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# Value chain identification, prioritization and actors mapping in Kef ALL

## *Workshop report*

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This report summarizes the proceedings of the workshop “Identification and selection of value chains with characteristics eligible for agroecology upgrading in the governorate of Kef” held in Kef, Tunisia on December 15<sup>th</sup>, 2022. The workshop brought together 35 stakeholders from different backgrounds including farmer’s associations and representatives from public institutions. The objective of the workshop was to identify the value chains present in the region, choosing among them the two that are the most profitable in a participatory approach. Then, in a parallel session, mapping and assessing all relevant actors, diagnosis of the value chains through SWOT analysis and finally a value chain assessment according to agroecological principles.

The CGIAR initiative Transformational Agroecology across Food, Land and Water Systems develops and scales agroecological innovations with small-scale farmers and other food system actors in seven low- and middle-income countries. It is one of 32 initiatives of CGIAR, a global research partnership for a food-secure future, dedicated to transforming food, land, and water systems in a climate crisis.

[www.cgiar.org/initiative/31-transformational-agroecology-across-food-land-and-water-systems/](http://www.cgiar.org/initiative/31-transformational-agroecology-across-food-land-and-water-systems/)

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### 1. Introduction and objectives

The workshop on value chain identification, prioritization and actors mapping took place on December 15<sup>th</sup>, 2022 in el Kef (North-West Tunisia) as part of the project “Transformational Agroecology across Food, Land, and Water systems” and more specifically of workpackage 3 “Inclusive business models and financing strategies”. This workshop was simultaneously organized by ICARDA and INRAT.

In the same way as the previous workshop in Siliana, the objective is the identification and selection of agroecological value chains in the study area following a participatory approach with all relevant stakeholders.

The aim is the co-creation of a common value chain vision with an identification of the main stakeholders and the linkages between the different steps of the value chain. As part of the objective of the workshop, participants were tasked to Identify strengths, weaknesses, threats and opportunities for the selected value chains after the first roundtable with all the stakeholders.

The methodology adopted in this workshop is slightly different from the workshop done in Siliana because in the region of el Kef, only one living lab was visited in Kesra and we could not base our results from a single ALL. These steps were followed:

1. Presentation of the project “Transformational Agroecology across Food, Land, and Water systems”.
2. Organization of a plenary session for the choice of two value chains with a strong potential for integrating the principles of agroecology among the potential value chains in the study region (Sheep, cereal, honey, medicinal and aromatic plants and olive oil). In this context, two questions were asked:

(1) Based on the economic, environmental and social criteria which value chain is the most suitable for the region?

(2) Among the value chains chosen by all the stakeholders present in the workshop, what are the two main value chains with a strong potential for integrating the principles of agroecology?

In this session, flash cards were distributed to the participants to write their arguments towards the choice of the value chain based on economic, social and environmental criteria. After selecting the most cited value chains, the participants present in the session were given the instruction to choose only two value chains with a strong potential for integrating the principles of agroecology.

3. Organization of two working sessions in parallel on the two selected value chains in which participants must characterize and diagnose the different stages of the chain, map the value chain, identify opportunities and threats and assess the agroecological principles.

The stakeholders present came from different backgrounds, farmer’s associations attended but also representatives from public institutions such as OEP, CRDA, GiFruit, ONH etc.

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Figure 1. Group photo of all the stakeholders present during the workshop

## 2. Workshop results

### 2.1. Plenary session on the selection of two value chains with a high potential for the integration of agroecological principles

#### Arguments for choosing the value chains

Based on the results obtained in the living lab in el Kef and also the literature review on national statistics, five value chains were selected for the region of el Kef. These latter are: Olive oil VC, Sheep VC, Honey VC, Cereal VC and Medicinal and aromatic plants VC. The results from the first session carried out on the arguments for choosing value chains with a high potential for integrating agroecological principles are illustrated in Table 1.

In the plenary sessions, the attendants were asked to choose among these value chains which one were the most adapted to the region based on economic, social and environmental criteria and two VC were chosen: The olive oil and sheep.

The olive oil value chain is the most requested value chain by the respondents. On the economic aspects, the high number of planted areas with olives in El kef was cited along with a high productivity and a high olive oil demand both on national and international markets. There are a lot of opportunities to export with a low production costs and a possibility of label creation. Olive oil procures high revenues from smallholders especially for women. There is a high valorization of by-products (margin, leaves and wood for animal feed, wood charcoal, soap).

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Concerning the social aspects, olive oil VC helps creating jobs especially for women during harvest season, it improves farmer's income and reduces rural migration. There are social values related to the cultivation of olive trees and we observe a family cohesion during the harvest season.

For the environment aspects, there is a favorable climate for olive trees cultivation, it is a resilient crop, adapted to climate change (local varieties) It is a non-polluting crop with a reduced use of pesticides and fertilizers, a low water consumption with reduced greenhouse effects and finally olive trees plantation is a mean to avoid erosion and to help soil fixation.

The second value chain chosen by the stakeholders was the sheep. On the economic aspects it provides income every year, it is possible to valorize the by-products (wool, leather), it is a source of revenues for a lot of households. Thanks to the integration of crop-livestock, there is a reduction on the cost of animal feed and the production costs are suitable for breeders. It provides income for women through wool sales which makes them less dependent financially. Finally, there is a high consumer demand all year long. Concerning the social aspects, sheep VC helps creating jobs in the region, improving family well-being (improves HH revenues), it reduces rural migration, all the family members contribute in sheep breeding activity. There are specific social values related to sheep breeding in the region with high technical skills of local breeders, a know-how inherited between generations and a knowledge shared between breeders. For the environment aspects, sheep VC is adapted to the environment, it is less water demanding and there is a compost valorization. This VC helps to improve soil fertility through legume crops and is adapted to climate change.

**Table 1. Mains reasons for value chains selection**

|                         | <i>Olive oil VC</i>                                                                                                                                                                                                                                                                                                                                                                                       | <i>Sheep VC</i>                                                                                                                                                                                                                                                                                     | <i>Honey VC</i>                                                                                                                                                                                                                                          | <i>Cereal VC</i>                                                                                                                                                                                                                                  | <i>Medicinal and aromatic plants VC</i>                                                                                                                                                |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Economic aspects</b> | Large area of olives in Kef<br>Strategic product in the national and international levels<br>High olive tree productivity<br>High olive oil demand (internationally and locally)<br>Opportunities to export olive oil<br>Low production costs<br>Different olive oil use (food, cosmetic, wood objects, etc.)<br>High revenues from smallholders especially for women<br>Opportunities for label creation | Provide income every year<br>Valorization of by-products (wool, leather)<br>Sources of revenues for a lot of households<br>Reduce animal feed (Integration crop-livestock)<br>High breeding rate (know-how of women)<br>High consumer demand all year long<br>Production cost suitable for breeders | High productivity of honey<br>High consumer demand<br>Valorization of by-products<br>Opportunities to sell in international and national market<br>Important source of revenues<br>Low production cost<br>Different uses of honey (cosmetics, medicines) | Strategic crop<br>Large area of cereals<br>Large area of barley crop (integration crop-livestock)<br>Valorization of cereal products (traditional products: couscous, pasta, etc.)<br>Contributes to food security<br>Use of straw as animal feed | High value added of this activity<br>Valorization of natural resources<br>High consumer demand<br>Low production cost<br>Products diversification<br>Regular production<br>High income |
| <b>Social aspects</b>   | Jobs creation especially for women during harvest season.<br>Improve farmer's income<br>Collaboration with all stakeholders in the value chain                                                                                                                                                                                                                                                            | Jobs creation<br>Improve family well-being (improve HH revenues)<br>Social values related to sheep                                                                                                                                                                                                  | Noble product<br>Healthy product<br>Social values of honey<br>Improve beekeepers' well-being                                                                                                                                                             | Jobs creation especially for women<br>Valorization of local varieties<br>Production of local products                                                                                                                                             | Jobs creation for mountain inhabitants<br>Reduce rural migration<br>Women job creation                                                                                                 |

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|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                |                                                                                                                        |                                                                                                                                                                                                                                                                      |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | <p>Reduce rural migration</p> <p>Family cohesion during the harvest season</p> <p>Social values related to the cultivation of olive trees</p> <p>Local diets</p> <p>Noble product (olive oil)</p> <p>Olive crop is part of the heritage</p>                                                                                                                                                                                                                                                                                       | <p>breeding in the region</p> <p>High technical skills of local breeders</p> <p>Contribution of all the family members in sheep breeding activity</p> <p>Noble product</p> <p>Main product during celebrations (Aid, weddings, etc.)</p> <p>Family work force (know-how inherited between generations)</p> <p>Sharing knowledge between breeders</p> <p>Reduce rural migration</p> <p>Provide income for women through wool sales</p> | <p>Jobs creation</p> <p>Less time consuming compared to other agricultural activities</p> <p>Enhance trusting relationship between producers and consumers</p> |                                                                                                                        | <p>Improve family livelihoods</p>                                                                                                                                                                                                                                    |
| <b>Environment aspects</b> | <p>Favorable climate for olive trees cultivation</p> <p>Resilient crop</p> <p>Adaptation to climate change (local varieties)</p> <p>Valorization of by-products (margin, leaves and wood for animal feed, wood charcoal, soap)</p> <p>Conservation of local olive varieties (Chetoui)</p> <p>Non-polluting crop</p> <p>Reduced use of pesticides and fertilizers</p> <p>Low water consumption reduce the greenhouse effect</p> <p>Soil fixation (olive trees plantation is a mean to avoid erosion)</p> <p>Balanced ecosystem</p> | <p>Organic fertilizer</p> <p>Adaptation to environment</p> <p>Less water demanding</p> <p>Compost valorization</p> <p>Improve soil fertility through legume crops</p> <p>Sheep adapted to climate change</p>                                                                                                                                                                                                                          | <p>Biodiversity conservation (Pollinization)</p> <p>Non-polluting activity</p>                                                                                 | <p>Use of innovative technologies to conserve soil erosion</p> <p>Minimize the use of pesticides (local varieties)</p> | <p>Erosion control</p> <p>Soil conservation</p> <p>Pests and diseases control</p> <p>Agroecological products (natural cosmetic products, organic herbal tea, etc.)</p> <p>Use of by-products as a compost</p> <p>Biodiversity conservation (forest conservation)</p> |

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Figure 2. Proposed arguments for the selection of VC

Among 33 participants, 18 have chosen olive oil value chain and 12 chose sheep VC as the major value chains with high potentialities to integrate agroecology principles.

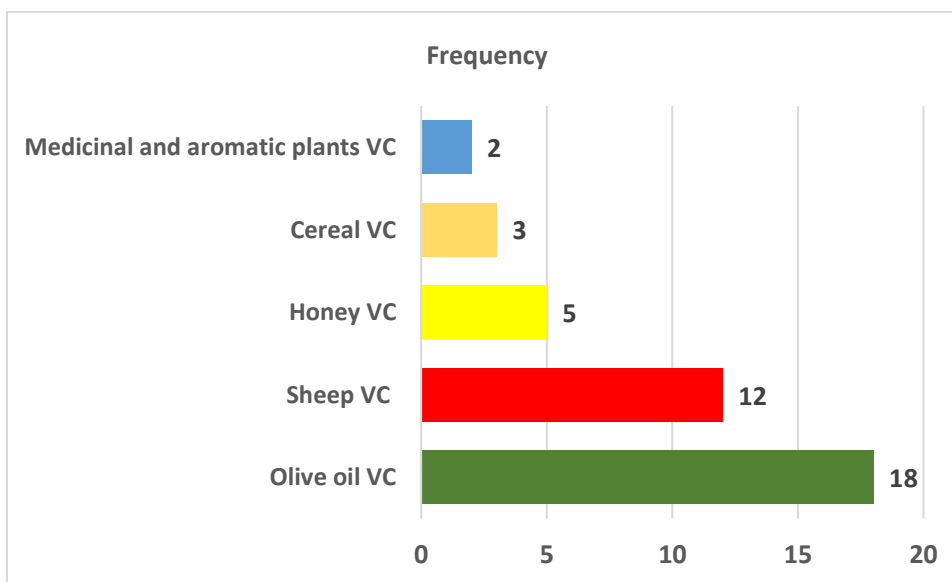


Figure 3. Number of respondents for the selection of VC



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### 2.2. Results of the plenary session: Selection of olive oil and sheep value chains

The first task given to the attendants was the mapping of the selected value chains. This work was done in two parallel sessions: One session for the Olive oil VC and one session for the sheep VC.

The second task was to do the mapping of the value chain with its main actors, the value-added of the product and the relationship from the input providers to the final consumers. Then, a Swot analysis was made describing the strengths, weaknesses, opportunities and threats for each VC.

Finally, based on the 13 principles of the agro-ecology, an assessment was made on each of the VC.

#### Olive oil value chain in el Kef

Similarly, to the first workshop, the value chain analysis was conducted in a participatory manner with attendants from public institutions and farmer's associations.

In the region of el Kef, the olive oil value chain is well organized and is characterized by relatively small producers. The input supply concerns private nurseries for the olive tree plant which sell the tree at the price of 3 to 5 TND; the providers of fertilizer especially for large olive plantations; the water rented cisterns because the region suffers from a low rainfall and farmers need to rent water cisterns from privates to provide some water.

At the production level, there are 50810 ha planted in olive trees with a production estimated in 2022 at 18699 T. The majority of the land is planted with the variety "Chetoui", which is well adapted to the region. Pruning of olive trees cost between 2 and 6 TND/tree, tillage cost 25 to 30 TND/hour. The harvest is done traditionally in this region. The products obtained are: olives, leaves for animal feed and wood.

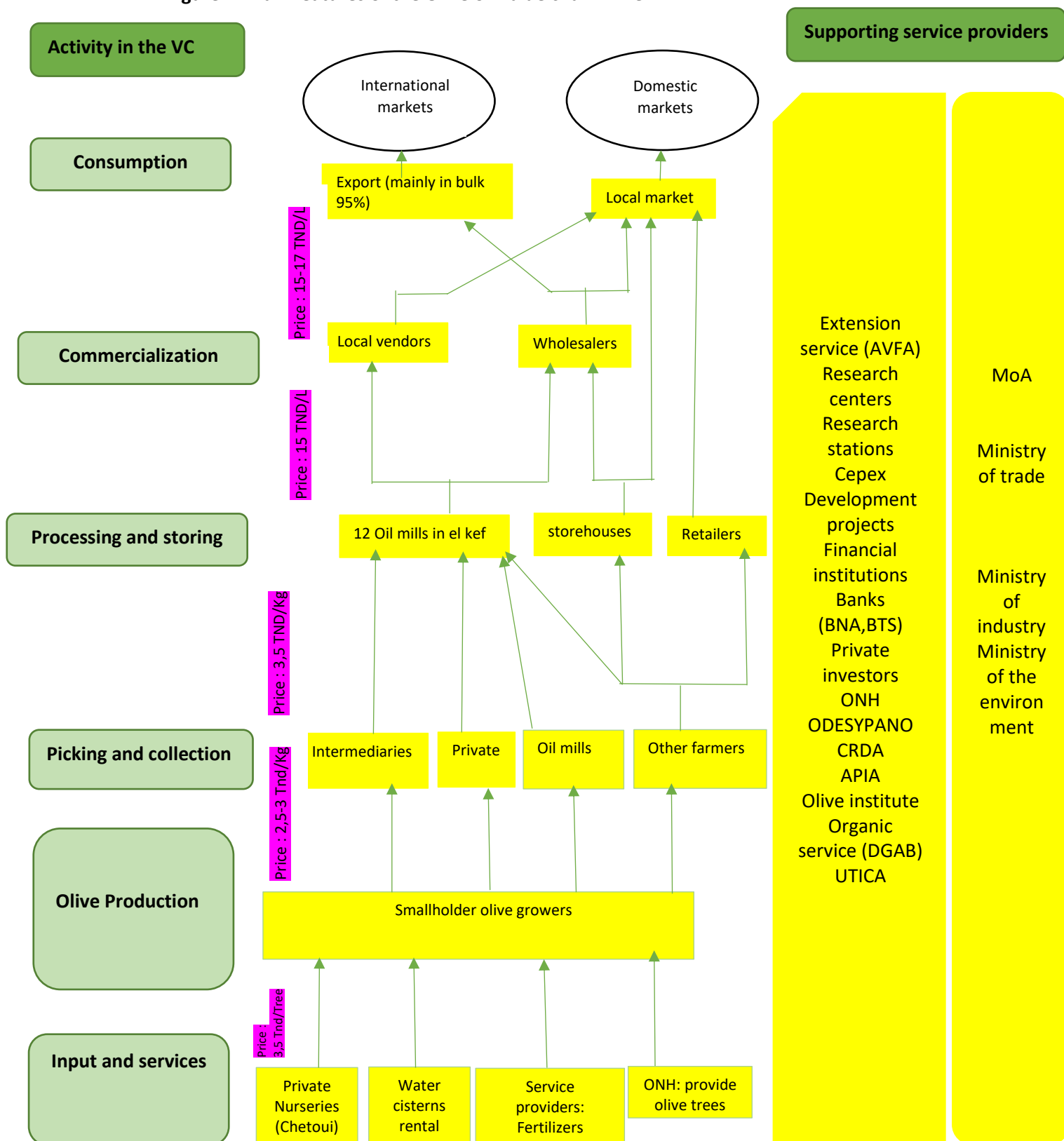
The olives are sold between 2,5 and 3 TND/Kg at the production level. The sale of the total harvest can be done before the harvest season at the price of 25000 TND/Ha or after the harvest to intermediaries, private, oil mills or to other farmers coming from other regions.

Then the intermediaries and private sell the olives to the oil mills at the price of 3,5 TND/Kg and some quantities of olives go to the storehouses and the other to retailers. There are 12 oil mills in el kef, among them two are organic. From the oil mill, the olive oil is sold at 15 TND/Kg to local vendors and wholesalers. Olive oil is then commercialized in the local market or abroad. The exports are mainly in bulk for 95% of the exported oil.

Public institutions intervene all along the olive oil value chain, they can be considered as a support or service provider for the sector. These organizations concern the extension service (AVFA), the different ministries (agriculture, trade, industry, environment), the regional commissariat to the agricultural development (CRDA), the research centers and stations, the center for the promotion of exports (CEPEX), the national office of olive oil (ONH), the olive institute. The olive oil value chain is also supported by the development projects, the financial institutions and the private investors.

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Figure 4. Main features of the Olive oil value chain in Kef





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### ✓ SWOT analysis for the olive oil value chain

In the region of el Kef, the strengths of the olive oil value chain are related primarily to the local variety of olives “Chetoui” which concerns 80% of the total orchards. It is a well-adapted type of olives to the regional climate and soils. Secondly, olive oil VC is a source of income for farmers, it also provides jobs especially during harvest season. Thirdly, olive oil VC is able to integrate agroecological principles and it is also possible to valorize by-products (leaves for animal feed, margins, wood).

The olive oil VC suffers also from some weaknesses. They concern the lack of skilled olive growers and oil millers; an insufficient application of the technical package; the lack of availability for the workforce during the harvest and the lack of skilled workforce labor; the lack of olive oil valorization because it is commercialized in bulk without packaging; the lack of quality control of olive oil and finally the lack of farmer’s associations.

For the opportunities, olive oil value chain is a culture suitable for the region and is adapted to local climatic conditions; it can be a solution to erosion and in the long term there is a possibility of creating a label (Olive llass) and finally there are different development projects that are involved in the region.

Regarding the threats, climate change effects with low rainfall and higher temperatures will certainly affect this VC on the long run; there is also appearance of new diseases; a lack of valorization of the by-products and an insufficient professional organization (dominance of the intermediaries).

### ✓ Table 2. SWOT analysis for the olive oil value chain

| Strengths                                                 |  | Weaknesses                                                               |  |
|-----------------------------------------------------------|--|--------------------------------------------------------------------------|--|
| Presence of autochthonous variety (Chetoui)               |  | Lack of skilled olive growers and oil millers                            |  |
| It provides jobs                                          |  | Insufficient application of the technical package                        |  |
| It is a source of income for the farmer                   |  | Lack of availability for the workforce during the harvest                |  |
| It is able to integrate the agroecological principles     |  | Lack of skilled workforce labor                                          |  |
| Valorization of by-products                               |  | Lack of olive oil valorization (packaging)                               |  |
| Crop particular to the region                             |  | Lack of quality control of olive oil                                     |  |
|                                                           |  | Lack of farmers associations                                             |  |
| Opportunities                                             |  | Threats                                                                  |  |
| Can be a solution to erosion                              |  | Climate change                                                           |  |
| Possibility of creating a label (Olive llass)             |  | New diseases                                                             |  |
| Adapted to local climatic conditions                      |  | Lack of valorization of the by-products                                  |  |
| Different development projects are involved in the region |  | insufficient professional organization (dominance of the intermediaries) |  |

### ✓ Agroecological assessment

Attendants were asked to make an agroecological assessment to the olive oil value chain based on the 13 principles of the HLPE (See Table 3).

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**Table 3. Agroecology principles applied to the olive oil VC**

| Principles                                                                                                                                                                  | Olive oil value chain                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Recycling</b><br>Does your organization engage or promote the recycling of inputs or outputs within the company and with your partners?                               | -Recycling of wood for the manufacture of utensils and charcoal.<br>-Compost (Cutting brunches, leaves, margins)<br>-Livestock feeding (food blocks)                  |
| <b>2. Input reduction/replacement</b><br>Does your organization engage or promote the reduction or elimination/replacement of purchased inputs for agricultural production? | -Use of compost and margins.<br>-Introducing legume crops as manure: Reduction of soil preparation.<br>- Good soil management reduces disease: Underuse of pesticides |
| <b>3. Soil health</b><br>Does your organization engage or promote the management of organic matter and soil biological activity?                                            | -Erosion control, soil fixation.<br>-Improves the soil quality (manure).<br>-Improves soil structure and texture.                                                     |
| <b>4. Animal health</b><br>Does your organization ensure animal health and welfare?                                                                                         | - A source of bee feeding                                                                                                                                             |
| <b>5. Biodiversity</b><br>Does your organization maintains and enhances the diversity of species, functional diversity and/or genetic resources?                            | -Can be planted with other trees (almond, pomegranate).<br>-Can be used as windbreaks to protect other corps.                                                         |
| <b>6. Synergy</b><br>Does your organization enhance positive ecological interactions and complementary in the agroecosystems? (Animals, crops, trees, soils and water).     | -Improves water retention capacity.<br>-Provides Food for livestock (sheep).<br>-Water and soil conservation.                                                         |
| <b>7. Economic diversification</b><br>Does your organization promote productive and income diversification on farms?                                                        | -Valorization of sub-products improves the farmer's income.<br>-If the farmer follows the technical package the productivity will improve                             |
| <b>8. Co-creation of knowledge</b>                                                                                                                                          | Co-creation of knowledge can be realized in case the farmers are in an association (SMSA, GDA)                                                                        |

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Does your organization enhances co-creation and sharing of knowledge?. (local, scientific innovation ,farmer to farmer exchange)

### 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?

- Included in dietary habits and medications.
- Conservation material (used for pickling).

### 10. Fairness

Does your organization support dignified and robust livelihoods for all actors in the food system (trade, employment, intellectual property rights, transparency)?

- Olive oil VC guarantees decent livelihoods in case there are large areas planted or in case there is intercropping.

### 11. Connectivity

Does your organization ensures proximity and confidence between producers and consumers?

- Total lack of connectivity between the institutions in the value chain structures.
- Lack of trust between producer and consumer.
- An electronic platform on the internet need to be established

### 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?

- Land division due to inheritance.
- Inadequate use of water resources.
- Depletion of water resources

### 13. Participation

Does your organization encourages participation in decision making, decentralized governance and or local management of food systems?

- Negligible involvement in decision making.
- Negligible involvement in olive variety choices.

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### Sheep value chain analysis in Kef

The core functions of the sheep value chain in Kef include: Input supply, production (farmers, breeders and fatteners), intermediaries, processing (butchers, abattoirs), marketing (market access and channels) and consumption. All these functions are coordinated by regulatory actors especially OEP, GIVLAIT and CRDA.

Intermediaries are an important player in the value chain to the extent that they can intervene at various links and capture a significant margin. Two types of intermediaries are identified:

1. The permanent intermediaries who practice this activity throughout the year and are specialized in the purchase and marketing of sheep products between regional markets and the markets of major cities,
2. Occasional intermediaries who practice this activity only in the period of Eid el Idha and have also other professional activities (agriculture, trade, etc.).

The sheep production in Kef has several marketing channels which link production to final consumption through several stakeholders (See figure 5). The number and type of actors vary from one distribution channel to another. There are long channels and short channels, it depends on the selling season and the type of product sold (lamb in the period of Eid or chopped meat). A single stakeholder can play different roles; he can be breeder, butcher and intermediary. The calculation of the profit margin is difficult because the product can go through several players before reaching the final consumer. The main marketing channels identified are:

- **Sheep purchased by individual consumers:** This marketing channel is the shortest since consumers may buy their sheep at the period of Eid El Idha or festive occasions at the farm. Sheep producers are breeders, breeders-fatteners or fatteners; they can sell their lambs at the time of Eid in the different markets in the region.
- **Sheep slaughtered at butcheries:** This marketing channel is longer than the first since the butcher sells chopped meat. Butchers buy in the majority of the cases carcasses of animals which does not exceed 20kg. The butchers have several options: buy from small farmers who sell their animals several times a year to earn money, buy from intermediaries' sheep to fatten them during two or three months, buy carcasses at the slaughterhouse of Kef, buy at the sheep market in kef governorate.
- **Sheep transported to markets:** Major cities are supplied with sheep from Bahra community in two ways: At the time of Eid, breeders from the community of Bahra sell their lambs in the markets of major cities and their products are highly demanded. The market of Tunis is the most important for breeders from Kef because sheep price is very interesting. Outside the period of Eid El Idha, sheep from Kef are transported to slaughterhouses of big cities and they are also highly demanded. Butchers can at the time of Eid become intermediaries and sell lambs on the markets of major cities together with their family members. Restaurants and hotels can contract with the butchers in the region for regular delivery in sheep meat.
- **Sheep purchased by other farmers:** Farmers buy sheep to increase the number of heads or for replacement. Prices vary depending on sheep breed.

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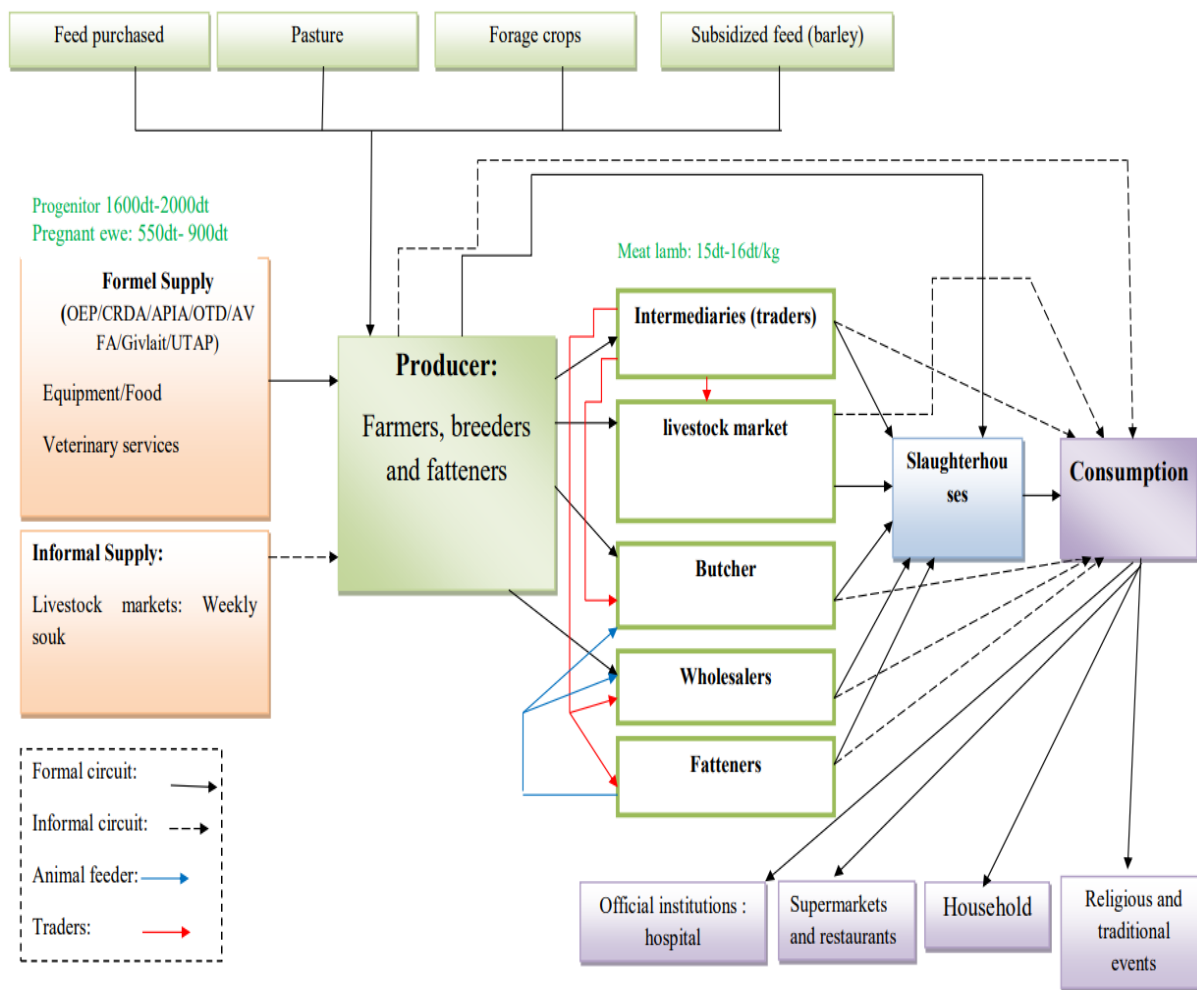


Figure 5. Main features of the sheep value chain in Kef

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### ✓ SWOT analysis for the sheep value chain

Sheep value chain in the region of el Kef has strengths, they concern the fact that this activity is embedded in the habits of the breeders, it has low production costs; sheep are not sensitive to the diseases; there is always a high consumer demand; it provides income when needed for the breeder; there is an integration crop-livestock and a high technical skill for women.

Concerning the weaknesses, respondents in the workshop cited overgrazing; the risk of consanguinity; an unbalanced feed intake; the unavailability of feed because of the degradation of rangelands; the increase in the price of feed; the low quality of the forages; a low valorization of by-products and a low productivity.

Concerning the opportunities, there is a possibility of label creation for goat in Bahra location (meat with high conservation characteristics).

For the threats, there is a genetic erosion of local breed; an unorganized sheep value chain (added value captured by intermediaries); a negative impact of drought on pasture resources and a decapitalization in sheep herd.

**Table 4. SWOT analysis for the sheep value chain**

| Strengths                                                                               | Weakness                                                               |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Activity embedded in the habits of the breeders                                         | Overgrazing                                                            |
| Low production costs                                                                    | Risk of consanguinity                                                  |
| Less sensitive to the diseases                                                          | Unbalanced feed intake                                                 |
| High consumer demand                                                                    | Unavailability of feed                                                 |
| Provide income when needed                                                              | Increase price of feed                                                 |
| Integration crop-livestock                                                              | Low quality of forage                                                  |
| High technical skills for women                                                         | Low valorization of by-products                                        |
|                                                                                         | Considered as secondary activity                                       |
|                                                                                         | Low productivity                                                       |
| Opportunities                                                                           | Threats                                                                |
| Label creation for goat in Bahra location (meat with high conservation characteristics) | Genetic erosion of local breed                                         |
|                                                                                         | Unorganized sheep value chain (added value captured by intermediaries) |
|                                                                                         | Negative impact of drought on pasture resources                        |
|                                                                                         | Decapitalization in sheep herd                                         |

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### ✓ Agroecological assessment

In this session, the stakeholders present in the workshop were asked if the sheep value chain can integrate the agroecology principles. The 13 principles applied to the sheep value chain are presented in the table below.

**Table 5. Agroecology principles applied to the sheep VC**

| Principles                                                                                                                         | Sheep value chain                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>4. Recycling</b>                                                                                                                |                                                                                                                                                                                                                                          |
| Does your organization engage or promote the recycling of inputs or outputs within the company and with your partners?             | Recycling opportunities in the sheep value chain: <ul style="list-style-type: none"> <li>- wool</li> <li>- leather</li> <li>- compost</li> </ul>                                                                                         |
| <b>5. Input reduction/replacement</b>                                                                                              |                                                                                                                                                                                                                                          |
| Does your organization engage or promote the reduction or elimination/replacement of purchased inputs for agricultural production? | Use of the compost instead of chemical products<br>Crop rotation<br>Low energy consumption for sheep activity                                                                                                                            |
| <b>6. Soil health</b>                                                                                                              |                                                                                                                                                                                                                                          |
| Does your organization engage or promote the management of organic matter and soil biological activity?                            | Produce compost<br>To avoid transhumance from other regions (stop diseases)<br>Adopt crop rotation (fallow – forage)<br>Integrate legumes in agricultural production system                                                              |
| <b>4. Animal health</b>                                                                                                            |                                                                                                                                                                                                                                          |
| Does your organization ensure animal health and welfare?                                                                           | Use of lime for cleaning stable<br>Vaccination of animals<br>Stable aeration<br>Use insecticides for pests<br>Painting sheep head with Henna (to avoid disease “El Homra”)<br>Selecting the sheep breed with black head for reproduction |
| <b>5. Biodiversity</b>                                                                                                             |                                                                                                                                                                                                                                          |
| Does your organization maintains and enhances the diversity of species, functional diversity and/or genetic resources?             | Introduce legumes<br>Planting Acacia tree, Medicago Arboria, Atriplex<br>Planting Cactus, ray-grass                                                                                                                                      |
| <b>6. Synergy</b>                                                                                                                  |                                                                                                                                                                                                                                          |
| Does your organization enhance positive ecological interactions and complementary in the                                           | Two times of grazing for sheep: in Spring (fallow) and in summer<br>Use chopper for the cactus valorization                                                                                                                              |



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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| agroecosystems? (Animals, crops, trees, soils and water).                                                                                                                         | Forage association (cactus, brandishes of the olive tree, barley, etc..)                                                                                                                                                                                                    |
| <b>7. Economic diversification</b>                                                                                                                                                |                                                                                                                                                                                                                                                                             |
| Does your organization promote productive and income diversification on farms?                                                                                                    | Sell different products (wool, lamb, goat, compost, forage)                                                                                                                                                                                                                 |
| <b>8. Co-creation of knowledge</b>                                                                                                                                                |                                                                                                                                                                                                                                                                             |
| Does your organization enhances co-creation and sharing of knowledge?. (local, scientific innovation ,farmer to farmer exchange)                                                  | <p>Sharing knowledge in association (SMSA, GDA)</p> <p>Veterinary and extension services to keep information</p> <p>Participation in development project to adopt new technologies (CLCA project, GIZ project, etc.)</p> <p>Sharing knowledge with neighboring breeders</p> |
| <b>9. Social values and diets</b>                                                                                                                                                 |                                                                                                                                                                                                                                                                             |
| Does your organization contribute to building healthy, diversified and culturally appropriate diets, based on identity, tradition, social and gender equity of local communities? | <p>Sheep activity represents a social value for the community</p> <p>Sheep activity integrates cultural value (celebration diets)</p> <p>Culinary festival (Borzgane) in may celebrating traditional food</p> <p>Lamb meat has a social value</p>                           |
| <b>10. Fairness</b>                                                                                                                                                               |                                                                                                                                                                                                                                                                             |
| Does your organization supports dignified and robust livelihoods for all actors in the food system (trade, employment, intellectual property rights, transparency)?               | The value added is captured by intermediaries at the end of the value chain                                                                                                                                                                                                 |
| <b>11. Connectivity</b>                                                                                                                                                           |                                                                                                                                                                                                                                                                             |
| Does your organization ensures proximity and confidence between producers and consumers?                                                                                          | Presence of intermediaries between producers and consumers                                                                                                                                                                                                                  |
| <b>12. Land and natural resource governance</b>                                                                                                                                   |                                                                                                                                                                                                                                                                             |
| Does your organization strengthen institutional arrangements to include the recognition of farmers as managers of natural and genetic resources?                                  | <p>Exploitation of private grazing</p> <p>Participation in the OEP program to improve private grazing (planting tree, Sulla, cactus, etc.)</p>                                                                                                                              |
| <b>13. Participation</b>                                                                                                                                                          |                                                                                                                                                                                                                                                                             |
| Does your organization encourages participation in decisión making, decentralized governance and or local management of food systems?                                             | No participation in the decision making                                                                                                                                                                                                                                     |

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### Conclusion

The objective of the workshop was to identify the main value chains present in the region, choosing among them the two that are the most profitable to integrate agroecological principles in a participatory approach. Olive oil VC and Sheep VC were selected by respectively 18 and 12 participants according to economic, social and environment aspects.

Compared to the sheep value chain, the olive oil value presents great opportunity to create added value for olive producers in adopting the agroecological practices. the olive oil VC has a high potential to improve resource efficiency by the reduction of inputs use (water, chemical inputs, etc.) and the recycling opportunities for the by-products (margin, leaves and branches). Indeed, olive oil VC contributes to strengthen the resilience in improving soil fertility (to avoid soil erosion), biodiversity (enhance functional agro-biodiversity), synergy (recycle olive by-products for animal feed) and economic diversification (different uses of the product and by-products). In terms of social equity/responsibility, olive oil VC has social values and diets in considering the olive oil by all stakeholders as a noble product with a very long tradition. Public and private institutions, development institutions and research institutions are involved in the olive oil VC to share knowledge to olive producers grouped into associations to promote an olive oil product with a high quality.

### Acknowledgments

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### Disclaimer

The views expressed are the authors’ own and do not necessarily reflect those of ICARDA, CGIAR, IRESA, INRAT, or any research and development partners involved in this research program. Personal information, including name, business title, e-mail, phone, images, and GPS points included in this report, have been authorized in writing or verbally by the data subjects.

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### Annex 1: Workshop program

| Session 1: Workshop opening |                                                                                                                                                                       |                                                                                                 |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 9:30- 9:40                  | Presentation of the project                                                                                                                                           | Project Coordinator<br>International Centre for Agricultural Research in the Dry Areas (ICARDA) |
| 9:40-10:10                  | Presentation of the obtained results within the framework of the project                                                                                              | Socio-economic team<br>National Institute of Agricultural Research in Tunisia                   |
| Session 2: Plenary session  |                                                                                                                                                                       |                                                                                                 |
| 10:10- 11: 00               | Identification and selection of potential value chains                                                                                                                |                                                                                                 |
| 11:00-11:30                 | Coffee Break                                                                                                                                                          |                                                                                                 |
| Session 3: Parallel session |                                                                                                                                                                       |                                                                                                 |
| 11:30 - 13:00               | -Rapid value chain assessment for the selected VC (mapping, SWOT) in two parallel sessions<br>-Integrating agro-ecological principles into rapid value chain analysis |                                                                                                 |
| 13 :00 – 13:50              | Presentation of the results and discussion                                                                                                                            |                                                                                                 |
| 13 :50 – 14:00              | Session 4: Closing Remarks                                                                                                                                            |                                                                                                 |
| 14:00                       | Lunch                                                                                                                                                                 |                                                                                                 |

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### Annex 2: Participant's list

| Last name         | Name      | Institution | Profession               | E-mail                                                                 | Phone    |
|-------------------|-----------|-------------|--------------------------|------------------------------------------------------------------------|----------|
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|          |        |          |        |  |          |
|----------|--------|----------|--------|--|----------|
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|----------|--------|----------|--------|--|----------|

### Annex 3: Workshop photos





