



Strategic guidelines for the rice value chain in the Ratanakiri Province, Cambodia

ILS LEDA

The study is realised by ILSLEDA experts, in the framework of the Project
“*CLESIDRA: Civil Society Links and Empowerment for Socially Inclusive
Development in Ratanakiri, Cambodia*”, co-funded by the European Union.

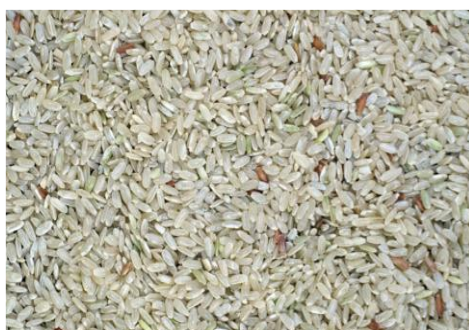
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Our greetings go, then, to all the components of the Focus Groups.

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*The Ratanakiri rice can be
presented as the best Cambodian
organic rice grown by the wise hands
of the ancient local tradition*

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Chapter 1. INTRODUCTION

This paper has been elaborated in the framework of the project “*CLESIDRA: Civil Society Links and Empowerment for Socially Inclusive Development in Ratanakiri, Cambodia*”, co-funded by the European Union.

The main CLESIDRA expected outputs are:

Output 1: A platform (PLASED) established for networking, Civil Society Organizations (CSOs), Local Authorities (LAs), Socio-Economic Service Providers (SESP) and other relevant stakeholders of Ratanakiri Province in Cambodia, with the aim of building a free and permanent dialogue for the socio-economic inclusion of women, youth, indigenous, and the most marginalized and vulnerable people, including representative of each category (at least 110 people of which at least 40% women)

Output 2: At least 4 participatory strategies (STRAT) for competitive, inclusive, sustainable and resilient value chain development (possibly rice, cassava, forestall products, eco-tourism), realized through an innovative participatory exercise, as permanent key tool of the Platform delivered, and elaborated through the participation of at least 15 people for each value chain.

Output 3: A Comprehensive Services System (COSS) established for supporting socio-economic development of the province, as a branch of PLASED, including at least 20 CSOs, 10 SESP, and 10 LAs, of which at least 40% women

The paper refers, in particular, to the output 2.

The logic of the Action relies on the belief that the civil society and the CSOs have an important role for contributing to the province and national development, provided (A) their capacities are empowered, and (B) an environment does exist and enables their active citizenship in public and political life. With this aim, the action will sensitize and strengthen CSOs about the advantages to establish a permanent dialogue with local administrations, and other local actors (Output 1); This dialogue will be facilitated through achieving consensus about local competitive, sustainable, and inclusive territorial development, assessing needs and opportunities in favour of the targeted beneficiaries (Output 2), and enabling them to use the strategic framework to access to the correspondent employment and self-employment opportunities.

The project is run through a partnership between FELCOS, ILS LEDA, Build Community Voices (BCV) and Urban Poor Women Development (UPWD).

The paper aims at recommending strategic guidelines and a plan of action for the development of a competitive, inclusive, and sustainable RICE value chain in the targeted territories.

RICE is one of the four prioritised value chains for the exercise, the other being cassava, cashew nut, and tourism. The prioritisation was realised in accordance with the following elements:

- Presence in the province
- Competitive advantages
- Resilience
- Prioritisation from public policies

In particular, chapter 2 will provide details about the RESCO methodology for the value chain assessment; chapter 3 will describe the background of the value chain; chapter 4 will analyse the assessment of the competitive advantages, inclusiveness, and sustainability of the value chain in the target areas; and, finally, chapter 5 will outline the Strategic Actions Guidelines and priorities for the value chain development.

The document is still a draft proposal, submitted to the endorsement of the local actors involved in the Value Chain Focus Group, through which the assessment was carried out.

Chapter 2. METHODOLOGY

In general, the RESCO methodology¹ seeks to recommend value chain strategic guidelines and plans and it can be applied to any sector. With regard to this specific project, the sector of intervention is agriculture and the RESCO methodology will assess the main characteristics, potential, and obstacles for each of the four selected value chains, by involving the main territorial actors.

The assessment considers six main components, i.e.: the competitive advantage, the market positioning, the gender dimension/equality, the sustainability (financial, social, environmental), the value chain status, and the obstacles (to the value chain development).

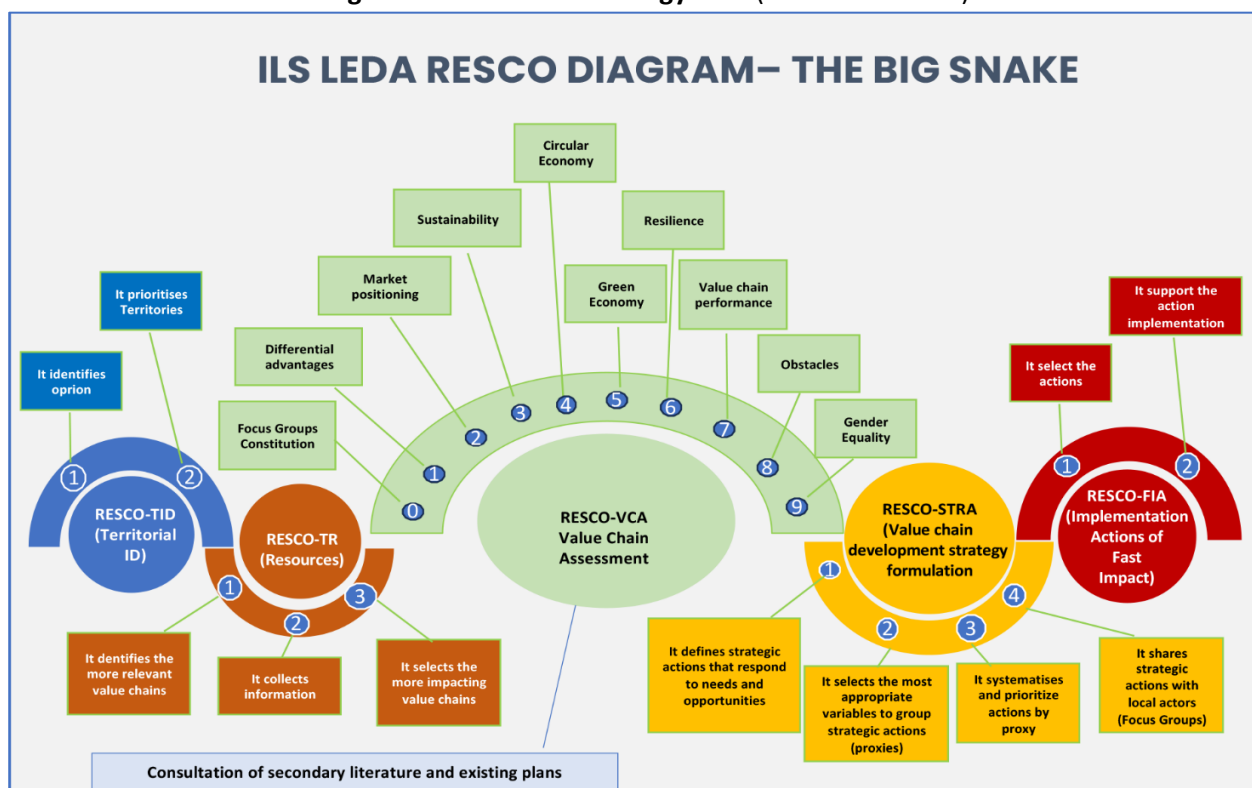
For each component a set of factors are considered, and, for each factor, specific variables are evaluated, according to a special scoring methodology.

The assessment is carried out by following these steps:

- 1) Focus group meetings with 17 people representing local actors of the public and private sector, through a questionnaire;
- 2) Consulting secondary literature;
- 3) Meeting with experts.

The picture below illustrates the RESCO methodology logical and chronological flow.

Figure 1. RESCO methodology flow (Source. ILS LEDA)



¹ILS LEDA has been applying RESCO in 13 countries during the last 20 years.

Chapter 3. BACKGROUND

Rice has been grown in Cambodia for thousands of years, dating back to 5,000 BCE; it is one of the main staple foods for Cambodians today, and it remains of enormous cultural importance to the population to this day. In fact, according to Eurocham Cambodia (2023), rice holds immense cultural significance in Cambodia, going beyond its role as a staple food. It is deeply intertwined with the country's traditions and beliefs, symbolizing prosperity, fertility, and good luck. Revered as a representation of life itself, rice takes centre stage in various ceremonies and rituals throughout the nation. In addition to rice cultivation, Cambodians have a rich history of producing rice wine, known as "Sraa Tram." This traditional alcoholic beverage is meticulously crafted by fermenting rice in clay pots, resulting in a distinct and flavorful drink. Often enjoyed during social gatherings and celebratory occasions, rice wine brings people together, fostering a sense of camaraderie and shared merriment (Eurocham Cambodia, 2023).

Cambodian Rice is of the Indica type and comes in forms of white rice and fragrant rice with various grain lengths, degrees of translucence or chalkiness, whole kernels and various degrees of broken². Crop scientists estimate that over 3,000 varieties of rice are cultivated in Cambodia. This portfolio concentrates on varieties with high international reputation for quality and showing best export performance (Cambodian Rice Festival, 2014).

This crop has already earned global recognition. With improved technological capabilities and know-how, *Cambodia is fortunate to be able to develop some of the world's most desirable rice varieties*. It has won five best rice awards in the world including: in 2012, 2013, 2014, 2018 and 2022 for Phkar Romduol (long-grain jasmine rice) varieties and the China-ASEAN Gold Award 2023 for Cambodian Fragrant Rice, also known as Sen Kro Oub (in Khmer); and in 2022, Cambodia's Phka Romduol rice has been crowned the best rice in the world at the World Rice Forum (Eurocham Cambodia, 2023; Kuntheea, 2024).

As previously mentioned, rice is the main crop in Cambodia, and it is grown in many regions of the country. Its cultivation is estimated to employ around 3 million people in the country, with paddy production occupying around 75% of Cambodian agricultural land. Paddy rice production and rice export have been key priorities in Cambodia's agricultural sector since their inclusion in the Royal Government of Cambodia's Rectangular Strategy Phase II in 2008 (Eurocham Cambodia, 2023).

Ratanakiri Province, well-known for highland rice producing in Cambodia, has about 30,000 ha potential for upland rice production (Var et al., 2016)

Chapter 4. THE VALUE CHAIN PERFORMANCE

The value chain performance, its opportunities and needs were assessed according to the following components:

- 1) Competitive advantage, and causes
- 2) Marketing positioning
- 3) Value chain performance
- 4) Sustainability
- 5) Environment sustainability
- 6) Circular economy

² For more detailed information, please refer to the 'Cambodian Milled Rice Standards'.

- 7) Resilient economy
- 8) Gender gaps
- 9) Obstacles

4.1. Competitive advantage

The participants to the focus group meeting reported that the seeds that farmers use are: Romdoul, Neang Orm, Kra Chak Cheas and Local/traditional seeds. The reasons why farmers choose to grow the above-mentioned varieties of rice rely on the fact that these **cultivars are resilient to pests and diseases, they are easy to grow and take care and they can grow everywhere in Ratanakiri, on any type of land/soil**. The seeds used by farmers are imported from other provinces such as Battambang, Kompong Thom, Preah Vihear, Thom Province. In particular,

- one of the most recognized varieties is Romdoul, a hybrid variety of rice, which has a good smell, and it tastes good, and it is very soft when eaten. Moreover, it takes shorter time to grow, and it can sell at a better market price compared to other varieties (higher price: 1500 – 1700KH for non-processed rice, and 3000 – 3500KH after processing).
- Neang Orm: It is also delicious and can provide more productivity if compared to Romdoul. It is also heavier than Romdoul. It is more popular for local people in terms of eating compared to Romdoul.
- There are also the local seeds that are resilient/resistant to grow in the mountain and resilient when facing drought. This cultivar has different names depending on the area or province. But it cannot be grown in the fields that are constantly full of water. This local variety of rice is not suitable for export or sell to the market. After cooking, the rice grain loses its softness and is not made to be stored for longer. Mostly, the local people grow this kind of variety (local/traditional variety) just to eat, not for sale. One of this variety is called Ghal: it is an indigenous people traditional seed, and mostly eaten by indigenous people. It is not popular in other places or in the market.

The RESCO focus group (May 2024) stated that the most valuable competitive advantages of the RICE value chain in Ratanakiri Province (Cambodia) are:

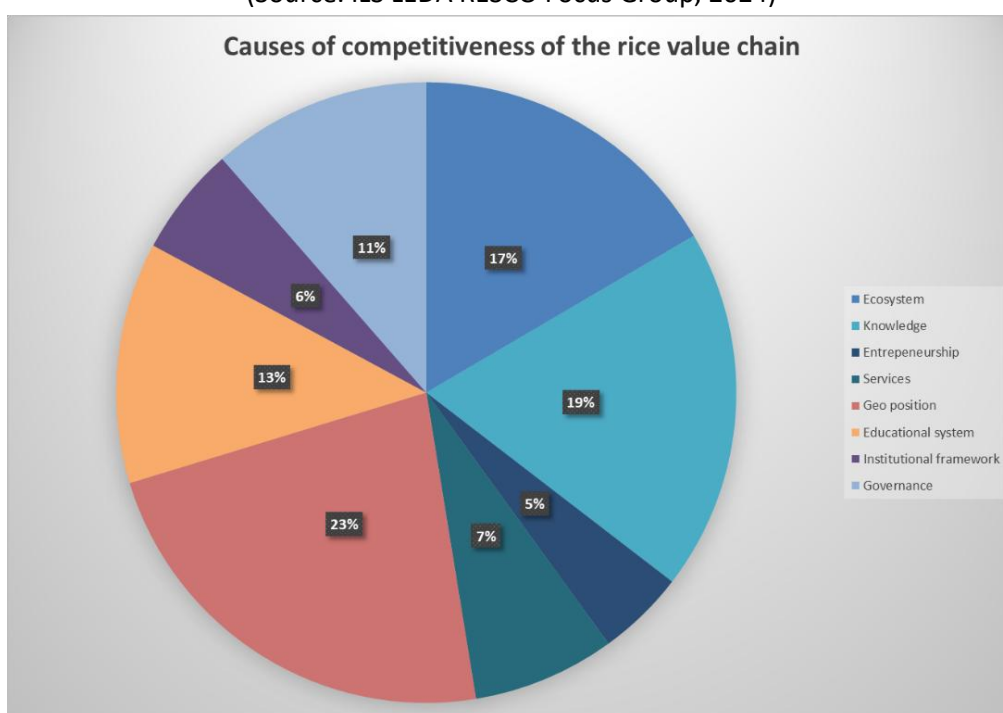
- ✓ **Organic Process:** Although the seeds that farmers use (Romdoul, Neang Orm, Kra Chak Cheas and Local/traditional seeds), **cultivars resilient to pests and diseases**, are imported from other provinces such as Battambang, Kompong Thom, Preah Vihear, Thom Province, rice cultivation in Ratanakiri is mostly (in 90% of the cases) conducted through organic processes, without the use of chemicals, since the soil in Ratanakiri is especially fertile.
A community leader who participated in the focus group meeting stated that, according to his experience, the rice that grows through the organic process is **softer** than the chemical one.
- ✓ **Farmers ability in making the plant resistant to diseases:** the participants to the Focus Group reported the following reasons to explain why the rice in Ratanakiri is more resilient to plant disease, than in other provinces
 - Readiness to harvest, even if it is raining, when the rice plant still stands strong (do not fall), which make it is easier to harvest.
 - If farmers grow the hybrid (Romdoul) and the other variety (Neang Orm) near to each other, the pest or insect will destroy the hybrid one first, because Romdoul Plant has good smell, which attract pest/insects and disease.
- ✓ **Proximity to Laos and Vietnam**, that are relevant country to export rice.

Furthermore, the RESCO focus group assessed those factors impacting with the aforementioned competitive advantages, and the result gave the 3 main causes:

- 1) **Geographical position** mainly thanks to its position at the borders, and proximity to Laos and Vietnam;
- 2) **The knowledge of population**, which corresponds to the specific knowledge local people accumulated in realising their economic activities, in terms of processes, techniques and technologies, organisation;
- 3) The **Ecosystem**, including microclimates, plants, soil, water, corresponding to the specific natural system made up of living organisms and the physical environment where they interact in an interdependent manner.

The result of this assessment is shown in the following figure.

Figure 2. Causes of competitiveness of the Rice value chain in the Ratanakiri Province
(Source. ILS LEDA RESCO Focus Group, 2024)



4.2. Market position

Estimates of rice exports, including informal exports, suggest that rice is by far the most important agricultural export product of Cambodia. Although exports include paddy rice, milled rice is increasingly considered to have important potential for future exports (Kunthea, 2024).

The volume of rice exports increased by 12% from 572,878 tons in 2018 to 641,735 tons in 2022, worth USD 415.9 million. The main destination for Cambodian rice exports is China, which accounted for 39% of total exports in 2022 (USD 163.8 million). The next largest export markets are France (USD 62.9 million), Malaysia (USD 31.2 million), the Netherlands (USD 25.1 million) and Gabon (USD 17.1 million). (Eurocham Cambodia, 2023). In 2022, Cambodia exported \$902M in Rice, making it the 8th largest exporter of Rice in the world. At the same year, Rice was the 15th most exported product in Cambodia. The fastest growing export markets

for Rice of Cambodia between 2021 and 2022 were France (\$31.4M), Italy (\$9.92M), and Czechia (\$9.6M) (OEC, 2024). Cambodia's rice exports have benefited from a number of factors, including the country's favourable climate for rice cultivation, the increasing demand for rice in global markets, and the signing of free trade agreements with key trading partners (South Korea and China) (Eurocham Cambodia, 2023). Exported rice varieties included fragrant rice, long-grain white rice, parboiled rice and organic rice; fragrant rice accounted for 70.5 percent of the total exports (Kunthea, 2024).

As for the imports, Cambodia's rice imports represent only a small fraction of the country's total rice consumption and have been decreasing in recent years. Import volumes fell from 23,260 tons in 2018 to 7,868 tons in 2022, worth USD 3.4 million (Eurocham Cambodia, 2023), becoming the 107th largest importer of Rice in the world. At the same year, Rice was the 187th most imported product in Cambodia (OEC, 2024). The main source of Cambodian rice imports is by far Vietnam, which accounted for 67% (USD 2.3 million) of total imports in 2022, followed by the United States (USD 0.7 million), Thailand (USD 0.1 million), India (USD 0.1 million) and Japan (USD 0.07 million). Cambodia's rice imports have been driven by the increasing demand for rice in the country, as well as the Government's efforts to improve food security. However, with increasing domestic rice production, the need for imports has decreased (Eurocham Cambodia, 2024).

In order to assess the market positioning of the rice value chain, the RESCO focus group analysed:

- The direct buyers of the rice main products
- The current market positioning of the rice main products
- The expected goals for the rice main products

The figures 3 and 4 show the results.

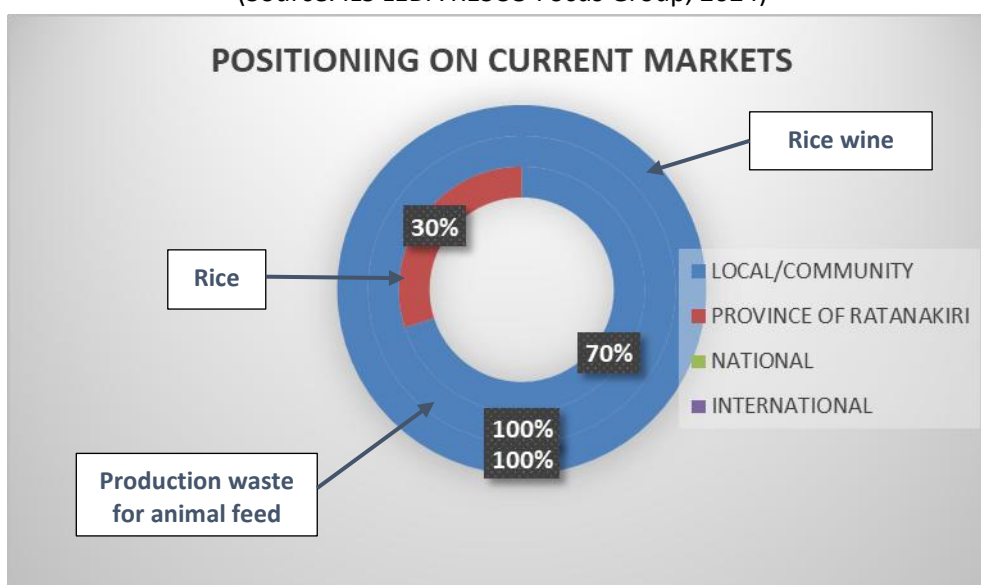
The RESCO Focus Group selected 3 main products: rice, production waste for animal feed, wine rice; and shared the following information:

As for the **buyers**, Production is often bought directly locally by middlemen who dictate the price and then export mainly to Vietnam. There are no direct exports by local producers. Therefore, producers do not actually know where their product ends up and to which markets it goes. The rest of the production is bought by the same local cooperatives that process the rice and then sell it in the local markets. The local cooperatives are also producers.

Current market positioning of the rice main products

- ⇒ **Rice** - 70% of the production is sold at local level, while 30% at provincial level. However, farmers don't export by themselves, there are only middleman to buy and export (maybe exporting to Vietnam). There are two types of sales: the producers in cooperatives and associations produce and keep a part of the production for their own consumption, a good part they sell to the cooperatives that have the machines to process it and these after processing the raw rice resell it to the local market, mainly to individual consumers. But the amount that each cooperative/association can buy is only about 20 tons per year, depending on the budget they have. Furthermore, there is a very small online sales business via Facebook nationwide in Phnom Pehn (negligible).
- ⇒ **Production waste for animal feed** - it is an insignificant amount produced and distributed only locally.
- ⇒ **Rice wine** - 100% sold at local level: it is a artisanal production, sold locally, mainly displayed and sold in the main tourist resorts, as a souvenir (wine bottle).

Figure 3. Positioning on current markets of the Rice value chain in the Ratanakiri Province
(Source. ILS LEDA RESCO Focus Group, 2024)



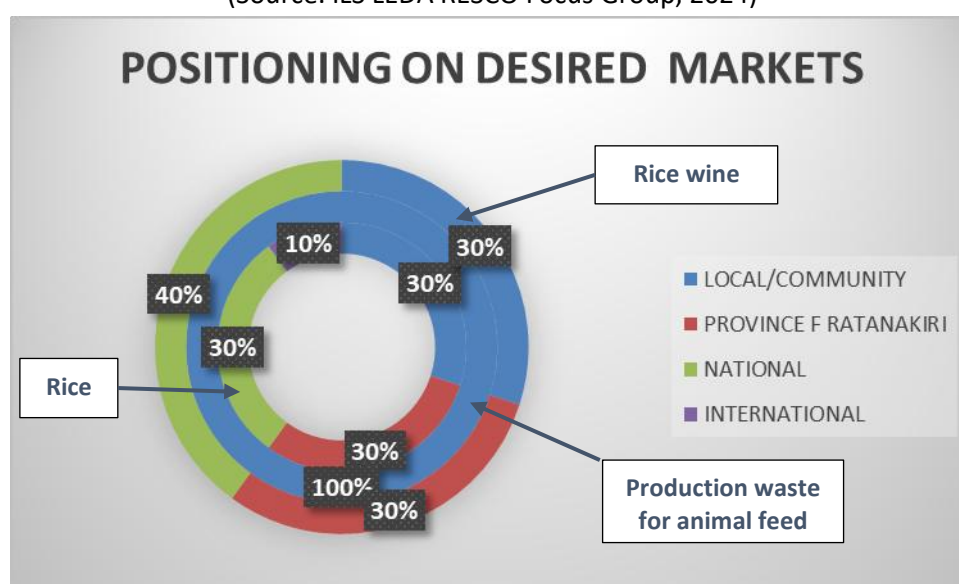
Expected goals for the rice main products

As stated during the Focus group meeting, participants would like to export, attracted by the higher earnings that could be achieved. Even if there are those who would prefer to secure the rice needed to meet the needs of the local people, internally, and export the remainder.

To sum up, the effort for sharing the expand the markets for rice and rice wine should rely on:

- Reduction of the local market (from 70% to 30% for rice and from 100% to 30% for rice wine)
- Increase of national (up to 30%) and international (up to 10%) rice markets
- Increase of the provincial (up to 30%) and national (up to 40%) markets for rice wine.
- Whereas the market of production waste for animal feed should remain 100% at local level.

Figure 4. Positioning on desired markets of the Rice value chain in the Ratanakiri Province
(Source. ILS LEDA RESCO Focus Group, 2024)



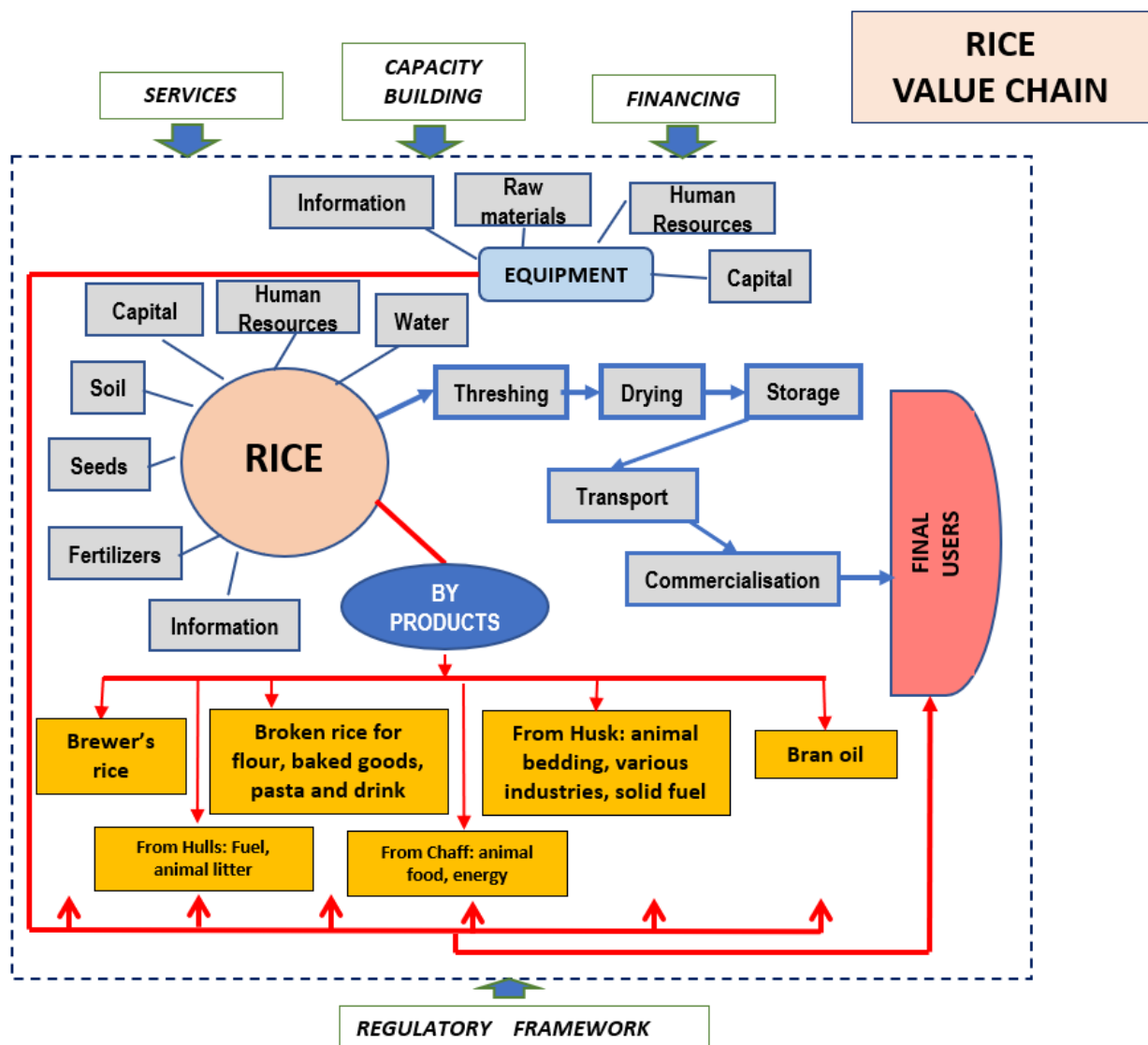
4.3. Rice value chain performance assessment

The RESCO focus group assessed needs for the main components of the rice value chain, and they are:

1. Productive inputs and general infrastructure
2. Human resources
3. Financial resources
4. Information
5. Equipment and supplies
6. Services
7. Additional activities
8. By-products

The following figure shows the components of the rice value chain.

Figure 5. The Rice Value chain components (Source. ILS LEDA)



The main results about the value chain performance regarding high level and medium level needs are the following ones:

Productive inputs and general infrastructure

High level

- Irrigation: The irrigation system covers only few districts such as Kon Mom, Ou Yadav, and Vern Sai. It costs a lot for them to grow rice in Dry season, that's why farmers in Ratanakiri can grow rice only one time per year (during the rainy season).

Medium level

- Seeds: It is hard to find good seeds and it is also hard to identify which seeds are good. The FG participants stated that they do not have institutions to produce their own seeds. If they want to know what the varieties of seeds from Ratanakiri are, they have to check with the National Institution (in Phnom Penh). It would be better to have an institution in Ratanakiri to produce their own seeds at provincial level, reducing transportation costs; however, it will take 7 years to produce their own seeds. Romdol rice variety comes from other provinces, but according to the expert it could be possible to create/produce their own variety of Romdol in Ratanakiri, because the soil in Ratanakiri is of good quality (has good fertilizer which allows rice to grow well), and it can be grown through organic process (without the use of chemical products).
- Soil and Fertilisers: As previously mentioned, some lands needs fertilizers in order to get good production. To better maintain the quality of land, it is necessary to know what type of fertilizer and the right quantity to use that can both maintain the quality of the land and increase the production.
- Storage: Some farmers do not have storage to stock their rice (non-processed rice).

Human resources

High level

- According to the Focus Group, the following professional figures are lacking in the territory:
 - Administration,
 - Product procurement and marketing responsible.
- As for the Human Resources of the future, there are no:
 - Operator of new digital and remote sensing technologies
 - Technician specialized in robotics and automation
 - Technician specialist in Artificial Intelligence (IA)

Financial Resources

Medium level

- Own funds: Rice Associations, which buy rice from farmers, have limited financial/budget for buying the rice. There are self-help revolving groups in associations/cooperatives but often people do not return the credit.
- There are resources from banks, but access requirements and procedures are very restrictive, due to excessive bureaucracy, often combined with a lack of information on opportunities
- Government programmes: the loan from the government for Agri/cultivation purposes as an interest rate of 5% per year. It is not easy to fulfil the bank's requirement to get the loan. There are also many Microfinance Institutions (MFIs) that provide loans (not only for Agriculture purpose), but the interest rate is really high, 18% per year. So, people who take the loan from MFIs are most likely at risk of being indebted.

Information

High level

There is a lack of information on:

- Market demand
- Technology

Durable equipment and supplies

High level

- The value chain does not have a level of automation and mechanisation that makes this type of machineries (furrower, combine harvesters, etc.) usable. The work is still very artisanal and carried out on a small scale. The only equipment used are ploughs and harvesting machines. Cooperatives have them in their own equipment, individual producers are forced to rent them from private 'suppliers' who are in this business, but as there are few available, they often have to wait for them to become available and in the meantime production reaches harvest time and they are forced to hire daily labour, the price of which has risen considerably, otherwise they lose the harvest, which passes the point of maturity. There are also planers to level the ground to prevent unevenness that makes harvesting difficult.
- As for processing equipment (dryers, hullers for husking/shelling, bleaching machines, honeycomb separators), in Ratanakiri producers don't have the huller machine, but other association in other provinces have it, only the industry which process rice has the hullers. However, The Ratanakiri Department of Agri plan to buy that machine. According to the FG, if they have the huller, farmers will not need to worry about the rain when they are harvesting, and they won't need to rush to sell their rice (wet rice) to the enterprise/factory at a lower price. Their current rice processing machinery is not working well, and it has not a good quality, so it cannot process/produce a good quality of rice. When they process the rice, the quality of rice is not good in term of looking/colour.
- Finally, there are no supplies for tools and machinery nor supplies for packaging (boxes, bags).

Services

Medium level

The focus group considers as a medium priority improve the following services:

- Assistance services for sowing, time sowing method, irrigation, management, resilience against pests and diseases, harvest productivity, variety control, performance stability, etc. These services are theoretically provided by the DoA only for cooperatives, but the service often has gaps in terms of ubiquity and quality (especially technical on cultivation and land management is limited). Producers, either in an associated way (through cooperatives) or individually, do not have the funds to access this type of service privately. ***They express a desire for more assistance in improvement productivity and how to produce collectively.***
- Technical, administrative, organisational services.
- Marketing/Commercialisation.
- Training.
- Support in the development of Cooperatives, cooperation/networking: It is mainly the government that provides this kind of assistance by issuing licences for the legal establishment of cooperatives and associations. Participants would like more agile support on how to set up cooperatives.
- Support in the development of alliances / associations: participants raised the need of support to build connection/network with companies or NGOs that provide service and products for cultivation process at a better/lower price and need financial support for Agriculture purpose.

- Access to finance.
- Soil quality monitoring.
- Business start-up.
- Services for introducing new technologies.
- Services for green economy (Bio Certification and Organic pesticides/fertilisers): Among the producers who participated in the focus group, there are several who do not use chemicals during production, yet they are not certified, due to a lengthy and excessively bureaucratic process. However, the bio certification it is currently offered by the government and therefore it is free of charge.

Buyers³

High level

the following buyers don't exist at provincial level:

- Fair Trade circuits (Like cooperatives or unions follow the standards procedures)
- Industry (Transformers of products)
- Public Entities (School, Hospitals, local administrations, others)

Additional activities

High level

As for the additional activities, such as fairs, festivals and cultural events, they don't exist at provincial level.

By Products

High level needs

According to the Focus Group discussion, they have no by-product production, some farmers produce noodles locally, but in an informal and family way. There are other small productions of animal feed from production waste but almost insignificant and locally produced and sold. Even rice wine is only produced locally in an entirely artisanal manner. In the case of these small by-products, the problem is often related to the level of production, in quantities not sufficient to undertake product transformation processes. According to the Department of Agriculture (DoA), they do not produce enough amount of rice that will attract investors to process it into other products. If they could produce a higher amount of rice, the investors will come. So, there is a high need for training in rice processing and business start-up, such as:

- Brewer's rice used as ingredient for beer brewing. In rural areas, brewer's rice has a variety of uses including ingredient for rice flour and rice noodles.
- Broken rice, which consists of all the grains which break during processing. This product is obtained through a mechanical process which separates broken grains from whole grains. The "breakages" are used in the food industry for the production of flours with which to produce foods derived from rice, such as flours, baked goods, pasta and drinks.
- The "flours" used for zootechnical use and are chosen by the various farms based on the nutritional value necessary for the animal diet.
- The husk used as animal bedding and as mulch in gardening.
- Husk mixed with other materials and used as: biodegradable and compostable vases and containers, plaster and components for green building.

³ To know more about buyers, please refer to the Section 4.2 Market position.

- Chaff is the residue resulting from the processing of brown rice by removing the outer parts of the grain. It is often used in animal foodstuffs.
- Chaff used in biogas plants for energy production.
- Hulls used as fuel in cogeneration plants.
- Hulls used as an excellent litter for stabled animals, particularly cattle and poultry.
- Bran oil, once stabilized and extracted, is a high-quality vegetable oil for cooking or eating.
- Solid fuel made from rice husk (i.e., loose form, briquettes, and pellets), carbonized rice husk produced after burning, and the remaining rice husk ash after combustion.

4.4. Sustainability

The Rise focus groups assessed 4 types of sustainability:

1. The economic sustainability
2. The social sustainability
3. The institutional sustainability
4. The financial sustainability

Large space will be given to environmental sustainability and resilient economy in the next chapters.

The following tables show the results of the assessment

Table 1. The sustainability of the Rice value chain in the Ratanakiri Province

(Source. ILS LEDA RESCO Focus Group, 2024)

Economic sustainability			
Variables	Values		
	Low	Medium	High
Number of hectares of land available (1)			
Is the sales of the local rice value chain in the first 5 sold products of the area? (sign HIGH) Is it among the 5 least sold products in the area? (Sign Low), Sign Medium in the other cases			
No. Of Micro, Small, and medium enterprises in the value chain (collective and individual) (2)			
Number of employed people (formal + informal) (3)			
Level of women employment			
Formal employment share over total			
(1) Usually 3 - 5 hectares /family (it is enough to grow/ and they can have about one ton of rice to sell (besides the amount for their domestic use) (2) Formal collective actors are usually cooperatives and associations, whereas individual actors are usually informal. (3) Work in this sector is mainly informal and seasonal, in the sowing and harvesting period workforce is employed. Apart from associations and cooperatives, other actors working in the sector have a high level of informality.			
Social sustainability			
Variables	Values		
	Low	Medium	High
Ability to create jobs for individuals with different physical and mental abilities			

Ability to create jobs for people with low skill and training level			
Companies run by youth (persons under 35) / total number of companies			
Socially responsible enterprises that invest in the development of the social sphere			
Institutional sustainability			
	Values		
	Low	Medium	High
Level of execution of government plans for the value chain development in the territory			
Level of attention of the official government for the development of the value chain in the territory/area			
Attention of government to social needs			
Financial sustainability			
Variables	Values		
	Low	Medium	High
Potential to secure loans for the business sector			
Presence of specific financial mechanisms for the value chain (loans facilities, credit lines, etc.)			
Availability of incentives/programmes supporting the livelihoods of specific groups in the community?			
Availability of incentives to citizens for the differentiated collection			
Availability of incentives to cooperatives for the differentiated collection			

In conclusion sustainability is a severe gap for the province economy, and strategies shall be addressed for responding to its need, the main one being⁴:

Economic sustainability:

- Increase the level of formal employment (HP)
- Increase the number of hectares of land available (MP)
- Increase the number of Micro, Small, and medium enterprises in the value chain (collective and individual) (MP)
- Increase the level of women's employment (MP)

Social sustainability

- Create jobs for individuals with different physical and mental abilities (HP)
- Increase the number of SMEs managed by young people under 35 years of age / total SMEs (MP)
- Enhance responsible enterprises that invest in the development of the social sphere (HP)

Institutional sustainability

- Direct the attention of the government towards social needs (HP)
- Improve the level of attention and execution of the official government for the development of the value chain in the territory (MP)

⁴ HP refers to high priority needs while MP refers to medium priority ones.

Financial sustainability

- Provide opportunities to secure loans for the business sector (HP)
- Provide specific financing mechanisms for the value chain (HP)
- Provide incentives/programmes supporting the livelihoods of specific groups in the community (HP)
- Provide incentive to citizens and cooperatives for the differentiated collection (HP)

4.5. Green economy

The focus group assessed the green economy associated to the rice value chain, according to the following components:

- Public Regulations
- Contamination and risks
- People and organization commitment
- Contamination caused by the value chain activities
- Access to environmental resources
- Best practices

The following table shows the results:

Table 2. Green economy aspects related to the Rice value chain in the Ratanakiri Province

(Source. ILS LEDA RESCO Focus Group, 2024)

Public regulations					
Variable	Indicators for variable		Indicator for the variable effectiveness		
	NO	Yes	Low	Medium	High
Are environmental sustainability, the reduction of pollution, the limitation of gas emissions, and the polluting use of energy sources included in public policies and regulations?					
Is the government implementing policies that favour the transition to a clean environment? Are they effective?					
Is the government working to achieve the United Nations Sustainable Development Goals?					
Is there an incentive system to stimulate the green economy and penalize the non-green economy?					
Contamination and risks					
Variables	Indicators				
	Low	Medium	High		
How would you consider soil contamination in your territory?					
How would you consider water pollution in your territory?					
How would you consider air pollution in your territory?					
Do you think people are aware of the risks of pollution and climate change? (1)					
Commitment of people					
Are there organizations and/or institutions committed to environmental sustainability and the green economy?					

Do you think people have consistent behaviours to safeguard the environment?			
Contamination caused by the value chain activities			
Variables	Indicators		
	LOW	MEDIUM	HIGH
Emission Co2			
Use of diesel engine for energy			
Use of Waste management sustainable practices			
Audio noise			
Use of environment control devices			
Presence of enterprises for the solid waste recycling			
Presence of enterprises for the organic waste recycling			
Presence of enterprises for the liquid waste recycling			
Are the containers of liquid and powdered substances reused (refilling)?			
Access to environmental resources			
Variable	Very Few	Some	Many
How is the access to drinking water for the value chain actors?			
How is the access to irrigation water for the value chain actors? (2)			
How is the access to electricity for the value chain actors?			
How is the access to public resources (like rivers, lands, etc.) for the value chain actors?			
How is the access to private resources (land properties) for the value chain actors? (3)			
Green economy practices			
Variables	Indicators		
	LOW	MEDIUM	HIGH
How many companies in the value chain practice solutions for environmentally friendly production?			
How many companies in the value chain provide recyclable material?			
How many companies in the value chain re-use internal waste to recycle it?			
How many companies in the value chain reuse wastewater to recycle it?			

- (1) There are NGOs that do this kind of awareness-raising work
- (2) Most crops are cultivated with natural irrigation, taking advantage of the rainy season; only in very few cases are there irrigation canals, which are used to cultivate other types of crops in the dry season. Furthermore, where irrigation systems are in place, assistance on their operation and maintenance should be increased (it often happens that draught animals themselves damage them by entering them).
- (3) It is not so obvious to have the formal requirements necessary to access land and home ownership. People with greater economic difficulties face greater impediments in accessing it.

In conclusion, the assessment results suggest:

Public regulations:

High priority needs

- Make pressure on the government for improving the environmental sustainability, by improving the effectiveness of the regulations on environmental sustainability, the reduction of pollution, the

limitation of gas emissions, and the polluting use of energy sources, the transition to a clean environment, and the achievement of the Sustainable Development Goals.

- Make pressure on government for establishing incentives to stimulate the green economy.

Contamination and risks

Medium priority needs

- Improve measures for reducing the water and air pollution
- Realise initiatives for sensitizing people on the risks of water and air pollution and climate change

Commitment of people and organizations

Medium priority needs

- Sensitise, realise capacity building, and other initiatives for increasing the commitment on environmental sustainability and the green economy.

Contamination caused by the value chain activities

High priority needs

- Sensitise, realise capacity building, and other initiatives for increasing the use of Waste management sustainable practices and environment control devices
- Promote the creation of enterprises for the solid waste recycling, the organic waste recycling and the liquid waste recycling
- Raise awareness on the reuse of containers of liquid and powdered substances

Medium priority needs

- Raise awareness to reduce CO₂ emissions and the use of diesel engines for energy

Access to environmental resources

High priority needs

- Improve the access to irrigation water

Medium priority needs

- Improve the access to land property

Green economy practices

High priority needs

- Increase the number of enterprises that practice solutions for environmentally friendly production
- Increase the number of enterprises of the value chain that provide recyclable material, re-use and recycle internal waste and wastewater.

4.6. Circular economy

The focus group assessed circular economy needs for the rice value chain, through the following components

- Waste management
- Services
- Business performance

Table 3. Circular economy needs related to the Rice value chain in the Ratanakiri Province

(Source. ILS LEDA RESCO Focus Group, 2024)

Waste management			
Variables	Indicators		
	No	Weak	Yes
Are there companies that selectively collect waste for reuse it within the companies in the value chain? (1)			
Are there companies for the storage of this waste?			
Are there companies that sell this waste? (2)			
Are there companies that make products from rice production waste?			

(1) Only in urban areas (particularly in Banlung) there are private companies, in cooperation with the municipality, that only collect waste, but do not separate it. People only separate things they can resell, mainly iron, engine parts, etc.

(2) They are private citizens, who informally resell mainly cardboard, aluminium, iron and motors.

Services			
Variables	Indicators		
	No	Weak	Yes
Is there research to find innovative solutions for the circular economy of the rice value chain?			
Are there university courses in the field of circular economy? (3)			
Are there professional training courses in the field of circular economy?			

3) There are some institutions that have some courses related to environment, but only in the public high school; there are also some lessons about waste management and environment. The largest academic offer is in the capital and sometimes students need to apply for scholarship to study this major/courses.

Business performance			
Variables	Indicators		
	Low	Medium	High
In your opinion, what is the cost of energy consumption over total production costs for company of the rice value chain?			
In your opinion, how is the cost of water consumption compared to the total production costs for a company of the rice value chain?			
In your opinion, what is the participation of renewable energies in the total energy consumption of companies in the value chain? (4)			
In your opinion, how many companies of the value chain adequately treat wastewater from renewable sources?			
In your opinion, how many companies do nitrogen and/or phosphorus balances?			

(4) The energy in Ratanakiri is generated from Solar Panel (used to light the lightbulb in the house or to light the road, use for the fans, or charging devices). There is a hydro-power plant, and the government has plans to build another hydro-power plant in Ratanakiri. The main reasons why they don't use the solar panels in the Rice Value chains, is because it costs a lot of money to buy it, this is because rice is grown in the rainy season where there is less exposure to the sun, which makes it necessary to add additional energy through batteries in order to provide more power, especially in rice processing. According to some integrators, the profit margins of rice, compared to other crops (like durian, avocado and else), are lower. Therefore, the use of panels is not cost-effective, considering the considerable installation and maintenance costs. Moreover, the land in Ratanakiri is not suitable for growing rice in dry season.

In conclusion, circular economy practices are very much ignored in the province, with rare exceptions. Accordingly, the Focus Group assessment came out with the following needs:

Waste management

High priority needs

- Enhance the creation of companies that collect waste selectively, store it, and sell it
- Enhance the creation of companies that make products from rice production waste

Services

High priority needs

- Stimulate the research to find innovative solutions for the circular economy
- Stimulate universities, and professional school to introduce education on circular economy

Business performance

High priority needs

- Stimulate and educate enterprises to make plans for reducing the energy, and the water consumption
- Stimulate and educate enterprises to increase the use of alternative energy sources
- Stimulate, educate, and support enterprises to reuse renewables resources (especially water)

4.7. Resilient economy

The focus group assessed resilient economy opportunities and needs for the rice value chain, through the following components:

- Vulnerability risks
- Risk prevention
- Resilient recovery post catastrophe opportunities
- Long-term environmental sustainability opportunities (contribution to the mitigation of climate change impact)

Vulnerability risks

According to the participants to the Focus Group, the typologies of catastrophes occurred in the territory in the last 5 years are:

- Floods: they mostly happen between August to October, during the rainy season, and when it occurs, it will destroy the rice, especially the rice field nearby river or main water stream. The flood in Ratanakiri usually happens every two or three years.
- Landslides, they only happen on the areas nearby the river bank or hill.
- Excessive temperature during dry seasons.
- Pandemic (Covid19).
- Wildfires.
- Hurricanes/Storms/Typhoons/Tornados.,

Thus, the main damages caused by these catastrophes are:

- a) people left without job

Risk prevention

The measures foreseen for facing the abovementioned catastrophes that need to be improved are:

- ⇒ Effective information advice system (WhatsApp, social, mobile cars, radio, TV, etc.): There is actually a service, provided by a mobile phone company, that inform about any emergency cases, but only with a paid subscription. Sometimes the local Authority play the role to spread the information to local people when they know any emergency cases happen.
- ⇒ Previous tests on individual and collective behaviours
- ⇒ Disposal of public funds for emergency situations
- ⇒ Disposal of insurance mechanisms
- ⇒ Organisation of mutual aid organisation
- ⇒ Presence of civil protection voluntary trained ed equipped groups: besides the presence of the Cambodian Red Cross, in few municipalities the local authorities have conducted some training/sharing/ awareness raising campaign on what local/people should do when they are facing any problems/emergency cases
- ⇒ Disposal of lodging, and temporary housing

The Focus Group result accordingly relies on the following needs and opportunities for facing catastrophes:

Resilient recovery post catastrophe opportunities from the rice chain, that can provide

- Ability to produce goods needed in food emergencies after catastrophes: in the case of flooding, all rice underwater will be destroyed. So, if they only grow rice once a year, they need to wait for another year to come, so that they will start planting/growing again. Even if the government has the short-time-grow variety of rice to give to people who faced any difficulties; but how much they can help it depends on the case.
- Possibility of using workers to support other productions.

Long-term environmental sustainability measures

- Abating polluting waste (chemical products, products containing non-convertible waste)
- Reduction of energy from non-renewable sources and CO2 emissions
- Organic and agroecological cultivation models based on diversification

4.8. Gender equality

The focus group assessed gender equality needs for the rice value chain, through the following components

- Women participation to the value chain
- Access to resources
- State regulations: legislation and measures

The following table show the result of this assessment:

Table 4. Gender equality assessment in the rice value chain (Source. ILS LEDA RESCO Focus Group meeting, 2024)

Women participation to the value chain			
	LOW	MEDIUM	HIGH
Female working level in the value chain?			
Level of woman involved in local government with respect to the value chain development?			

Level of women in leadership positions and in representative bodies (e.g.: workers' groups, trade unions, etc.) in the value chain?			
Last year, how many women were promoted in the value chain?			
In the past year, how many women have benefited from training in the value chain?			
Access to resources			
	NO	PARTIALLY	YES
Is the access to labour in the value chain the same for men and women?			
Is the access to finance in the value chain the same for men and women? (1)			
Is the access to business services in the value chain the same for men and women?			
Within the framework of the value chain, is the access to the resources produced (and the choice on how to use of these resources) the same for men and women?			

(1) They have the same possibility to get the loan, but it depends on the collateral and the ability to pay off the loan (after the MFIs do the assessment).

State regulations: legislation and measures			
	NO	PARTIALLY	YES
Do you think the Gender Equality National Strategy /measures/services is being properly implemented (2)			
Do you think that sufficient measures for gender equality are taken at company level?			
Do you think that reconciliation measures and facilities between family and work responsibilities are properly implemented?			
Do you think that public care facilities for children and elderly are sufficient and covering the demand?			
Do you think that the issues of sexual harassment, abuse and exploitation at work are sufficiently taken into account in the value chain (understanding of the issue, support for victims, measures against perpetrators, etc.)?			
Do you think that the violence suffered by women in the private sphere (e.g. domestic violence, forced marriages, etc.) is sufficiently taken into account in the value chain (understanding of the problem, care for victims, support in pursuit of the perpetrators...)?			

(2) The law is certainly there, it is a problem of implementation, which often calls into question the culture and individual attitudes of each individual. It used to be culturally different because it was a more patriarchal society; now, fortunately, the situation is changing. There are still considerable gaps to be made up for sure, but they are working on that.

In conclusion women have the same access to resources than men; however, they are quite discriminated in the participation to the value chain and state regulations, and they need:

As for women participation to the value chain:

- Strong support to access promotions and trainings in the value chain
- Some support for accessing the labour market in the value chain
- Some support to obtain leadership positions and in representative bodies (e.g.: workers' groups, trade unions, etc.) in the value chain
- Some support to be involved in local government with respect to the value chain development.

As for state regulations:

- Strong support to implement reconciliation measures and facilities between family and work responsibilities and to increase public care facilities for children and elderly in order to cover the demand
- Some support to proper implement Gender Equality National Strategy, and to properly consider issues of sexual harassment, abuse and exploitation at work and violence suffered by women in the private sphere (e.g. domestic violence, forced marriages, etc.) in the value chain.

4.9. Obstacles

According to the Asian Development Bank (ADB, 2022), rice farmers in Cambodia have been working very hard in the past few years as the government has laid out plans to promote the country as a “rice basket” and a major rice exporter. However, this was a challenge for a country that, despite its surplus rice, experiences a food deficit in about a quarter of its provinces, making food security a concern. For the ADB, the main obstacles to the rice value chain development in Cambodia are:

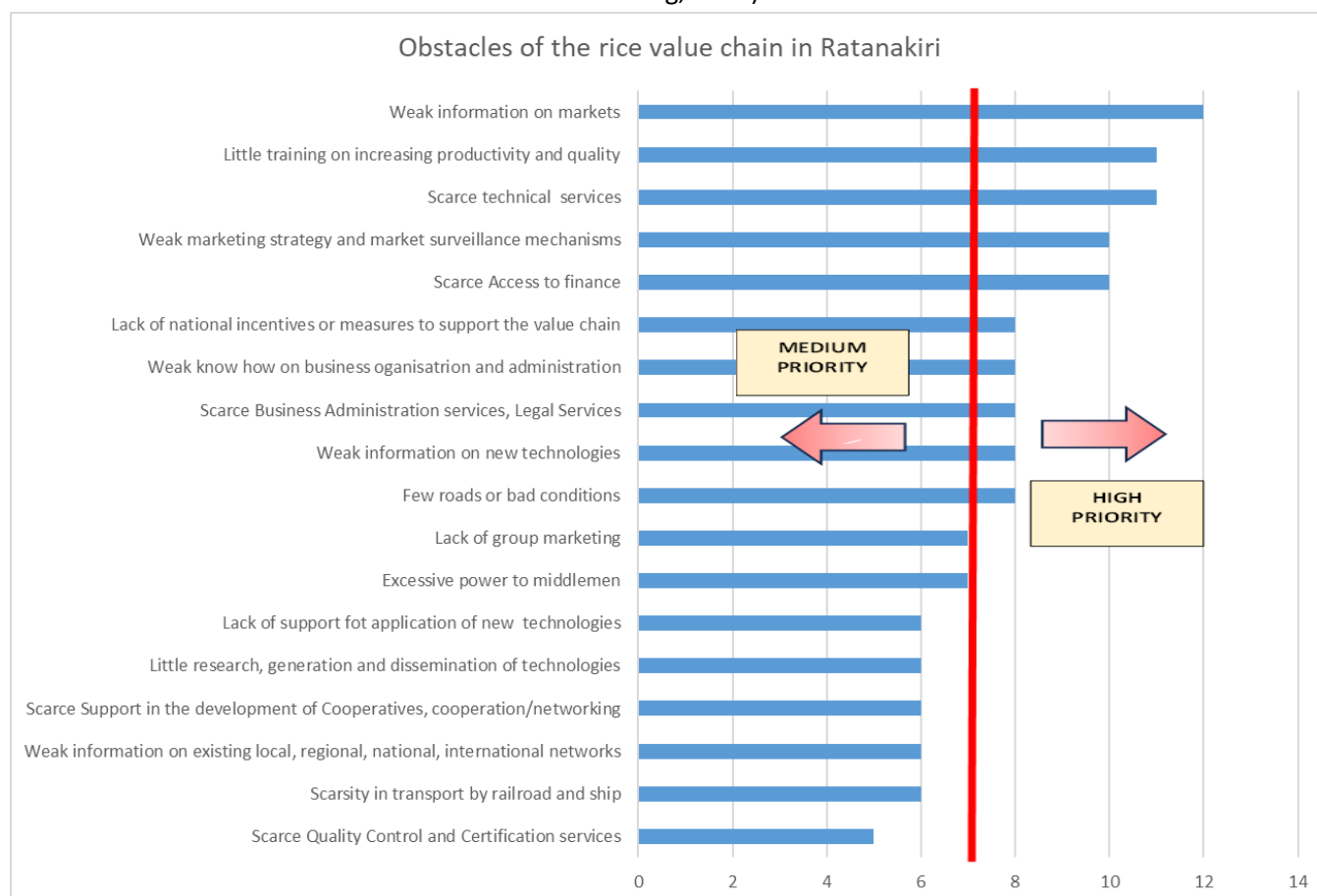
- The price of rice fluctuates often because of imbalances in supply and demand, aggravated by the movement of unprocessed rice paddy to Thailand or Viet Nam, which have better processing capacity, bigger storage, and wider distribution systems. Consistency in the quality of rice for export is also wanting because of a lack of postharvest infrastructure and varied production and processing technologies used in large and small farms.
- Climate change impacts also pose a threat to rice farming. Cambodia has had its share of an increasing number of extreme climate events such as floods and droughts, which have driven farmers to consider alternate cropping systems. Where water is available, dry season irrigated rice production is adopted as an alternative.
- Overall, Cambodia has great potential to become a rice basket in Southeast Asia. However, the country’s outmoded rice value chain needs to be updated if the twin objectives of food security and export expansion are to be achieved.

In addition, Cambodia traditionally has produced only one rice crop per year because it has lacked the extensive irrigation system needed for double-cropping. Where there is little irrigation, the amount of rainfall determines the size and quality of the crop. The government of Cambodia made great efforts to build irrigation systems throughout the country. The results occasionally were notable, and in a few parts of the country farmers were able to grow two or, more rarely, three crops of rice per year. In some cases the irrigation works were poorly conceived and hastily built, and they soon collapsed. Most of those that survived were abandoned after 1979. Another significant problem is that millions of land mines remain in Cambodian

fields from the years of warfare; this has severely restricted the amount of land available for cultivation (Encyclopaedia Britannica).

As for the obstacles faced in the rice value chain in the Ratanakiri province, the following table shows the results of the RESCO assessment conducted through the focus group meeting.

Table 5. Obstacles to the rice value chain in Ratanakiri, Cambodia (Source. ILS LEDA RESCO Focus Group meeting, 2024)



To sum up, the main obstacles, that need to be removed, regard the following categories⁵:

- **Infrastructure:** Few roads or bad conditions (HP); Scarcity in transport by railroad and ship (MP).
- **Access to information:** Weak information on markets (HP); Weak information on new technologies (HP); Weak information on existing local, regional, national, international networks (MP).
- **Business services:** Scarce technical services (HP); Scarce Access to finance (HP); Scarce Business Administration services, Legal Services (HP); Scarce Quality Control and Certification services (MP); Scarce Support in the development of Cooperatives, cooperation/networking (MP).
- **Commercial services:** Weak marketing strategy, market surveillance mechanisms for international positioning (HP); Excessive power to middlemen (MP); Lack of group marketing (MP).
- **Access to knowledge:** Weak know how on business organisation and administration (HP); Little training on increasing productivity, quality, including reduction of production losses and traceability.

⁵ HP refers to high priority obstacles while MP refers to medium priority ones.

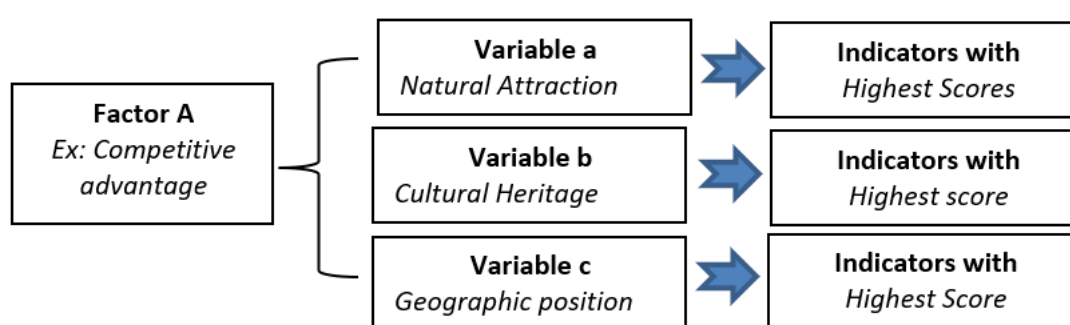
- **Access to technology:** Little research, generation and dissemination of technologies (MP); Lack of support for application of new technologies (MP).
- **Regulatory Framework:** Lack of national incentives or measures to support the value chain (HP).

Chapter 5. THE STRATEGIC GUIDELINES FOR COMPETITIVE AND INCLUSIVE DEVELOPMENT

5.1. The methodology for the elaboration of the Strategic Guidelines for the rice value chain development

The RESCO methodology for the elaboration of the Strategic Guidelines for the beef and dairy cattle value chain development uses the inputs proceeding from the RESCO assessment (interviews), from the analysis of the secondary literature, and from the consultations with experts, and classifies all these findings in a number of fields of intervention.

The inputs refer to the impact indicators of each variable corresponding to each factor either if it is positive (points of strengths), or negative (points of weaknesses), as illustrated in the following example.



The correspondent strategic actions should be addressed in order to:

- a. Maintain the points of strengths in the long term;
- b. Remove the points of weaknesses, as they represent obstacles to the development of the value chain.

RESCO, finally, uses a simple algorithm for deriving the strategic actions for each one of the “variables” corresponding to the different “factors”.

In particular, the formula is, as follows:

$$Sa = f(V_{ij}, Fa_n)$$

Sa = Strategic Actions

V_{ij} = Variable “i” of the Component “j”

Fa_n = Factor “n”

5.2. From potential and needs to action

The main potential and needs referred to each factor and correspondent variable of the rice value chain were illustrated in Chapter 4.

The process from addressing strategic action to the abovementioned needs foresaw:

1. Identifying individual action for each variable

2. Clustering complementary actions
3. Eliminating duplications
4. Including each action in correspondence of “strategic fields”

Accordingly, the RESCO assessment has also provided at least three strategic fields of action, such as

- a) Governance
- b) Capacity Building
- c) Service System

Considering the priorities emerged from the analysis of the rice value chain status and potential, and the CLESIDRA Project goals, these strategic actions are clustered according to three levels of priorities:

- **Priority N° 1:** *Actions correspondent to the objectives and proposals of the CLESIDRA Project Work Plan (See Box 1), and, at the same time, correspondent to the “High Priorities (HP)” indicated by the RESCO group*
- **Priority N° 2:** *Actions correspondent to the “High Priorities (HP)” indicated by the RESCO group, but not explicitly foreseen by the CLESIDRA Project, and that will orientate the three years plans of the dialogue platforms (PLASED, Value Chain Committees, and Coss)*
- **Priority N° 3:** *Actions correspondent to the “Medium Priorities (MP)” indicated by the RESCO group*

BOX 1. CLESIDRA WORKPLAN

WP1 - Improving the skills of CSOs, producers and LAs on multi-stakeholder dialogue, integrated socio-economic development

A1.1 Capacity building workshops for CSOs on active participation in decision-making processes and multi-stakeholder dialogue.

A1.2 Capacity building workshops on inclusive socio-economic development and value chain competitiveness and sustainability.

A1.3 Capacity building workshops and support to upgrade CSOs’ organisational capacity (internal governance, impact, human and financial resource management, advocacy, project formulation and management)

A1.4 Capacity building workshops and technical assistance to CSOs on sustainable production techniques/methods, preservation of natural resources and security of smallholder farmers (incl. rights to tenure)

WP2 - Establishment of the multi-stakeholder PLASED platform

A2.1: Delivery of technical assistance in the PLASED platform’s design and start-up

A2.2: Inception of the PLASED platform and implementation of strategic actions

A2.3: Development, publication and circulation of a booklet on the PLASED experience

WP3 - Participatory elaboration of the Strategies (STRAT) for the competitive, inclusive, sustainable and resilient value chains’ development

WP4 - Establishment of a Comprehensive Service System (COSS)

A4.1 Mapping and analysis of the service providers/infrastructure in the Ratanakiri Province

A4.2 Technical assistance for designing the COSS

A4.3 Capacity building and technical assistance to the COSS start up

A4.4 Capacity building workshops to improve skills of the single service providers and address service system gaps

A4.5 COSS start up and provision of financial support to selected COSS users (Financial support to Third Parties)

The strategic vision for the Rice development

The first result of the RESCO assessment is the identification of a Strategic Vision for the Rice Value Chain development to be achieved in 2030.

This vision consists in increasing national markets by 30% and international markets by 10%, counting on good competitive advantages provided by the organic process and the farmers ability in making the plant resistant to diseases, also thanks to the local ecosystem and traditional know- how.

As a matter of fact, the Ratanakiri rice can be presented as the best Cambodian organic rice grown by the wise hands of the ancient local traditions.

5.3. The Strategic Guidelines and Action Plans in details

PRIORITY No. 1

AM - MULTI LEVEL VALUE CHAINS

AM1.1: GOVERNANCE

AM1.11: Establish a PLASED (Platform for Sustainable Development), a mechanism for enhancing social dialogue and maintaining competitive advantage and creating jobs, through

- a) Delivering technical assistance in the PLASED platform's design and start-up
- b) Supporting priority actions, such as
 - b1: drafting a territorial marketing strategy
 - b2: Lobby with government for improving the execution of government plans, and supporting SMMEs which want to growth, and be formal
- c) Support building of alliances with other relevant national and international actors
- d) Publication and circulation of a booklet on the PLASED experience

This Activity corresponds to the CLESIDRA actions of the work plan WP2

AM1.2: SERVICES

AM1.21 Establish a COSS (Coordinates Service system) for delivering socio-economic services in an effective and efficient way, through:

- a) Mapping and analysis of the service providers/infrastructure in the Ratanakiri Province
- b) Technical assistance for designing the COSS
- c) Capacity building and technical assistance to the COSS start up
- d) COSS start up and provision of financial support to selected COSS users (Financial support to Third Parties)

This Activity corresponds to the CLESIDRA actions of the work plan WP4

AM1.22: Improve business services, and access to them, with priority to the following ones:

- a) Technical, administrative, organisational services
- b) Marketing/Commercialisation
- c) Support in the development of Cooperatives, cooperation/networking
- d) Support in the development of alliances / associations

This Activity corresponds to the CLESIDRA actions of the work plan WP4 (A44)

AM1.3: CAPACITY BUILDING

AM1.31: Build capacities on business administration, and plans, useful also for addressing request of funds and credit

This Activity corresponds to the CLESIDRA actions of the work plan WP1 (A14)

A1 – RICE VALUE CHAIN

A1.1 GOVERNANCE

A1.11: Establish a Rice Development Committee, on the base of the focus group participants, and as a PLASED sub-groups, and facilitating taking common initiatives, for maintaining the competitive advantage (organoleptic characteristics of the specific varieties used in Ratanakiri, such as Romdoul, Neang Orm, Kra Chak Cheas and traditional seeds/cultivar), safeguarding the ecosystem, improving population habits, boosting organic production, and activating green economy;

This Activity corresponds to the CLESIDRA actions of the work plan WP3, and WP2 (A2.2)

A1.12: Lobbying with local and national authorities, through establishing a working group with the Ministry of Economy and Ministry of Agriculture and other relevant public authorities for:

- a) introducing national incentives or measures to support the value chain with particular reference to reducing the price of equipment (Plow furrower, combine harvesters, processing machinery - dryers, hullers for husking/shelling, bleaching machines, honeycomb separators -, packaging machines, supplies for tools and machinery, supplies for packaging -boxes, bags) through proper taxation and by reducing bureaucratic procedures; for the production of rice products and by-products;
- b) improving the irrigation system and/or introduce incentives to build irrigation system in all the districts of the Ratanakiri Province in order to allow producers to grow rice also in the dry season;
- c) boosting proper incentives and financial/technical support to the flourishing of a solid green economy out of the value chain process; with particular regard to organic production, alternative practices for fertilization and protection from plant diseases; waste management sustainable practices; improving the effectiveness of public policies and regulations on environmental sustainability, the reduction of pollution (air, water, soil and audio), the limitation of gas emissions, and the polluting use of energy sources; improving the effectiveness of the policies that favour the transition to a clean environment; the use of alternative energies in the production sector (not only for domestic use) and the reuse of recycled water

This Activity corresponds to the CLESIDRA actions of the work plan WP2 (A2.2)

A1.13: Facilitating commercialization including:

- a) Encouraging collective sales to increase negotiation power
- b) Facilitating the organisation of at least 1 annual initiative (fairs, festival, cultural event, etc.) for promoting the rice products supporting fundraising opportunities (international agencies' opportunities, sponsorships, crowdfunding and business social responsibility)

This Activity corresponds to the CLESIDRA actions of the work plan WP2 (A2.2)

A1.2 CAPACITY BUILDING

A1.21: Improving professional skills, possibly through initiatives such as the "University of professions" and exposure to innovative practices, through networking actions, with particular reference to:

- a) technical capacities to boost production of the specific varieties: Romdoul, Neang Orm, Kra Chak Cheas and traditional seeds/cultivar and maintain their organoleptic characteristics because they are resilient to pest and diseases, they are easy to grow and take care and they can grow everywhere in Ratanakiri, on any type of land/soil;
- b) how to produce rice product and by-products such as:
 - rice wine and by-products from rice production waste, such as brewer's rice used as ingredient for beer brewing;
 - Broken rice used in the food industry for the production of flours with which to produce foods derived from rice, such as flours, baked goods, pasta and drinks; the flours is used for zootechnical use;
 - Bran oil, once stabilized and extracted, is a high quality vegetable oil for cooking or eating;
 - From husk: animal bedding and as mulch in gardening, biodegradable and compostable vases and containers, plaster and components for green building (mixed with other materials)
 - From Chaff (as the residue resulting from the processing of brown rice by removing the outer parts of the grain): animal foodstuffs, and in biogas plants for energy production.
 - From hulls : input for fuel in cogeneration plants; and excellent litter for stabled animals, particularly cattle and poultry, solid fuel (i.e., loose form, briquettes, and pellets), carbonized rice husk produced after burning, and the remaining rice husk ash after combustion

This Activity corresponds to the CLESIDRA actions of the work plan WP1 (A1.2)

A1.22: Improving entrepreneurial capacities, as far as:

- a) Business organization and administration
- b) Negotiating capacity
- c) Project financing, for example capacities for allowing the achievements of the condition for eligibility and access to use the opportunities of funding from national and international private and public entities
- d) Improving the cooperative access to finance and budgeting in order to increase the amount of rice to buy
- e) Circular economy businesses, such as: environmentally friendly productions; use of recyclable material; saving energy and water consumption, using alternative energies; waste management sustainable practices (re-use internal waste and wastewater reuse), waste collection, selection, storing and recycling
- f) Favouring women access to the value chain

This Activity corresponds to the CLESIDRA actions of the work plan WP1 (A1.4)

A1.23: Realise awareness campaigns (possibly through a cycle of communitarian conferences) to enhance environmental sustainability and reducing the climate change impact addressed to the population (inducing non-polluting behaviour), institutions (favouring and implementing strategies and initiatives favourable to environmental protection) and producers (using alternative practices for fertilization, protection from plant diseases, etc.) to sensitise them to the need to have positive behaviours that safeguard the environment, on the following issues:

- a) environmental sustainability, the reduction of pollution, the limitation of gas emissions, and the polluting use of energy sources the importance of environmental protection for a local sustainable development, and for maintaining the value chain competitiveness;
- b) the importance of smart agriculture and its benefits;

- c) the importance to achieve the United Nations Sustainable Development Goals;
- d) the importance of circular economy, starting from waste management sustainable practices (such as reuse and recycle);
- e) the improvement of environment control devices.

This Activity corresponds to the CLESIDRA actions of the work plan WP1 (A1.1)

A1.3: SERVICES

A1.31: Improve business services and access to them, also through coordinating service providers, in particular the following ones:

- a) Marketing and commercialisation services that promote the varieties used in Ratanakiri (Romdoul, Neang Orm, Kra Chak Cheas and traditional seeds/cultivar) through a brand policy, proper advertising, labelling, traceability, and geographical recognition; especially, Neang Orm and Kra Chork Cheas Varieties which are more resistant to plant disease; with particular regard to group marketing, surveillance mechanisms and international positioning and commercialisation of products and by-products.
- b) Business start-up services; in particular for the startup of new enterprises for producing rice products and by-products:
 - rice wine and by-products from rice production waste, such as brewer's rice used as ingredient for beer brewing;
 - Broken rice used in the food industry for the production of flours with which to produce foods derived from rice, such as flours, baked goods, pasta and drinks; the flours is used for zootechnical use;
 - Bran oil, once stabilized and extracted, is a high quality vegetable oil for cooking or eating;
 - From husk: animal bedding and as mulch in gardening, biodegradable and compostable vases and containers, plaster and components for green building (mixed with other materials)
 - From Chaff (as the residue resulting from the processing of brown rice by removing the outer parts of the grain): animal foodstuffs, and in biogas plants for energy production.
 - From hulls: input for fuel in cogeneration plants; and excellent litter for stabled animals, particularly cattle and poultry, solid fuel (i.e., loose form, briquettes, and pellets), carbonized rice husk produced after burning, and the remaining rice husk ash after combustion
- c) Support services to
 - acquiring of the equipment useful for the value chain, assuring best price and quality
 - Support services on the operation and maintenance of existing irrigation systems
 - Support services specialised in increasing productivity, quality, including reduction of production losses and traceability
- d) Financial services

A1.32: Improve services for environmental sustainability through:

- The creation of enterprises for the recycling of solid, liquid and organic waste;
- Promote installation and maintenance services for alternative energies;
- Creating links between the local academic world and international networks for learning from best practices.

This Activity corresponds to the CLESIDRA actions of the work plan WP4 (A4.4)

A.2.1: GOVERNANCE

A2.11: Through the established Rice Development Committee

- Prioritising the achievement of the United Nations Sustainable Development Goals
- Promoting the collective purchase and use of machineries among producers in order to reduce costs
- Lobbying with financial institutions the introduction of loans for the business sector

A2.12: Lobbying with the government for:

- supporting social inclusion through introducing reconciliation measures and facilities between family and work responsibilities; increasing public care facilities for children and elderly so that they are sufficient and covering the demand; facilitating access to the labour force for people with different physical and mental abilities; improving the roads, and increasing the transport by railroad and ship; introducing/improving incentives/ programmes supporting the livelihoods of specific groups in the community; introducing incentives for the formalisation of collective and individual employment and regulation to combat informal employment
- realising an accessible information system on the national measures in favour of the value chain, monitoring the execution of the national plan in favour of the value chain

A2.13: Facilitating commercialization including:

- Reducing the power of intermediaries
- Formalising online and telephone purchasing channels
- Awareness and promotion among public entities to purchase local rice products
- Facilitating access to fair trade
- Promoting collective storage facilities among producers in order to reduce costs

A2.14: Supporting Environmental sustainability, green and circular economy through

- boosting circular economy
- promoting linkages between producers and researchers to innovate in circular economy practices;
- making agreements with universities and TVET centres for introducing professional training courses in the field of circular economy

A2.15: Promoting innovation in the Rice value chain, with particular reference to:

- Advocating for increase research in the field of seed preservation, plant diseases in order to prevent damages to agriculture and job loss;
- Linking the actors of the rice value chain with international networks related to technologies for exposure to new technologies.

A2.16: Improving response mechanisms for facing emergencies, including: Effective and free information advice system (WhatsApp, social, mobile cars, radio, TV, etc.); Previous tests on individual and collective behaviours; Disposal of public funds for emergency situations; Disposal of insurance mechanisms; Organisation of mutual aid organisation; Presence of civil protection voluntary trained ed equipped groups;

Disposal of Health Care emergency support; Disposal of medicines; Disposal of lodging, and temporary housing; making public funds available for emergencies and insurance mechanisms, and increasing the value chain resilience

A.2.2: CAPACITY BUILDING

A2.21: Improving professional skills for

- Operator of new digital and remote sensing technologies; Technician specialized in robotics and automation; Technician specialist in Artificial Intelligence (IA)
- Operator of new technologies in the rice value chain, such as automatised the rice production process
- Issue such as: sowing method, irrigation, management, cultivation and land management, resilience against pests and diseases, harvest productivity, variety control, performance stability
- Equipment maintenance
- Issue such as increasing productivity, quality, including reduction of production losses and traceability also through the use of organic fertilisers, particularly for people with different abilities.

A2.22: Involving universities in order to include issues related to environmental protection in university curricula

A.2.3: SERVICES

A2.31: Improving business services for accessing to information on:

- markets (trends, competitors, opportunities, how to improve negotiation power, which products are most in demand in the market, how to make collective sales, etc.)
- the existing training opportunities;
- new technologies;
- finance opportunities.

A2.32: Improving services related to human resources training and recruitment/selection

A2.33: Improving services for

- acquiring of the equipment useful for the value chain, assuring best price and quality
- maintenance of existing irrigation systems
- increasing productivity, quality, including reduction of production losses and traceability

A2.34: Promoting the creation of nurseries to grow the seeds of the specific varieties (Romdoul Neang Orm, Kra Chak Cheas and traditional seeds/cultivar) in Ratanakiri and, thus, reduce the transportation costs

A2.35: Improving services for facilitating gender equality, through:

- awareness campaigns for facilitating gender equality in the distribution of roles and activities within the value chain;
- strengthening capacity of women for combating harassment (recognising the phenomenon, reporting or denouncing it, verifying if it happens to other women, knowing the law and the

women rights; supporting TVET in improving their offer of integrated professional training for women, including issues such as: Awareness, Self-esteem, Gender equality principles, Negotiation power; Defence against harassment; Information about job opportunities; Professional training for responding to the job opportunities

A2.36: Improving services for social sustainability, through:

- promoting services for business and employment formalisation
- supporting enterprises that use their social responsibility for social investments, facilitating SMEs managed by young people under 35 years of age/total SMEs, generate employment for people with mental and/or physical disabilities

PRIORITY No.3

A.3.1: GOVERNANCE

A3.11: Lobbying with government for:

- Increasing its level of attention to social needs, with priority to improving Gender Equality National Strategy /measures/services; introduce measures and incentives for women employment; simplify the formal requirements for access to land and home ownership and introduce incentives to access land property for disadvantaged people;
- creating an institution in Ratanakiri for the production and distribution of seeds
- introducing incentives for improving the performance of the value chain, such as incentives for building or buying storage facilities, for the establishment of Cooperatives, cooperation and/or networking
- introducing specific financial mechanisms and programmes to support the rice value chain and reducing the interest rate of the existing mechanisms; in particular, introduce financial support for: business start-up, the purchase of new technologies, the production of rice addressed to individual producers, associations and cooperatives.
- improving the effectiveness of public policies and regulations on environmental sustainability and green economy through the reduction of contamination (air, water, soil and audio), the limitation of gas emissions, reducing bureaucratic procedures and time to obtain the Certification for organic rice production, ensuring the execution of existing plans for the development of the value chain, introducing measures to tackle climate change and pollution (such as a control system of the pollution in Ratanakiri province) and create the adequate infrastructures to avoid water and air contamination
- Facilitating soil analyses, evaluating the composition of organic and non-organic elements through proper instruments

A3.12: Making agreements with financial institutions that reduce difficulties (guarantees, interest, grace period, insurance, etc.) of access to credit

A3.13: Making an agreement with universities and professional schools, for preparing new professional skills

A3.14: Promote gender equality and social inclusion, through:

- the constitution of a Union of worker women;
- the establishment a pink telephone where to report the harassment, managed by a women association;
- Facilitating formalisation of informal businesses, through making pressure to Government for reducing bureaucratic regulations, and providing incentives

A3.15: Making agreements with universities, research institutions and TVETs for:

- the introduction of new training courses related to the development of the rice value chain
- Promoting research on new technologies applied to the rice value chain

A3.2: CAPACITY BOILDINGI

A3.21: Improving entrepreneurial capacities, such as:

- business plans for accessing to bank finance
- business start up
- marketing and commercialisation

A3.22: Promoting gender equality, through:

- Provide capacity building to enable women in working in the rice value chain,
- Capacity building for favouring women access to leadership position and to participate in representative bodies (eg: workers' groups, trade unions, etc.)
- Capacity building addressed to companies to introduce measures for gender equality
- Strengthen capacity of women for combating it (recognising the phenomenon, reporting it, verifying if it happens to other women, knowing the law and women's rights)
- job training addressed to women on the rice value chain
- training on business start up addressed to women and young people
- exposure to best practices in Gender Equality National Strategy /measures/services

A3.23: Improving environmental sustainability, through:

- Training to the existing organisations and/or institutions committed to environmental sustainability and the green economy;
- Capacity building addressed to producers to reduce energy and water consumption, promote the use of alternative energies, and waste management best practices to avoid soil and water contamination;
- Capacity building on the resilient measures that can be taken to mitigate climate change effects, such as: Ability to produce goods needed in food emergencies after catastrophes; Possibility of using workers to support other productions; Abating polluting waste (chemical products, products containing non-convertible waste); Reduction of energy from non-renewable sources and CO2 emissions; Organic and agroecological cultivation models based on diversification.

A3.24: Promoting social and environmental sustainability, through awareness campaigns on the following issues:

- on gender equality and the importance of the access of women in the workforce, with particular regard to women participation to decision making process regarding the value chain development and how to combat patriarchal norms at cultural level;
- business and job opportunities, with priority to people with disabilities, women and young people, generated by the value chain development in all its component
- awareness campaign with the entrepreneurs, for including women harassment prohibited and persecuted as a company regulation;
- the importance of preserving and improving soil quality in particular through the use of organic fertilisers;
- Awareness campaign on efficient long-term use of water resources.
- The risks caused by soil, water and air contamination and the measures to be taken to protect them.

A3.3 SERVICES

A3.31: Promoting and improving business services, especially services addressed to entrepreneurs, to boost the competitiveness of the value chain, through:

- soil quality monitoring services;
- assistance services on sowing, time sowing method, irrigation, management, resilience against pests and diseases, harvest productivity, variety control, performance stability, etc. In particular, technical services on cultivation and land management;
- TVET services;
- Support services to create cooperatives, networks, alliances / associations
- Business start-up services
- Services for introducing new technologies
- specific support services to form women entrepreneurs
- Promote the creation of Quality Control and Certification services
- improve information services on existing local, regional, national, international networks

A3.32: Building connection/network with companies or NGOs that provide service and products in cultivation process (agriculture purposes) in a better/low price

A3.33: Facilitating pollution monitoring/control services in Ratanakiri province

Synthesis of the main strategic guidelines

The following box illustrates the synthesis of the Rice values chain development strategic guidelines for **priority 1**

Box 2. Synthesis of the Rice value chain development guidelines for priority 1 (Source. ILS LEDA)

	MULTI-VALUE LEVEL	VALUE CHAIN LEVEL
GOVERNANCE	Establish a PLASED (Platform for Sustainable Development), a mechanism for enhancing social dialogue and maintaining competitive advantage and creating jobs	Establish a Rice Development Committee, on the base of the focus group participants, and as a PLASED sub-group
		Establishing a working group with the Ministry of Economy and Ministry of Agriculture and other relevant public authorities for: - introducing national incentives or measures to support the value chain - improving the irrigation system; green economy and environmental sustainability
		Facilitating commercialization
SERVICES	Establish a COSS (Coordinates Service system) for delivering socio-economic services in effective and efficient way	Improving services, with priority to: Marketing and commercialisation; Business start-up services; in particular for the start-up of new enterprises for producing rice products and by-products:
		Improve services for environmental sustainability
	Improve business services, and access to them	Support to the production of sub-products
CAPACITY BUILDING	Build capacities on business administration, and plans, useful also for addressing request of funds and credit	Improving professional skills to boost production of the specific varieties, and to produce rice product and by-products
		Improving entrepreneurial capacities
		Realise awareness campaigns (possibly through a cycle of communitarian conferences) to enhance environmental sustainability

The following box illustrated the synthesis of the Rice values chain development strategic guidelines for **priority 2**

Box 3. Synthesis of the Rice value chain development guidelines for priority 2 (Source. ILS LEDA)

	MULTI-VALUE LEVEL	VALUE CHAIN LEVEL
GOVERNANCE	Realise a service facilitating matching between labour demand and supply	Lobby with government for realising intelligent infrastructures: facilitating access to fund, increasing research on new technologies, and adopting incentives for businesses that increase jobs
		Enhance environmental sustainability and reducing the climate change impact

SERVICES	Improve services for business start-up	Improve business services, and access to them, especially quality control services, Soil quality monitoring, and transportation services
	Improve services for environmental sustainability and reducing the impact of climate change (circular economy)	Support in the production of sub-products
	Facilitating access to loans	
CAPACITY BUILDING		Improve capacities of the local actors to get information on market demand trends
		Sensitise farmers in formalising their activities
		Build capacities on protecting the environment and reducing the climate change impact, also through exposure to best practices
		Build capacities on “how to manage cooperation among producers”
		Build capacities for professional skills required by the rice development

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