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| <b>From</b>     | Agri Knowledge Centre                         |
| <b>To</b>       | EMT Members, Agri Commercial Officers (ACO's) |
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| <b>Subject</b>  | Sector Document for Tomato 2012 – Final       |
| <b>Version</b>  | Version N° 1 – October 2012                   |

## 1. Summary – Quick Guide Tomato Sector

### Facts and figures:

|                             | <b>Open field</b>           | <b>Green house</b>   |
|-----------------------------|-----------------------------|----------------------|
| <b>Yield in tons per ha</b> | 20 - 25 per year            | 125 per year         |
| <b>Total hectare</b>        | 1700                        |                      |
| <b>Total production</b>     | 43000 tons                  |                      |
| <b>Cost in RWF</b>          | 130 /kg                     |                      |
| <b>Price in RWF</b>         | 200 - 600 /kg               | 400 – 1000 /kg       |
| <b>Harvest</b>              | Nov-Dec-Jan and May-Jun-Jul | 2x 3 months per year |

- Seeds, pesticides and fertilizer are used as inputs. A modern cultivation system uses greenhouses with irrigation.
- Most tomatoes are sold fresh on local markets. There is one processor in Rwanda, who produces tomato paste. They process 1600 tons of fresh tomato. The processor pays the growers a fixed price of RWF 100 / kg. At this price the company cannot attract enough supply.
- The main market for the tomatoes is the local market. Some traders collect tomatoes and sell to other parts of the country to supermarkets and hotels. Most farmers do not work with contacts. There is some export to the Democratic Republic of Congo.

### Main risks:

- Tomatoes are very sensitive for diseases (fungus, soil bacteria, viruses and insects) Diseases are often spread by insects.
- Lack of water in the dry season. Too much water in the rain season and too much sun.
- Quality of inputs used (seeds should be free of diseases)

In closed greenhouses there are less insects, better irrigation systems but even then there are disease problems and crop rotation is needed to reduce the chances of diseases.

### Financing opportunities:

The financing opportunities in the tomato business are currently limited. Most of the farmers are small producers and sell directly to the local market. In the future opportunities may arise if farmers organise themselves through cooperatives or associations.

**Save for Loan:** Small scale individual banana growers who need working capital can use this type of loan.

**Input finance:** not yet applicable.

**Asset Finance:** In the future, if growers use greenhouses these might be an important asset to finance. This should be considered on the basis of the generated cash flow and how secure this cash flow is. Greenhouses provide no collateral.

**Raw material collection finance:** not yet applicable.

## **2. Introduction**

The tomato is one of the most important foods both because of its special nutritive value and also because of its widespread production. It is the world largest vegetable crop after potato and sweet potato, but it tops the list of canned vegetable. Tomatoes are used for soup, salad, pickles, ketchup, puree, sauces and many other ways.

Tomato production in Rwanda is hard to measure, because there are so many small growers. Roughly on an area of 1.700 ha Rwanda produces 43.000 tons of tomatoes a year (RDB 2010).

The production areas for tomatoes in Rwanda are mostly in the east, western and north. The marchlands are used frequently for tomatoes.

The production of tomato is dependent on the water supply in the area, the production of tomatoes in dry season is mainly situated around the lakes in the western part of the country. Here, the farmers get the water from the lakes to irrigate their plots. Farmers in the rest of the country are dependent on the rain and will therefore only start planting their seeds when the rainy season starts.

The tomato is not a crop of focus for the Rwandan government and is still in an infant stage. That the government is not directly supporting the tomato sector makes the tomato farmers real business men, they have to arrange everything themselves and are therefore forced to be entrepreneurial.

A new development is growing tomatoes in greenhouses. Using greenhouses makes it easier for the grower to prevent diseases. Insects can be kept out of the greenhouses, so quality improves. In the greenhouses is an irrigation system installed so quantity / yield can be improved as well. Both production (yield per ha) and prices are better than the open field crop.

Balton is a company selling inputs for tomato farmers. It tries to capture the whole tomato production process by supplying different inputs such as seeds, pesticides, greenhouses, irrigation and training & follow up. By doing this, the company wants to improve the technology that is used and with that achieve a higher production and a better quality of the produce. Because of the irrigation in the greenhouses growers can also produce tomatoes in the dry season. All the customers of Balton start on a small scale with greenhouses. The greenhouses are typically 8x15mtr.

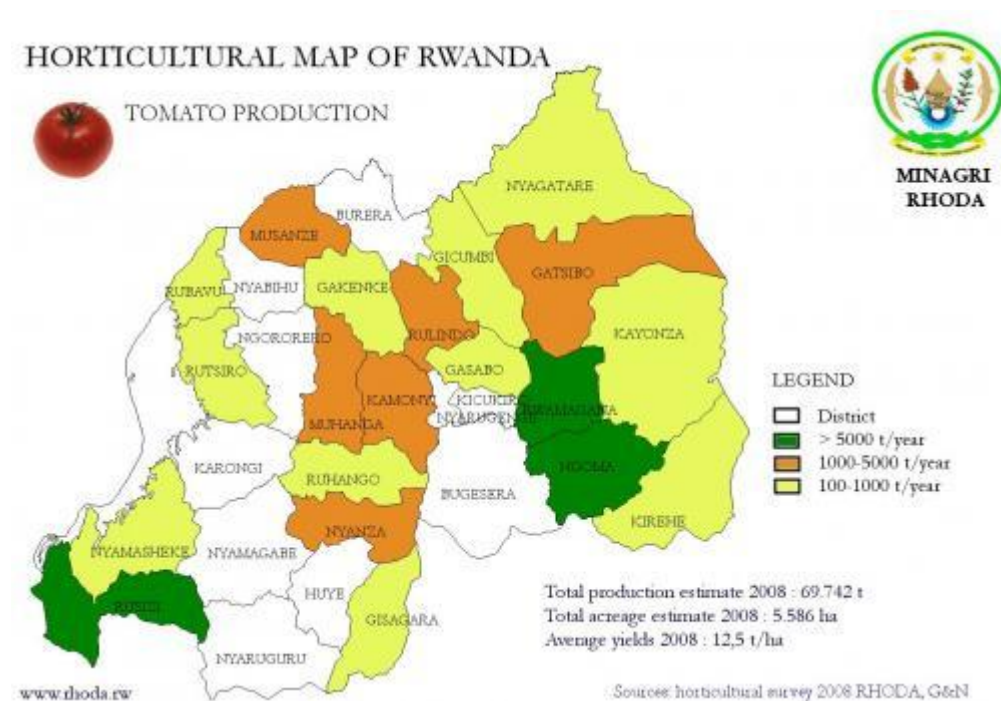
Most of the tomato farmers are small farmers producing for local markets. Bigger and more professional farmers sell their tomatoes to traders that will

look for partners such as supermarkets and hotels. There is even some export to Democratic Republic of the Congo.

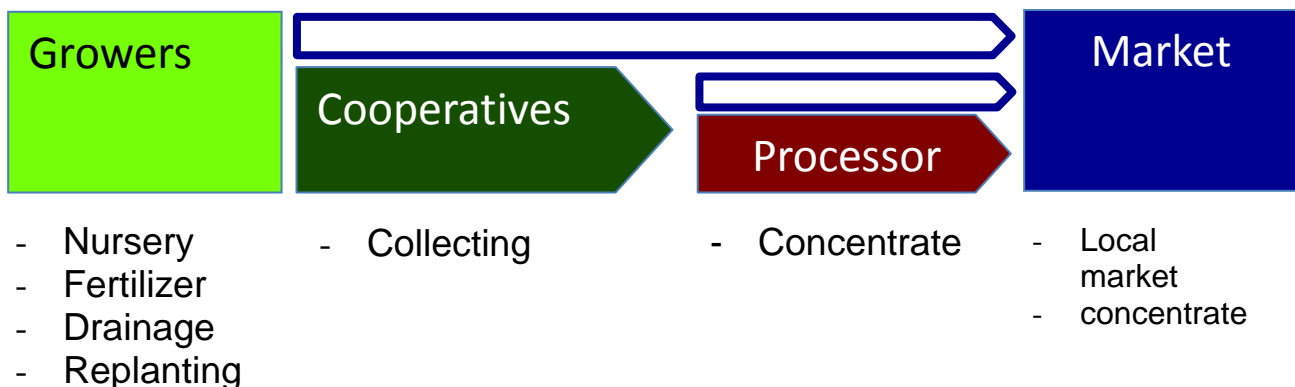
In Rwanda there is only one processor for tomatoes: Sorwatom. They make tomato extract for tomato paste, mostly for the local market in Rwanda.

Cooperatives that are exclusively engaged in tomato cultivation are not as common as it is in other crops. The benefit for the growers is not much because the small growers usually sell their product on the local market and the role of the single tomato processor in Rwanda is limited.

There are some associations that strive to make the agri sector a more profitable business by providing both training and capacity building support. They try to improve the production, find a market for their members produce and develop new technologies.

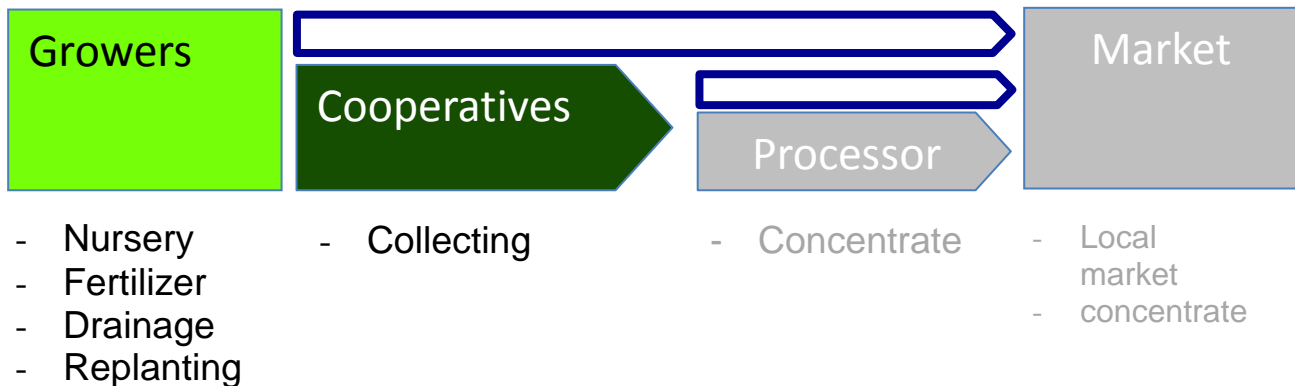


### 3. Tomato Value chain



The tomato value chain is in general very simple and short. Most of the small growers sell their tomatoes on the local market or to a trader who sells them on the domestic market (like supermarkets and hotels). Only in the Northern Province a few growers and traders export tomatoes to the Democratic Republic of the Congo. In Rwanda, there is only one processor. This processor makes tomato concentrate from fresh tomatoes. This tomato concentrate is used for tomato paste.

**a) Tomato grower / cooperatives**



The most common and traditional way of growing tomatoes is in the open field. Tomatoes need a lot of water but not too much, so mainly marshland is used for tomatoes.

The tomato season is dependent on the rain season. Farmers start planting their seeds when the rain starts (mostly August/September and some February/March). Three months later the harvest starts. This means that in December the markets are flooded with tomatoes and the price drops sharply. The months September and October are known for tomato scarcity and the prices are rising in these months. Tomatoes can be a real cash crop, farmers can make good money if they grow tomatoes in a professional way and the harvest goes well. However, there are a lot of diseases, the product is perishable and the climate (too much rain or sun) often affects the harvest negatively.

**Tomato planting/harvesting scheme**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | P |   |   | H | H | H | P |   |   | H | H | H | P |   |   | H | H | H | P |   |   | H | H |   |
| H | H | P |   |   | H | H | H | P |   |   | H | H | H | P |   |   | H | H | H | P |   |   | H | H |
| J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |   |

Year 1: Months 1-12 (J to D)

Year 2: Months 1-12 (J to D)

Cultivating the tomato crop once can hardly use machines. Only for ploughing the soil machines can be used. All the other activities are done by hand. For harvesting, baskets, bags or plastic buckets are needed. For transportation

growers rent a (pick up) truck. The total production costs are roughly RWF 130/kg. The average production in the open field for more serious growers is 20-25 tons per ha.

A new development is the use of greenhouses to grow tomatoes. This plastic greenhouses measure 8m x 15m or 8m x 20m and give the grower an opportunity to grow tomatoes professionally and year round. In greenhouses you can plant any time of the year. The planting schedule involves planting two times a year. The first harvest is after 3 months, harvest duration is, just as on open field, 3 months. In the greenhouses, the production can be as high as 1,25 kg per m<sup>2</sup> per week during the harvest period. In the greenhouses irrigation is available, so growers are not dependent on the rain season. The total production in greenhouses per year can be five times the production of the open field (125 tons / ha). Besides the improvement of the production quantities, the quality of tomatoes from greenhouses is much better. In greenhouses there is a system to uphold the tomato plants so they can grow faster and produce better quality. Greenhouses are totally closed with plastic or foreseen with insect nets to keep insects outside and decrease the chance of diseases. Greenhouses are the future!

Key issues in growing tomatoes are:

- Land / soil with enough, but not too much water
- Fertilizer (organic to improve soil structure and chemical)
- Pesticides
- Crop rotation

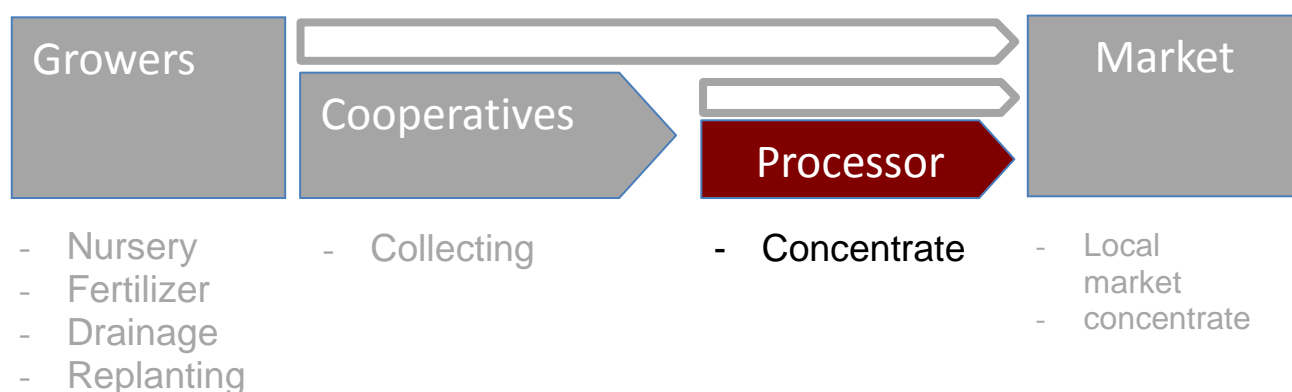
Key risks for growing tomatoes:

Tomatoes are very sensitive for diseases. The biggest risks in tomato production are fungus, soil bacteria, viruses and insects. The bacteria wilt (*Pseudomonas solanacearum*) is a very severe soil disease. In greenhouses it can be mitigated by planting the plants in bags that are put on the soil. Furthermore the mosaic virus is spread by insects. Those insects flourish in the dry seasons and are also by itself a threat for the tomato production.

- Main diseases are fungus, soil bacteria, tomato mosaic virus and insects (mostly in the dry season).
- Availability of water in the dry season.
- Quality of seeds
- Too much rain (diseases) and too much sun (harms the plant and the tomatoes).

The problem of too much water is mitigated by well-drained soil and the use of organic fertilizer to improve the soil structure. The best solution is to use closed greenhouses. But even then there are disease problems and crop rotation is needed to reduce the chances of diseases developing.

## b) Processing



There is just one tomato processor (Sorwatom) who produces tomato concentrate. The role of this company in the total value chain is limited. In August 2011 new management started and at this moment the company still has a problem with getting enough supply of tomatoes. In 2011 they needed / had capacity to process 4500 tons but only managed to process 1600 tons. For the season 2012 the plan is to process 6800 tons, but in the beginning of the season they already had a backlog.

Main supply season is November/December. Growers get a fixed price: 100 RWF/kg. This is a low price compared to the average market price and could be the main reason for the supply problem the company faces. Sorwatom works with 30 cooperatives in east Rwanda and near Kigali. The company does not have off take contracts with growers. For 1 kg of concentrate you need 7 kg of fresh tomatoes.

Sorwatom also has a problem with the quality of tomatoes supplied to them. The supply often contains bad and rotten tomatoes which decreases the quality of tomato paste.

Key issues in processing tomatoes are:

- Quality of management to manage the factory's capacity
- Quantity of supply
- Quality of supply

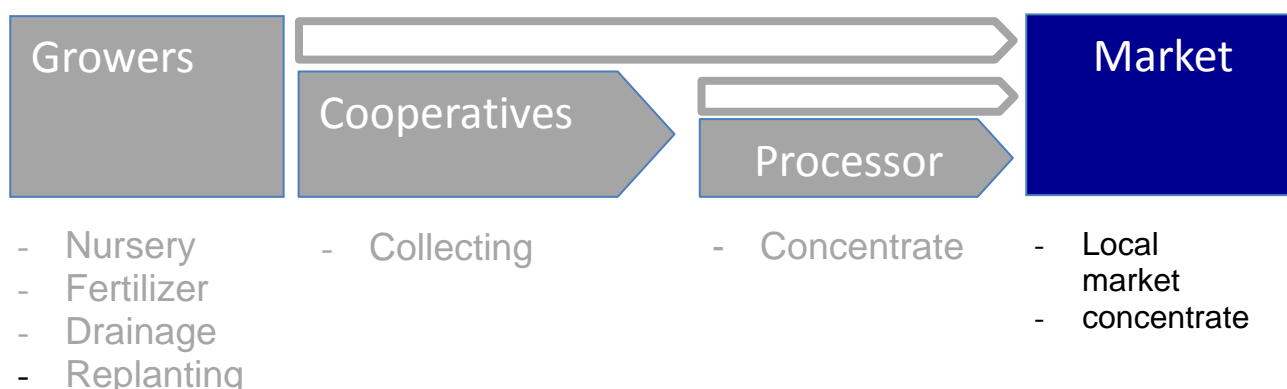
Key risks in processing tomatoes are:

- Lack of supply
- Quality of tomatoes

Sorwatom could work with off-take contracts and/or improve their purchase price so they are able to secure enough supply. To improve quality of supply they need better fruit selection, better handling and better transport. Currently Sorwatom starts to use a quality check.



### c) Market



The main market for Rwandan tomatoes is the domestic and local market. There is some export, especially from the north of Rwanda to the Democratic Republic of the Congo. Most of the farmers grow tomatoes on a small scale and sell their production on the local market. Some traders collect tomatoes from small scale growers and sell them in other parts of the country to supermarkets and hotels. These traders work on a small scale and don't work with contracts.

Over the past years the prices for tomatoes from the open field have been volatile, depending on region, season and quality and vary from RWF 200 / kg in the general harvest season around November and December to RWF 600 / kg in the price peak in September and October. The price for tomatoes from greenhouses are on average higher (RWF 400 - 1000 / kg) because the quality is better. The average price for greenhouse tomatoes is RWF 500 / kg. For up to date information on prices check markets and growers.

Key aspects of the market:

- Quality of the tomatoes
- Tomatoes are very vulnerable. It is very important that the tomatoes are handled with care.
- Transport (distance and opportunities to minimize damage)
- Availability in the dry season

Key risks in the tomato market are:

- Bad quality of tomatoes
- Too much supply in high season
- Price risk (e.g. supply, quality)

#### 4. Financing Needs

The financing opportunities in the tomato business are limited at this moment. Most of the farmers are small scale producers and sell directly to the local market. However, going forward, opportunities can arise when farmers organise themselves through cooperatives or associations, the linkages in the value chain become stronger (i.e. contract growing) and/or if BPR can link up with associations or other parties that strive to make the agri sector a more

profitable business. There is a draft agreement between Balton and BPR about the finance and supply of greenhouses to growers.

Some cooperatives sell their tomatoes to the only processor (Sorwatom). However, this does not happen on a big scale and at this moment there are no enforceable contracts that can work as collateral.

**a) Save for a Loan**

Small scale farmers continue to struggle for the finance. They often need some finance to increase the yield. Farmers are often required to borrow against collateral, which small scale farmers simply do not have. As a solution, BPR has developed a financing product: Save for a Loan, to provide small farmers a working capital facility. For more information read the product proposal: Agriculture Save for a loan.

**b) Input finance**

The needs for inputs in tomato production consist of seeds, fertilisers, pesticides and labour. At the moment, opportunities for input finance are limited because of the small scale of the individual growers. There is a limited degree of organisation of farmers and linkages within the value chain. Most farmers sell directly on the local market or to small traders. Furthermore, there is a high risks of diseases in the open field crop.

**c) Asset finance**

No assets are needed when growing tomatoes in the open field. The new development of growing tomatoes in greenhouses may change the asset finance need. It is important to keep this development in mind in the future. Financing greenhouses should be considered on the basis of the cash flow that will be generated and how secure this cash flow is. Greenhouses provide only limited value as collateral. However, one could consider obtaining title over the land if the land is owned by the farmer. Furthermore one can obtain security from other partners along the value chain.

At the processing factory level, asset finance can be required for buildings, equipment and vehicles. However, because of the history and the status of the only processor financing assets for the processor is not an interesting opportunity at the moment. This can change in future. Furthermore asset finance can also be an opportunity when new processors enter the market.

**d) Raw material collection finance**

There is no opportunity for collection finance, as tomatoes are mostly sold at the local market. Fruit collecting by cooperatives is not common because of the risk of damage and perishability of the tomatoes, and lack of linkages in the value chain (i.e. contract growing).



## 5. Strength, Weaknesses, Opportunities & Threats (“SWOT”)

The SWOT analysis of the tomato sector is summarised in the table below:

|  |  |
|--|--|
| <p><b><u>Strengths</u></b></p> <ul style="list-style-type: none"> <li>- Suitable soil &amp; climate for tomato production in Rwanda</li> <li>- All-year production is possible in greenhouses</li> <li>- Cost competitive</li> </ul>   | <p><b><u>Weaknesses</u></b></p> <ul style="list-style-type: none"> <li>- Only seasonal production in open field</li> <li>- Dependence on neighbouring countries and infrastructure for export market access</li> <li>- Dependence on weather conditions</li> <li>- Diseases can destroy the whole crop</li> <li>- Many growers are missing professionalism</li> <li>- Lots of small growers and lack of added value for cooperatives</li> <li>- Only one processor who doesn't perform well at the moment</li> </ul> |
| <p><b><u>Opportunities</u></b></p> <ul style="list-style-type: none"> <li>- Good market for tomatoes with better quality</li> <li>- Potential for tomato processing products with increased added value</li> <li>- Crop rotation leading to bigger plots for tomatoes</li> <li>- Possibility to increase production</li> <li>- Development of growing tomatoes in greenhouses</li> </ul> | <p><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>- New diseases</li> <li>- Import from neighbouring countries</li> </ul>  |

## 6. Risks

The financing opportunities in the tomato business are limited at this moment. When growers become more professional opportunities for input finance arise. Possibilities for asset finance can arise when more growers invest in greenhouses and financing opportunities arise when new processors enter the market.

The tables below summarises the main risks and mitigants for future financing possibilities.

### a) **Save for a loan**

The save for a loan system is fully automatic and there is no need to explain the risks and mitigants next to the normal precautions. For more details see the product description.

### b) **Input Finance**

| <b>Risk</b> | <b>Description</b>  | <b>Mitigants</b>   |
|-------------|---|--|
| Usage       | <ul style="list-style-type: none"> <li>- Risk that the funding is not used in the agreed manner</li> <li>- Risk that the inputs are subsequently sold to other users</li> </ul>   | <ul style="list-style-type: none"> <li>- Financing only trustworthy and professional clients</li> <li>- Direct payment to the suppliers of inputs</li> </ul>   |
| performance | <ul style="list-style-type: none"> <li>- Risk that plantation is not managed correctly (fertiliser is not applied correctly and in a timely manner) and does not achieve expected yields and quality levels</li> <li>- Risk that the factory is unable to absorb production and therefore the farmer is not able to sell its tomatoes to the factory</li> <li>- Climate Risk</li> </ul> | <ul style="list-style-type: none"> <li>- Provide input finance to farmers with a good track record.</li> <li>- Assume conservative performance figures based on track record of past years.</li> <li>- Make sure there is an alternative market in case the factory is not able to buy the tomatoes.</li> <li>- Input insurance</li> </ul> |
| Market      | <ul style="list-style-type: none"> <li>- Risk that the grower is unable to sell its tomatoes</li> </ul>   | <ul style="list-style-type: none"> <li>- Off-take agreement between grower or cooperative and trader.</li> <li>- Member of a cooperative and proven success of this cooperative to link growers and market</li> <li>- Possibility to sell to other buyers</li> </ul>   |
| Price       | <ul style="list-style-type: none"> <li>- Risk that the price of fresh tomatoes is lower than expected</li> </ul>  | <ul style="list-style-type: none"> <li>- Fixed price or minimum price contracts</li> <li>- Growers should produce in Sept-Oct (tomato scarcity)</li> <li>- Produce better quality</li> </ul>   |
| Payment     | <ul style="list-style-type: none"> <li>- Risk that the financing is not</li> </ul>  | <ul style="list-style-type: none"> <li>- Repayment should be on basis</li> </ul>   |

|  |                  |   |
|--|------------------|---|
|  | repaid as agreed | of payments of sold tomatoes and possible can be linked to an off-take contract.<br>- In case of an off-take contract, payments should be made on a BPR account of the client |
|--|------------------|---|

**b) Asset Finance**

Investment finance for greenhouses.

| <b>Risk</b> | <b>Description</b>  | <b>Mitigants</b>  |
|-------------|---|---|
| Usage       | - Risk that financing is not used for intended investments  | - Financing max 80% of the invoice of the assets.<br>- Direct payment to the supplier of the assets |
| Performance | - Risk that the acquired equipment does not enable grower to reach the planned production targets | - Track record of production performance of other growers with greenhouses                          |
| Market      | - Risk that the grower / processor is unable to sell its produce                                  | - Off-take agreement between cooperative/ processor and off-taker.                                  |
| Price       | - Risk that the price of tomatoes is lower than expected  | - Producing in periods of lower supply (Sep – Oct) at the market<br>- Produce better quality        |
| Payment     | - Risk that off-taker fails to pay or payment is not used to repay financing                      | - Acceptable level of sales revenues should transit through BPR account.                            |