600 ha. Four main plant speculations are practiced: cereals, olive trees, fruit trees, vegetable crops, which vary in terms of allocation from one delegation to another (Table 1, See Annex 1 for value chain mapping in Kef).

Table 1. Main agricultural speculationsin the kef region in 2020 (in Ha)

Delegation	Cereals	Legumes	Forages	Olive trees
The Kef Est	19830	616	2480	**5439**
The West Kef	10050	25	1400	**3105**
Dahmani	31700	01	2255	**4264**
Tejerouine	22960	-	3595	**7895**
Sers	18700	200	5049	**6305**
Ksour	17100	-	4100	**3345**
Djrissa	9170	01	1214	**995**
KalaatSnen	15870	-	1690	**2741**
KalaatKhesba	10960	-	211	**1719**
Nebeur	13560	1012	1690	**7310**
Sakiet Sidi Youssef	20050	70	4141	**5033**
Touiref	6950	550	1800	**2660**
Governorate	**196900**	**2475**	**29625**	**50810**

Source: ODNO, KEF 2020

Concerning animal production, the livestock sector has a strategic position in the regional economy by contributing to the coverage of 70% of the governorate's needs in meat and milk products. Three major animal speculations are developed in the governorate: ruminant breeding (sheep, goats and cattle), poultry breeding and beekeeping (Table 2, See Annex 1 for value chain mapping in Kef).

Table 2. Main livestock productionin the kef region in 2020 (in Ha)

Delegation	Ovine (female producer)	Bovine		Goats (female producers)	Beekeeping		Poultry (Thousand
		Local and cross-breed	Pure Race		Traditional Hives	Modern hives	
The Kef Est	45000	1600	1500	5600	04	326	
The West Kef	19500	157	322	2330	10	580	75
Dahmani	35000	367	432	3000	27	725	–
Tejerouine	32350	132	234	3255	47	1395	–
Sers	42615	474	531	3418	–	200	–
Ksour	41500	500	195	1900	30	440	–
Djrissa	9000	45	14	1800	22	132	–
KalaatSnen	49885	120	94	12460	426	445	–
KalaatKhesba	9000	01	09	1500	30	560	18
Nebeur	20530	992	1125	2505	58	1437	–
Sakiet Sidi	24600	360	–	5060	20	654	–
Touiref	16100	355	250	715	20	654	–

Governorate	**345080**	**5103**	**4706**	**43543**	**674**	**7684**	**93**

Source: ODNO, KEF 2020

1.2. General characteristics on Siliana governorate

The governorate of Siliana is located in the region of the upper Tell of the north-west of Tunisia. It is bounded by 7 governorates (Beja, Jendouba, Kef, Sidi Bouzid, Kasserine, Kairouan and Zaghouan), making it an area of passage between the North-West and the center of the country (Figure 2).
Siliana covers a total area of 4,642 km², representing 2.8% of the country's surface area and 28% of the total area of the North-West region. Its population is 223,087, among them 57%are rural. The agricultural labour force represents 27.2% of the total labour force (INS, 2014).

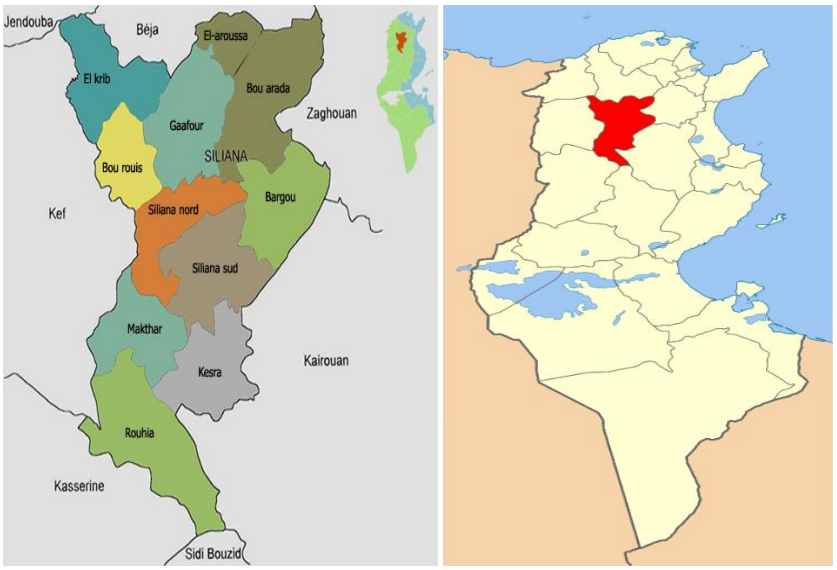

Figure 2. Location of Siliana Governorate (CRDA, 2020)

The governorate is characterized by a continental climate distinguished by fluctuating temperatures and frequent winds with an average annual rainfall of 500 mm in the heights and 300 mm in the plains (Table 3). There is a large cereal plantation in the north of the governorate while in the center and south there are small trees, cereal or fodder farms based mainly on mountain farming and extensive livestock farming.Four main plant speculations are practiced: cereals, olive trees, fruit trees, fodder and vegetable crops, which vary in terms of allocation from one delegation to another (Table 3, See Annex 2 for value chain mapping in Siliana).

The irrigated perimeters in the governorate of Siliana cover a total area of 18707ha, including 61% of public irrigated perimeters and 39% of private irrigated perimeters (ODNO, Siliana 2020).

Table 3. Main agricultural speculation in Siliana region in 2020 (in Ha)

Source: CRDA Siliana, ODNO, 2020

Delegation	Cereals	Olive trees	Arboriculture	Forages	Leguminous	Vegetables	Total
Siliana Nord	16350	5673	315	5600	225	210	**28373**
South Siliana	18450	8295	713	6000	358	200	**34016**
Bouarada	13000	10606	170	3650	300	200	**27926**
Gaafour	14600	9164	473	5400	580	290	**30507**
Lâroussa	16800	5508	684	5700	363	330	**29385**
El Krib	12250	4918	625	5400	292	240	**26425**
Bourouis	12450	9850	401	4700	550	225	**28176**
Makthar	13650	6545	1161	1750	60	80	**23246**
Bargou	14000	6756	731	6000	137	220	**27844**
Kesra	8000	7259	866	1050	5	60	**17240**
Rouhia	20300	6790	2025	550	20	160	**29845**
Governorate	**159850**	**81369**	**8164**	**45800**	**5590**	**2215**	**302983**

Livestock farming plays a strategic role in the regional economy by helping to meet the governorate's needs for meat and milk products. Two major animal speculations are developed in the governorate: small ruminants (sheep, goats and cattle) and beekeeping (Table 4, See Annex 2 for value chain mapping in Siliana).

Table 4. Main livestock production in Siliana region in 2020 (in Ha)

Delegation	Ovine (female producer)	Bovine		Goats (female producer)	Goats (Female Unit)	Beehives	
		Local and cross-breed	Pure Race			Modern	Traditional
South	22940	1190	740	2680	2680	650	35
Siliana Nord	21830	200	1080	2340	2340	850	40
Bouarada	28350	750	500	1040	1040	1800	28
Gaâfour	24300	646	162	345	345	1600	20
Krib	24290	2050	2300	2340	2340	900	30
Bourouis	27350	1690	530	895	895	1300	40
Makthar	34005	1600	460	2895	2895	1700	170
Kesra	28360	257	175	5660	5660	2300	120
Rouhia	48590	722	531	16695	16695	200	300
Laâroussa	15350	390	185	1450	1450	2400	45
Bargou	24635	695	507	3660	3660	2500	50
Governorate	300000	11990	7170	40000	40000	18000	878

Source: ODNOSiliana, 2020

2. Value chain selection at the living labs level

After a first focus on the national descriptive data concerning the two regions of the project, the second step was to deepen our knowledge about the value chains practiced in these regions by meeting the communities. For this purpose, 4 focus group discussions(FGD) were organized:

- The first FGD was organized on the 5th October 2022 at SERS, el Kef with a local farmer association (GDA Rural women in el SERS); A visioning approach was done in collaboration with CIRAD.
- Then three FGDs were organized in Siliana during 3 days: November 1st, 2nd and 3rd, 2022 at the three living labs (SMSA Ankoud El Khir, SMSA ETTAWEN, SMSA Kouzira). The objective was to identify with the communities the main value chains with agroecological character. The selection of the value chains by the members of the living labs was done according to a global evaluation matrix prioritizing the value chains on the basis of a set of predefined criteria (economic, social and environmental) of impact and feasibility.

2.1. First FGD in Sers living lab: The visioning approach

Meeting the GDA “Rural women in el SERS” in Sers community was the first focus group discussion done with the community (Figure 3).This GDA was created in 2015, it has 6 members and 55 adherents. The activities done among the GDA are breeding of small ruminants, cereal cultivation (the average size is between 2 and 2,5ha in the irrigated perimeter and 3ha in the others. All the members have less than 10 hectares and some of them rent land. They also practice beekeeping, poultry, grow saffron and vegetables.

The objective of this FGD was to perform a visioning approach which is a process of creating a compelling statement of what an organization aspires to be or to achieve in the medium term (i.e., in five years) or in the long term (10 or 20 years) (Shipley, 2000). In our case study, the members of the GDA were asked about their vision concerning their agriculture in the past, present and future. The group was split into two smaller groups working in two parallel sessions according to their type of agriculture: rainfed or irrigated.

In order to develop this vision, all persons present had to communicate their statements clearly and unambiguously. The first step was the share of individual visions; each participant presented to the other members of the group his vision of what he sees in agriculture in the past, present and future.
Then in a second step, the idea was to develop a collective vision. The participants were invited to design a common vision with a common statement summarizing the group's vision.

Figure 3. Workshop photo of the visioning in Sers community, October 2022

2.2. Living labs in Siliana

The first activity of WP3 of the project consists in selecting and validating value chains with high economic, social and environmental potential, by living lab/study area. The selection of the value chains must be done according to a global evaluation matrix prioritizing the value chains on the basis of a set of predefined criteria (economic, social and environmental) of impact and feasibility(See figure 4).

Matrix templates created with guidelines can be used throughout the selection process to guide data collection efforts during field visits, conduct stakeholder workshops and serve as checklists (Jochem S et al, 2015).

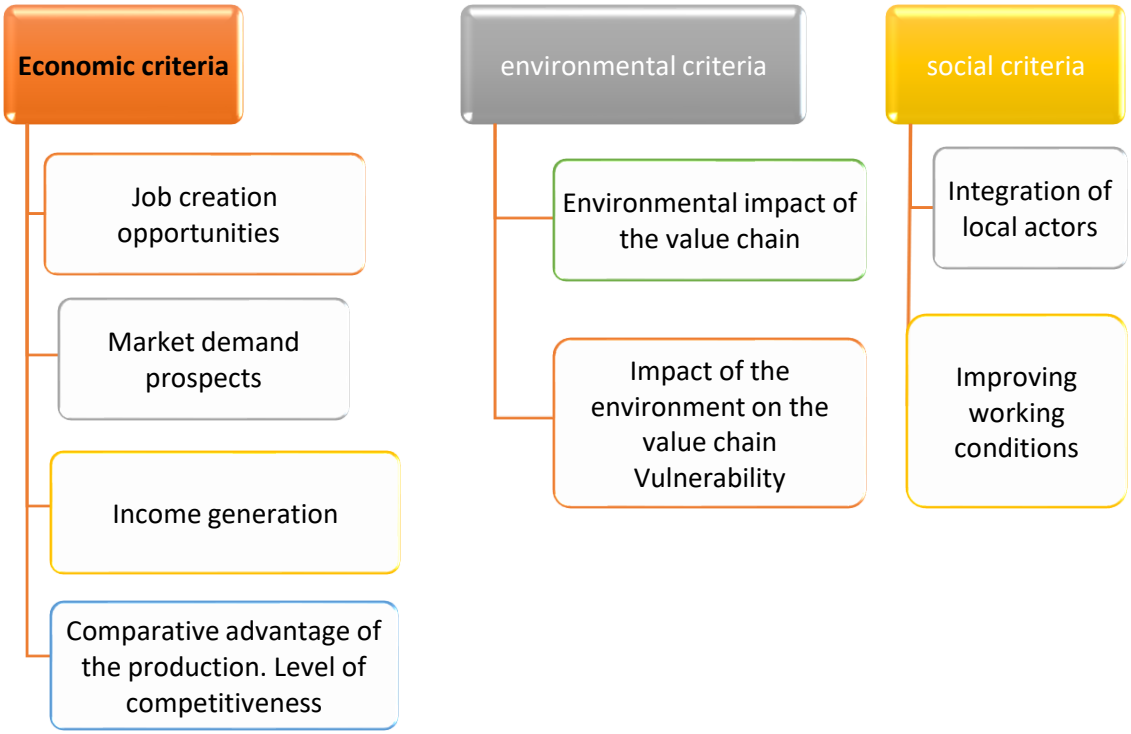

Figure 4. The three dimensions for the selection of the value chains

The three living lab in Siliana are:

- **AnkoudElKhir:**It is an SMSA situated in Rhahla (Gaafour), created in 2022. It has 3 members, 27 adherents and 100 beneficiaries. The activities concern livestock (more than 50% of the members are small ruminant breeders); Cereal crops (Wheat) and olive trees (between 100 and 400 trees for each member)
- **Ettawen:**It is an SMSA situated in Chouarnia (Makther), created in 2017. It has 3 members, 114 adherents and 126 beneficiaries. The activities concern arable crops (wheat and barley); livestock (fattening and lamb breeding). On average 80% of the members have between 20 and 50 heads of small ruminants and about 4 cows; olive trees (an average of 150 per farmer)
- **Kouzira:**It is an SMSA situated in Kesra, created in 2020. It has 9 members, 120 adherents and 500 beneficiaries. The activities concern arboriculture (Fig trees, Olive trees, Cherry trees); Cereals (between 0.5 and 5 ha).

In order to meet our objective, three workshops were organized with the stakeholders (partners/potential beneficiaries) of the value chains. The first one took place in Rhahla, Gaafour with SMSA'Ankoud El Khir' on the 1st November 2022, the second one took place in Chouarnia ,Makther on the 2nd of November 2022 with SMSA ETTAWEN and the third one took place in Kesra with SMSA Kouzira in the 3rd of November 2022.

2.3.Value chain selection from the livings labs FGD

The results of the focus group discussions conducted at the four living labs based on the economic, social and environmental aspects have revealed that the main value chains selected are cereals, olive oil and sheep meat for all the living labs. Honey VC and Fig tree VC were also chosen by the living lab of Kesra "Kouzira" (Table 5). In terms of added value, olive oil VC and Honey VC have great opportunities to valorise specific and local products especially in Siliana. Sheep meat VC allows the small breeders of all living labs to have a regular income by selling the lambs throughout the year. It is an activity anchored in the traditions of the region and with important social values (meat lamb consumed in the periods of celebration).

Table 5.Main value chain selected at the living lab level according to the importance of economic, social and environmental aspects.

		Cereal VC	Olive oil VC	Sheep meat VC	Fig tree VC	Honey VC
Living lab rural women SERS (GDS)	Economic aspect	Selling to cereal office Use of straw for animal feed	Regular income By-products valorisation Interesting selling price	Sources of revenues Production cost suitable for breeders		
	Social aspect	Social value (family cohesion)	Traditional activity Family cohesion	Family work force (know-how inherited between generations)		
	Environmental aspect	Rainfall crop	Use of the by-products For feed animal Soil fixation	Organic fertilizer		
Living lab Kouzira (SMSA)	Economic aspect	Large area Selling to cereal office	Small area Collective land	Opportunities to invest Integration crop-livestock	Added value Attractive market Opportunities to invest By-products valorisation	Added value Attractive market Opportunities to invest By-products valorisation
	Social aspect	Nutritional value Women participation Strategic crop	Family labour Nutritional value Creation of jobs	Family labour Farmer to farmer exchange Celebration events	Adapted to the farm system Inherited traditions	Healthy product Self-medication Family labour
	Environmental aspect	Adapted to the region climate (rainfall)	Soil fixation Use of olive by-products	Manure	Adapted to region climate	Pollinization Improve biodiversity
Living lab Ettawen (SMSA)	Economic aspect	Selling to cereal office	Attractive price Opportunities to invest	Regular revenue		
	Social aspect	Valorisation of cereal products (traditional products: couscous, pasta, etc.)	Healthy and nutritive product	Farmer to farmer exchange Social value of sheep meat Lamb of Aîd		
	Environmental aspect	Adapted to climate region	To avoid erosion Recycle by-products	Organic manure		
Living lab Ankoud El Khir (SMSA)	Economic aspect	Selling to cereal office	High added value	interesting selling price in the Aid period Varied marketing channels		
	Social aspect	Social value (harvest)	Traditional and healthy product	Social values of sheep meat (celebration events)		
	Environmental aspect	Rainfall crop	Soil fixation Resilient crop	Organic manure		

Source: Focus group discussions, 2022

Agroecological assessment

Different agroecological practices are revealed by the farmers interviewed during the focus group discussions at the living labs (table 6). Several agroecological practices (Rotation, crop diversification, forage association, etc.) have been introduced by ICRADA in the farmers' production system through research projects such as the CLCA project.

Table 6. Agroecological practices revealed by the farmers of living labs

	Agroecological practices
Cereal VC	Rotation, conservation agriculture, crop diversification, permanent crop, fallow land
Olive tree VC	Input reduction, manure, recycling by-products, benches
Sheep VC	Forage association ((Triticale + barley + oats), water save, manure, fallow land
Fig tree VC	Traditional product "Chriha"
Honey VC	Traditional beehive "Jebih" Improve biodiversity (planting sulla and acacia)

Source : Focus group discussions, 2022

The 13 agroecological principles (HLPE,2019) applied to the five value chain selected by the members of livings labs are presented in the table 7.

Table 7. Agroecological principles applied to the main VC at the living labs

Principles	Honey value chain
1. Recycling **Does your organization engage or promote the recycling of inputs or outputs within the company and with your partners?**	Recycling opportunities in the olive value chain (leaves, trunks, etc.) Recycling wool Waxrecycling
2. Input reduction/replacement **Does your organization engage or promote the reduction or elimination/replacement of purchased inputs for agricultural production?**	Water save in the sheep value chain Inputs reduction in the olive oil value chain Decrease/ stop the use of pesticides
3. Soil health **Does your organization engage or promote the management of organic matter and soil biological activity?**	Conservation agriculture, rotation Crop diversification, manure, Olive plantations help floor fixing, Planting sulla and acacia, forage association

4. Animal health **Does your organization ensure animal health and welfare?**	Certified inseminator, vaccination, aeration and hygiene of stable, traditional practices,
5. Biodiversity **Does your organization maintains and enhances the diversity of species, functional diversity and/or genetic resources?**	Genetic potential in the olive crops, planting acacia and Sulla, pollinization (honey VC), intercropping
6. Synergy **Does your organization enhance positive ecological interactions and complementary in the agroecosystems? (Animals, crops, trees, soils and water).**	Integration crop-livestock (sheep VC) Recycling olive by-products to feed animal Planting sulla and acacia to improve the agro ecosystem (Honey value chain)
7. Economic diversification **Does your organization promote productive and income diversification on farms?**	Diversified agricultural activities Different use of the product (olive oil, Honey) Different use of the by-products (cereal, olive oil, honey)
8. Co-creation of knowledge **Does your organization enhances co-creation and sharing of knowledge?.(local, scientific innovation,farmer to farmer exchange)**	Exchange of olive varieties between farmers Farmer to farmer exchange at the community level Sharing of knowledge between the members of association
9. Social values and diets **Does your organization contribute to building healthy, diversified and culturally appropriate diets, based on identity, tradition, social and gender equity of local communities?**	Traditional and social product (lamb meat) Local product (Fig tree) Creation of a label (olive oil) High nutritional value (olive oil and honey) Healthy product(olive oil and honey)
10. Fairness **Does your organization supports dignified and robust livelihoods for all actors in the food system (trade, employment, intellectual property rights, transparency)?**	Beekeeping and olive oil guarantee a decent income Beekeepers, olive oil producers and breeders have a suitable social place in the community Solidarity and respect between producers and consumers (Olive oil VC and Honey VC)
11. Connectivity **Does your organization ensures proximity and confidence between producers and consumers?**	Proximity and confidence between producers and consumers (Honey and Fig tree VC)

12. Land and natural resource governance **Does your organization strengthen institutional arrangements to include the recognition of farmers as managers of natural and genetic resources?**	Positive influence of SMSA on the biodiversity (planting sulla and acacia) Conservation of local varieties (olive oil VC) Conservation of local breeds (sheep VC)
13. Participation **Does your organization encourages participation in decision making, decentralized governance and or local management of food systems?**	No participation (sheep VC) Participation in the decision making for the management of Kesra mountain (Honey VC)

Source : Focus group discussions, 2022

Conclusion

The descriptive data on Kef and Siliana governorates allowed to notice that the most performing value chains in these regions were cereals, olive oil, sheep and honey. Based on economic, environmental and social criteria three value chains were chosen by the living labs during the focus group discussions. The 13 Agroecological principles were applied to these value chains during the workshops to highlight which of the value chain can integrate these principles.

Acknowledgments

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Annexes

Cereal value chain mapping in Kef

INGC/COSEM /CCSPS/UTAP /CRDA/GDA / SMSA

Supply

- Soil preparation
- Seeds / Phytosanitary products / Fertilizers

Farmer

CRDA/INGC

Production(2020):

196900ha ->174650,5 T

CerealOffice/Transporters

SMSA/GDA

Transportation, collection and Storage:

22 collection and storage units

Storage capacity 90000 T

Quantité collectée (en 2020) 68195,2 T

In the Kef region it is a short VC that ends at the level of collection and storage

Transformation:

First transformation

Second transformation

Flour milling

Food industry

Commercialization

Wholesalers

Retailers

Supermarkets

Proximity trade

Consumers

Olive value chain mapping in Kef

CRDA/APIA

AVFA/ONH/UTAP

APIA / ONH

SMSA / Private

Supply:

Soil preparation

Plants

Phytosanitary product s
Fertilizers

Production(2020):

50810 ha ->18699 T

ONH

Oil Mills

Transport and collection

Transformation and storage

12 active oil mills including:

Processing capacity: 474 T/d

Storage capacity: 1181 T

Commercialization
13 to15TND per liter in 2020

Consumers

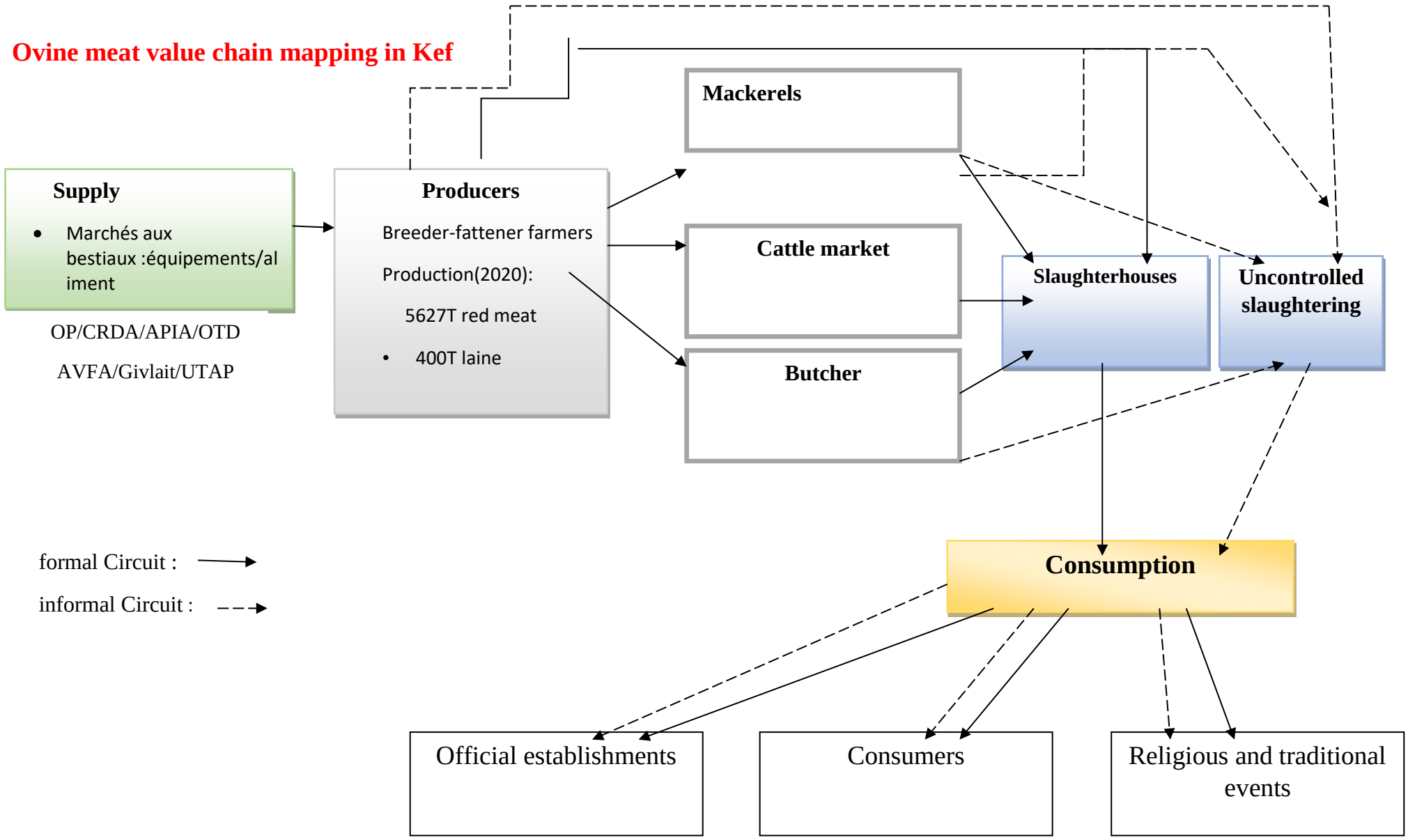
Wholesalers

Proximity trade

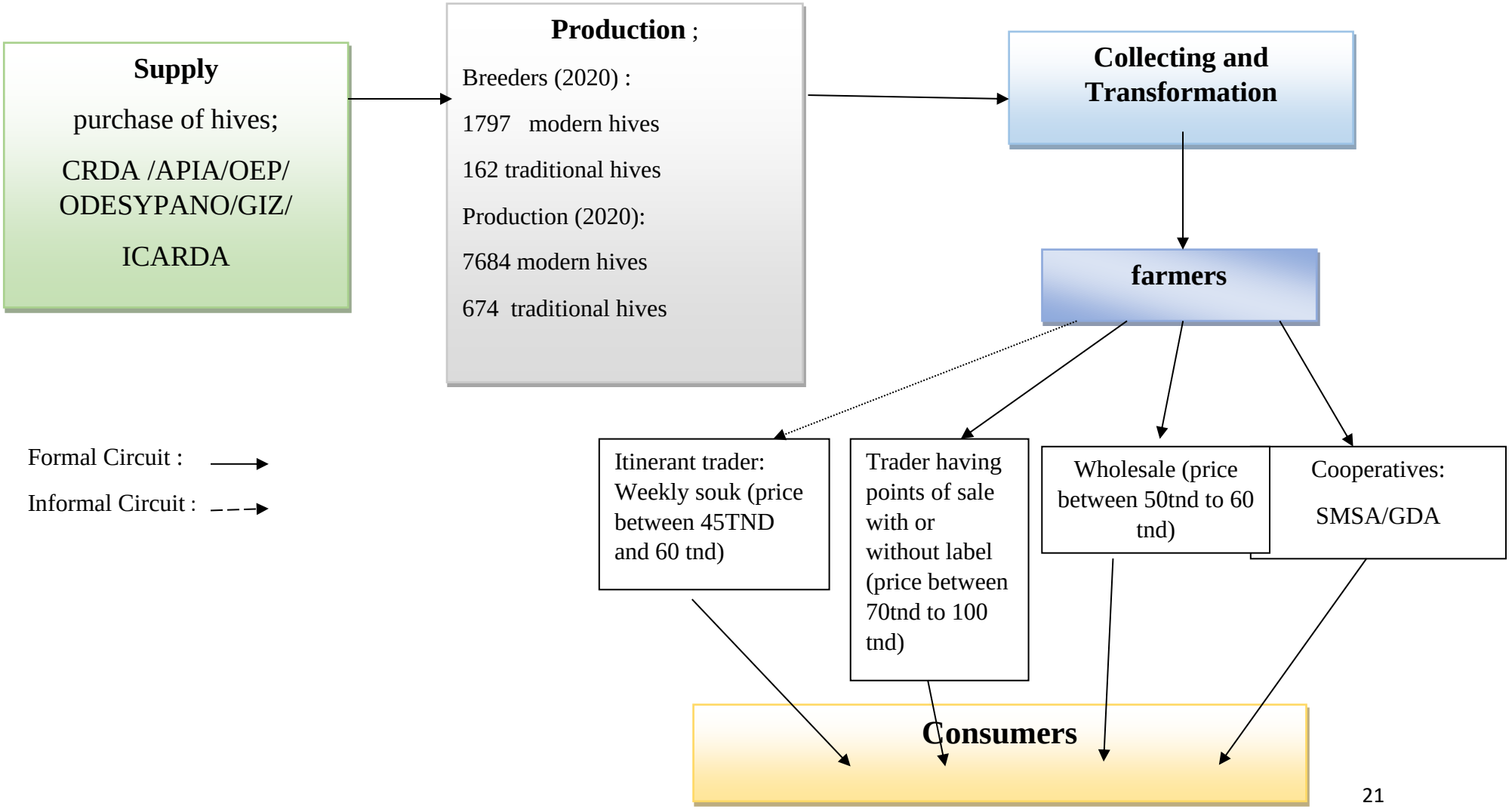
Supermarkets

Retailers

Ovine meat value chain mapping in Kef

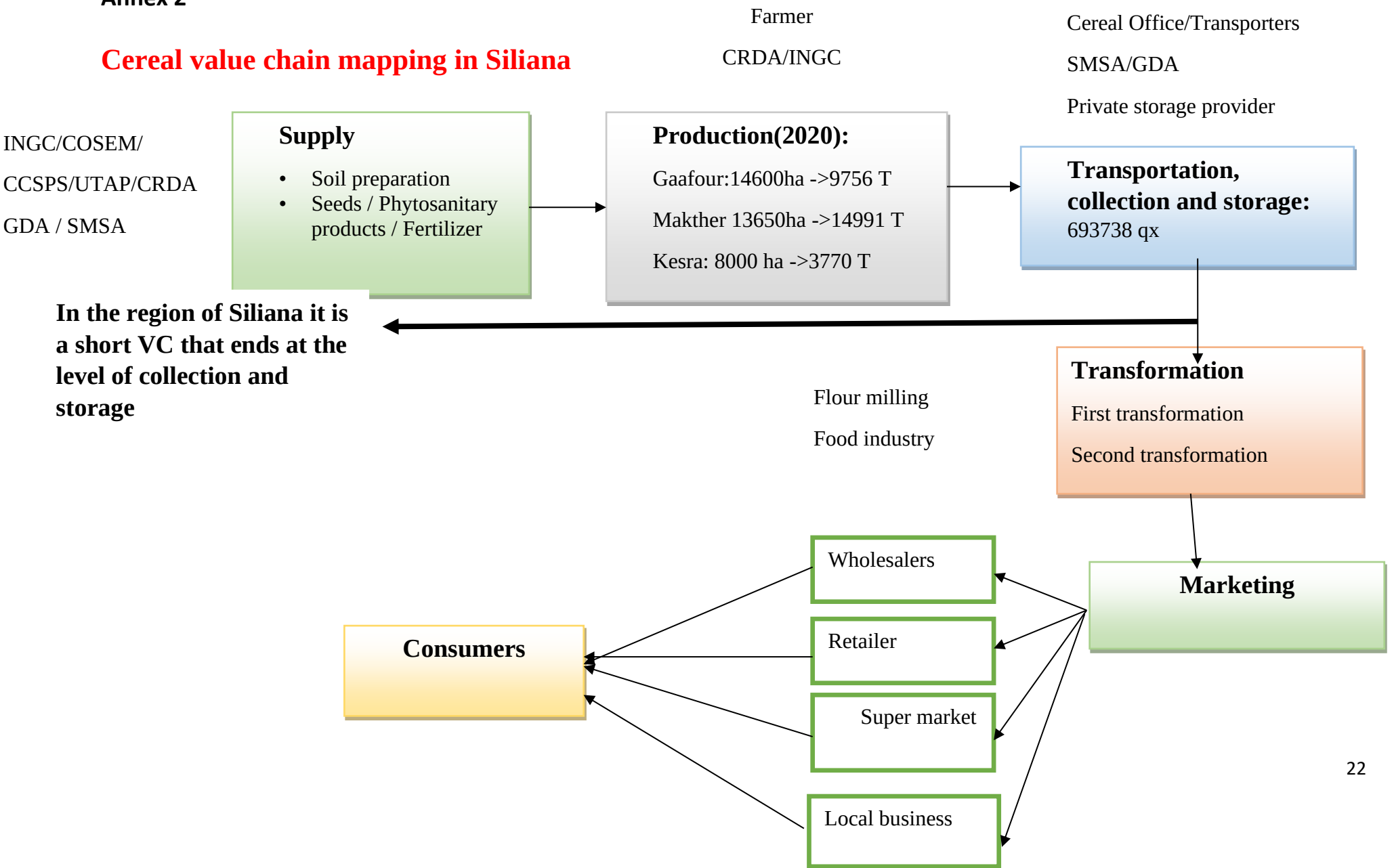


Honey value chain mapping in Kef



Annex 2

Cereal value chain mapping in Siliana



Olive oil value chain mapping in Siliana

APIA / ONHA

SMSA / Privés

Supply

Soil preparation

Plants

Phytosanitary products
Fertilizer

CRDA/APIA

AVFA/ONH/UTAP

Production(2020):

- Gaafour:30507ha ->14417 T
- Makther:23246ha ->2230 T
- Kesra: 17240 ha ->4127 T

ONH

Oil millers

Transportation and collection

Transformation and storage

26 active oil mills including:

Gaafour:2(C/j 105T, St 60T)

Makther: 1(C/j 35T, St 30T)

Kesra: 4(C/j 670T, St 4560T)

Marketing 13tnd to 15tndper liter in 2020

Wholesaler

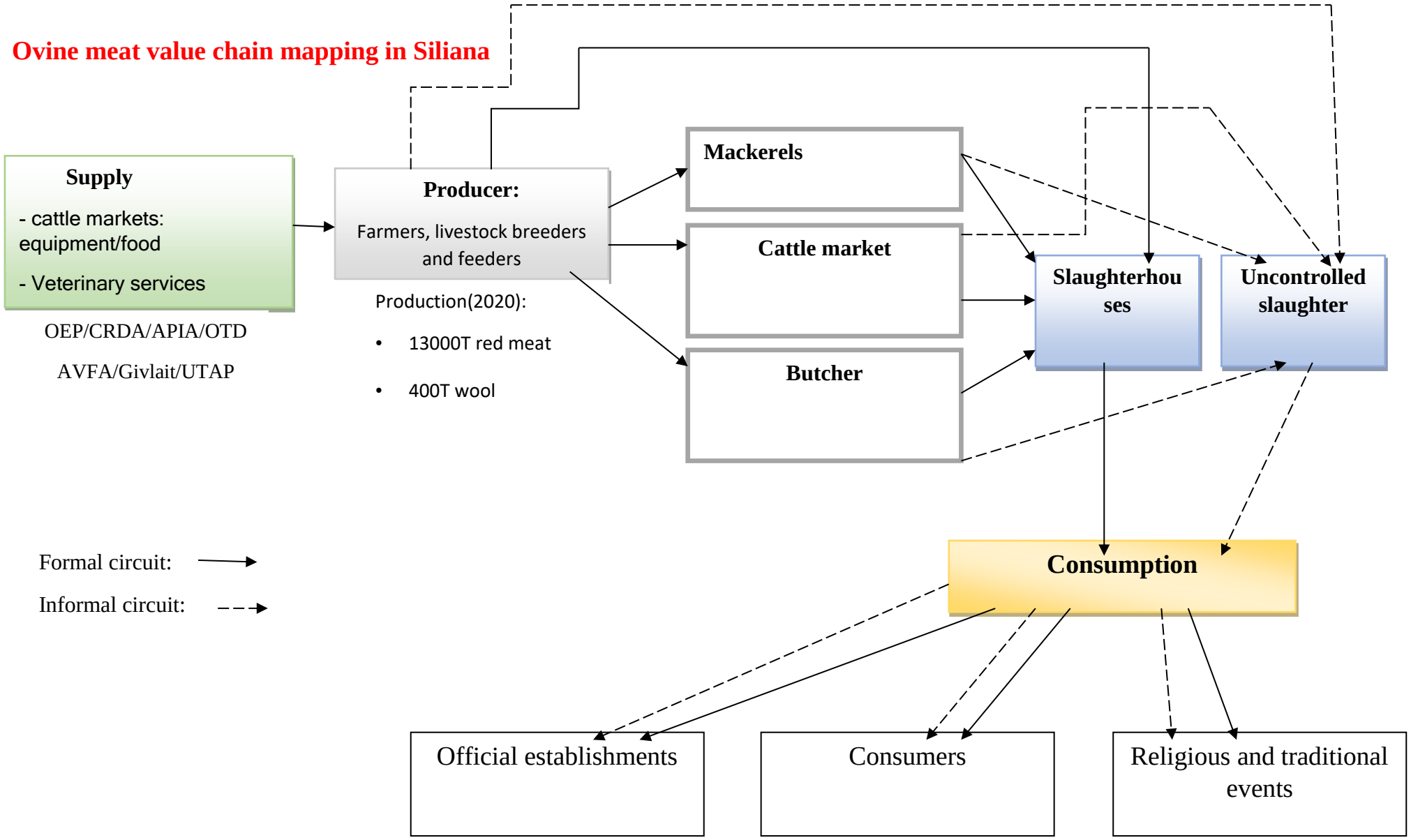
Retailer

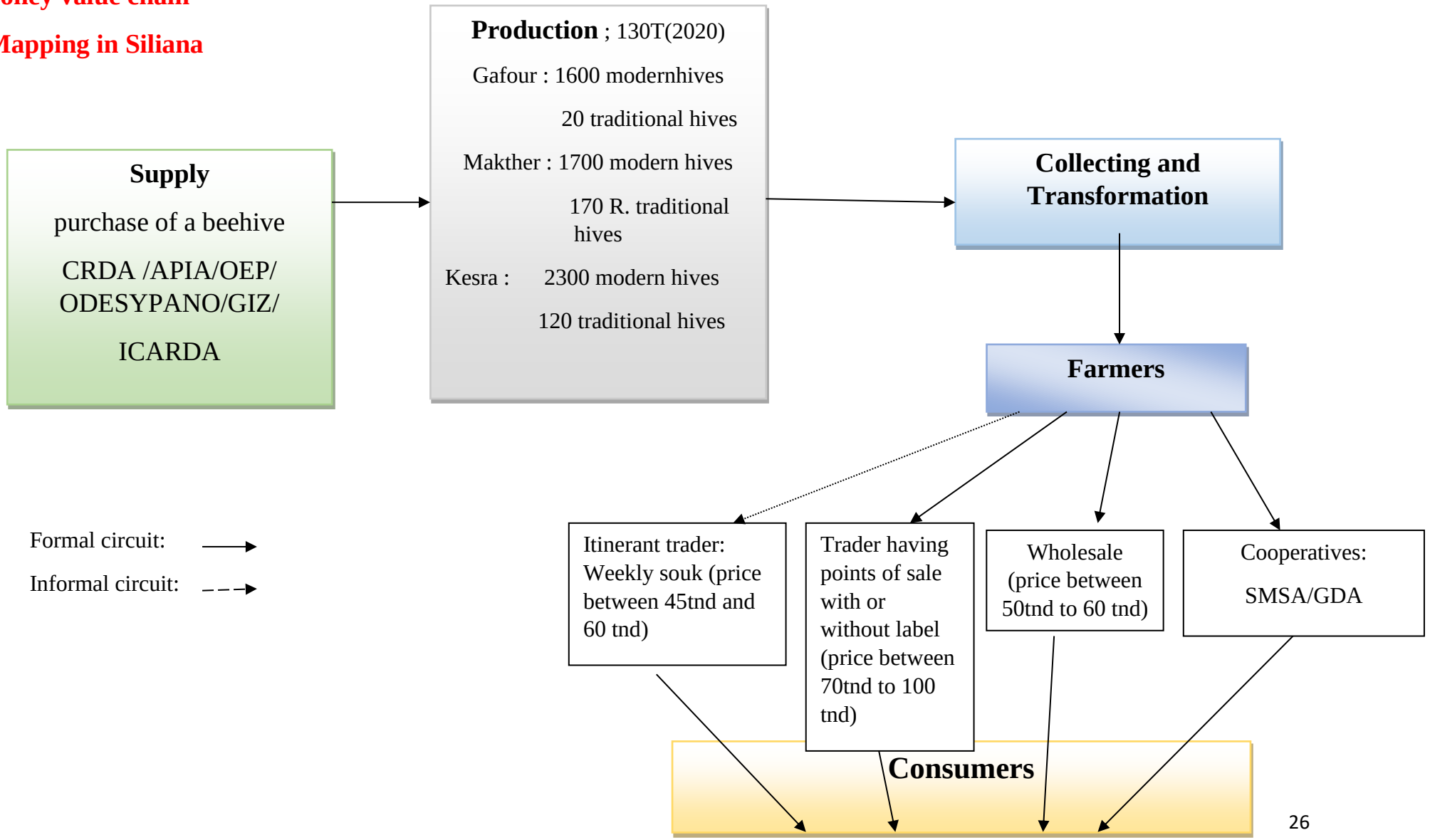
Super market

Local business

Consumer

Ovine meat value chain mapping in Siliana



Honey value chain

Mapping in Siliana