



# SDG Partnership facility (SDGP) subsidy SDGP 2019 Project Proposal Annex 1 to the application

**S**ustainable **C**itrus **C**hain **E**mpow**E**ring and **D**eveloping  
**S**mallholders in the Mekong Delta (**SUCCEEDS**)



## 1. General project information

<b>Project title:</b>	<b>Sustainable Citrus Chain Empowering and Developing Smallholders in the Mekong Delta (SUCCEEDS)</b>		
<b>Partnership</b>	<b>Organisation name</b>	<b>Type</b>	<b>Legally based in</b>
<b>Lead partner</b>	Kloosterboer Investments b.v.	Company	Netherlands
<b>Partner 2</b>	The Fruit Republic	Company	Vietnam
<b>Partner 3</b>	Ben Luc District People's Committee	Public	Vietnam
<b>Partner 4</b>	Rabo Foundation	NGO	Netherlands
<b>Partner 5</b>	Groen Agro Control b.v.	Company	Netherlands
<b>Partner 6</b>	Can Tho University	Knowledge Institute	Vietnam
<b>Project location(s):</b>	Vietnam, the Mekong Delta		
<b>SDGP theme:</b> (chose one theme)	<input type="checkbox"/> Nutrition value <input checked="" type="checkbox"/> Efficient value chains <input type="checkbox"/> Sustainable and climate-resilient food production systems <input type="checkbox"/> Better work and higher income for youth and women		
<b>Project purpose</b>	<ul style="list-style-type: none"> <li>The project aims to make the citrus sector of the Mekong Delta more sustainable, more efficient, and more profitable for the 150,000 citrus smallholders. This goal will be achieved by developing a sustainable citrus value chain, in which farmers will be contracted and supported, through a private sector extension system, fertilizer advisory service, access to virus free citrus seedlings and access to a finance program, in order to increase their incomes by least 50%. These interventions will reduce the negative impacts of agrochemicals on the environment and human health, as well as reduce the use of surface and ground water.</li> </ul>		
<b>Project key outcomes and outputs</b>  <i>As requested in the concept note we organized our key outcomes and outputs per SDGP program indicator</i>	<p><b>Project key outcomes</b></p> <p><i>Promoting growth in the agricultural and fisheries sectors (SDGP indicator)</i></p> <ul style="list-style-type: none"> <li>Over the project period generate a total value of €51 million in citrus production for smallholder farmers:             <ul style="list-style-type: none"> <li>TFR contract citrus farmers generate additional production value of €35 mln over the total project period</li> <li>Prevented yield losses of €16 mln from project certified virus free citrus trees sold to 20,000 farmers over the total project period.</li> </ul> </li> <li>Supply the world market with 2.5 mln kg processed citrus, adding value to 7.5 mln kg of low-quality citrus fruit that would otherwise be destroyed.</li> <li>Develop track record for access to finance model with 200 smallholder farmers, allowing TFR to upscale to more farmers, and be an example for other agriculture companies operating in Vietnam</li> </ul> <p><i>Improving working conditions and raising efficiency (better work, higher incomes and increased production) (SDGP indicator)</i></p> <ul style="list-style-type: none"> <li>Increased the net farm income per ha of TFR contract farmers by at least 50% compared to the farm income per ha which they had before they joined the TFR value chain.</li> <li>By the end of the project period, the number of directly employed persons depending on the developed TFR value chain for citrus, reaches 5,000 persons, of which at least 50% are women.</li> <li>The contract farmers and their workers, and all TFR operations will be compliant with social standards of GRASP of GLOBALG.A.P.</li> </ul>		

	<p><i>Creating environmentally responsible and sustainable food chains (SDGP indicator)</i></p> <ul style="list-style-type: none"> <li>• 10,000 citrus farmers have access to a tested and extensively proven production protocol for sustainable and economically efficient citrus production in the Mekong Delta through 3 citrus training centres</li> <li>• 500 GLOBALG.A.P. certified TFR contract farmers have decreased negative environmental effects from the misuse of agro-chemicals and overuse of water in citrus farming by at least 50% compared to normal practices</li> <li>• 25,000 kg of empty agro-chemical packaging materials collected and incinerated by the Long An pesticide waste collection system during the project period</li> <li>• National pesticide laws enforced at Long An province level, setting an example for other provinces</li> </ul> <p><i>Increasing private investment (SDGP indicator)</i></p> <ul style="list-style-type: none"> <li>• Investment by Kloosterboer and TFR</li> <li>• 200 loans disbursed through the access to finance fund established for smallholder citrus farmers</li> <li>• 5 citrus seedlings nurseries and the TFR demo nursery invest in professionalizing their nurseries to provide certified virus free citrus seedlings</li> <li>• Large number of national and local public and private actors inspired by the SUCCEEDS PPP; becomes an example for other agriculture subsectors in Vietnam</li> </ul> <p><i>Reducing malnutrition and undernourishment (SDGP indicator)</i></p> <ul style="list-style-type: none"> <li>• Successfully supply the domestic and international market with top quality certified sustainable, healthy and food safe citrus with more than 50 mln kg in the project period</li> <li>• Stimulated the consumption among 1,000,000 domestic consumers of healthy, vitamin and fibre rich, citrus fruit</li> </ul>
<p><b>Project summary</b></p>	<p>The project aims to make the citrus sector of the Mekong Delta more efficient, more sustainable, and more profitable for 150,000 citrus smallholders of Vietnam. These objectives contribute to the MoU signed between the Netherlands and Vietnam, wherein both countries will collaborate to support a transition towards sustainable agriculture in the Mekong Delta. These goals will be achieved by developing a sustainable citrus value chain, in which:</p> <ul style="list-style-type: none"> <li>• 500 farmers will be contracted and supported through a private sector extension system, fertilizer advisory services, access to virus free citrus seedlings and an access to finance program. These services will help the farmers to improve their productivity and obtain higher prices, by producing a higher percentage of class one citrus fruits that comply with and are certified in accordance with the highest international food safety standards, at the right period of the year.</li> <li>• The total increase in additional revenue will be an estimated €35 mln.</li> <li>• The number of directly employed persons depending on the developed value chain for citrus, will reach 5,000 persons</li> <li>• The certified virus free citrus nurseries will produce seedlings that will supply 20,000 farmers. The total value of prevented yield loss of these farmers will be €16 mln over the project period.</li> <li>• The project will have tested and have an extensively proven production protocol for sustainable and economically efficient citrus production in the Mekong Delta, which will be made available to 10,000 citrus farmers, visiting the farmer field days at 3 citrus training centres.</li> </ul>

	<ul style="list-style-type: none"> <li>• Under the production protocol farmers will reduce the negative environmental effects from the misuse of agro-chemicals and overuse of water in citrus farming by at least 50% compared to normal practices.</li> <li>• Cooperation with the Long An provincial government will result in a pesticide waste collection system, which collects and incinerate 25,000 kg of empty agro-chemical packaging materials during the project period.</li> <li>• Cooperation will also result in national pesticide laws being enforced at the provincial level.</li> </ul> <p>These measures will result in the project successfully supplying the domestic and international market with 20 mln kg of top quality, certified sustainable, healthy and food safe citrus over the project period.</p>		
<b>Project duration</b>	<b>Start date:</b> 1-6-2020	<b>Final date:</b> 31-5-2025	
<b>Project budget</b>	€ 3,988,015	<b>Requested subsidy</b>	€ 1,994,008

## 2. Project intervention and results

### 2.1. Problem and context analysis

#### 2.1.1 Project context

##### **Reduction in poverty in Vietnam, but smallholder farming remains a struggle**

The decline of the poverty rate in Vietnam from the mid-nineties till 2010 was spectacular and Vietnam has achieved international recognition for this success. The poverty headcount fell from 58 percent in 1995 to 20 percent in 2010. Agriculture played a very important role in this decline. The shift from a government-controlled economy to a market economy, allowing farmers to own their land and decide which crops they would grow, resulted in the spectacular rise of Vietnam as a global agriculture powerhouse. For many agriculture products, Vietnam became a global top five producer and exporter based on volumes, for example with crops such as rice, pepper, coffee, cashew nuts, frozen fish fillets and shrimp.

The fruit sector also played an important role in this transition. When farmers convert from rice to fruit farming, their income increases on average five-fold. This explains why the area cultivated for fruits went up from just 150,000 ha in the mid-nineties to 850,000 hectares today. Out of this total fruit area, 300,000 hectares (35%) are located in the Mekong Delta, and 136,000 hectares are planted with citrus. Most of these fruits were then sold in the domestic market, where an increasingly affluent domestic population started to increase its fruit consumption. This shift from rice farming to fruit farming has helped hundreds of thousands of farmers rise above the poverty line. While this shift is impressive, the poverty line in Vietnam is defined by the World Bank and the Government Statistics Office (GSO) of Vietnam as a monthly consumption per person of VND 969,167 or € 34, a rate below even the \$2 per day typically used by the World Bank to define the "extreme poor", thus even for those smallholder farmers no longer below the line there is ample room to improve income and living conditions.

##### **The unsustainable commodity trap**

Shifting from rice to fruit farming is not enough anymore. First of all, most land suitable for fruit farming in the Mekong Delta is already being used for fruit farming. In fact, climate change will further reduce the amount of land available for fruit farming. Secondly, the income gains which farmers achieved from switching from rice to citrus are coming under threat, as farmers have focussed too much on short term productivity gains, mostly through an overuse of agro-chemicals. This is resulting in all kinds of production problems, such as pests becoming resistance to pesticides, or soils having lost their organic matter and other important nutritional elements because farmers have not replaced them, focussing instead on the use of urea (nitrogen). All these issues lead to less healthy trees and a shorter economic life cycle of the fruit tree. If the more than 150,000 citrus farmer smallholder families in the Mekong Delta, do not shift their farming system towards a more sustainable production system, and if they are not able to produce higher quality and safe fruits, they will stay trapped into a commodity business with low prices and decreasing yields, threatening to lose all the progress that has been made in the past 20-30 years.

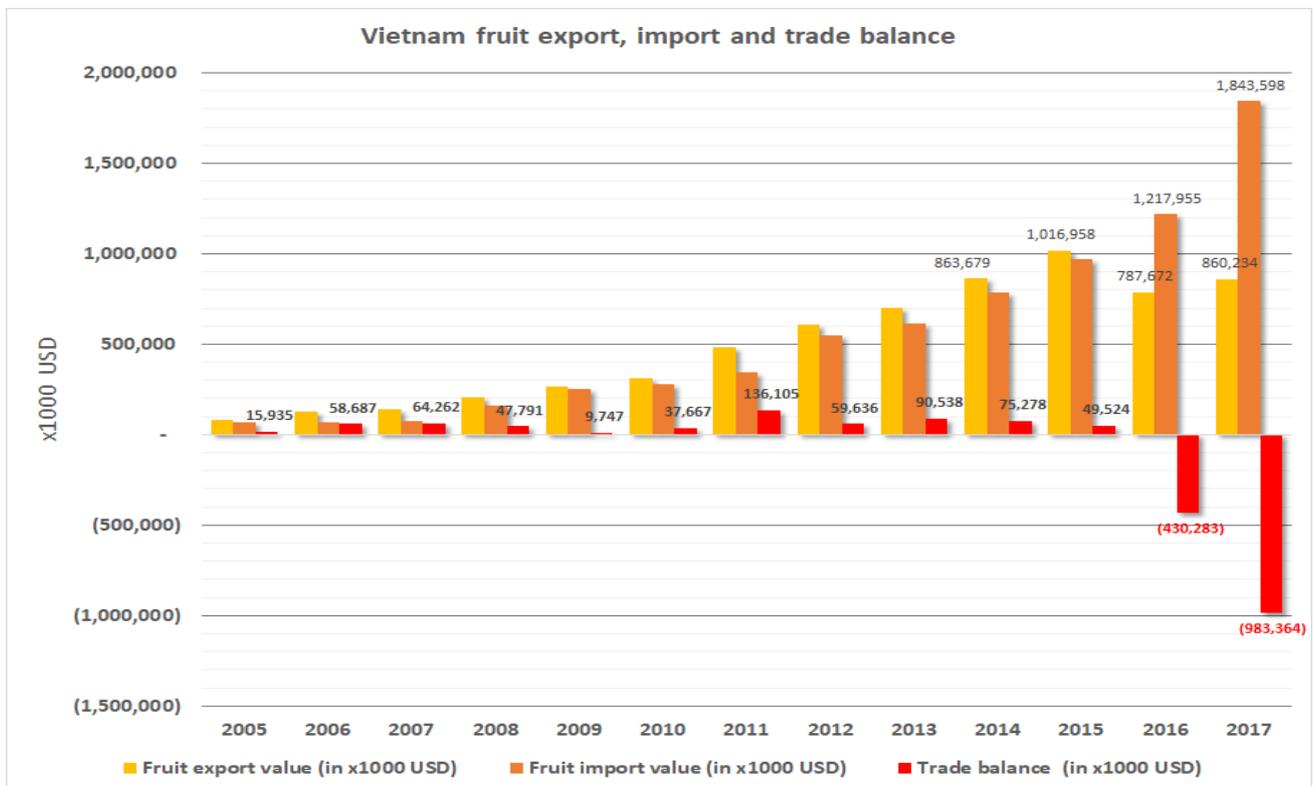
This is not only happening in the citrus sector, but in the whole Vietnamese agriculture sector. This is very clearly summarized in the influential report (2016) by the World Bank, titled "Transforming Vietnamese Agriculture: Gaining more from less". The World Bank concludes: "Vietnam's agricultural sector needs to generate more from less. That is, it must generate more economic value (and farmer and consumer welfare) using less natural and human capital and less harmful intermediate inputs. Future growth can rely primarily on increased efficiency, innovation, diversification, and value-addition."

This is exactly what this project proposal is focusing on: an efficient, profitable and sustainable value chain for citrus.

**Low margin export market destination and losing the domestic market**

How hard it is to make this change can be well illustrated with trade data from the Vietnamese fruit sector. Although the Vietnamese media often reports about the successful exports of the fruit sector, correct import and export fruit data paint a very different figure. Figure 1 clearly illustrates that despite growing fresh fruit exports, Vietnam has a fast-growing negative trade balance in fruit, importing more than it exports.

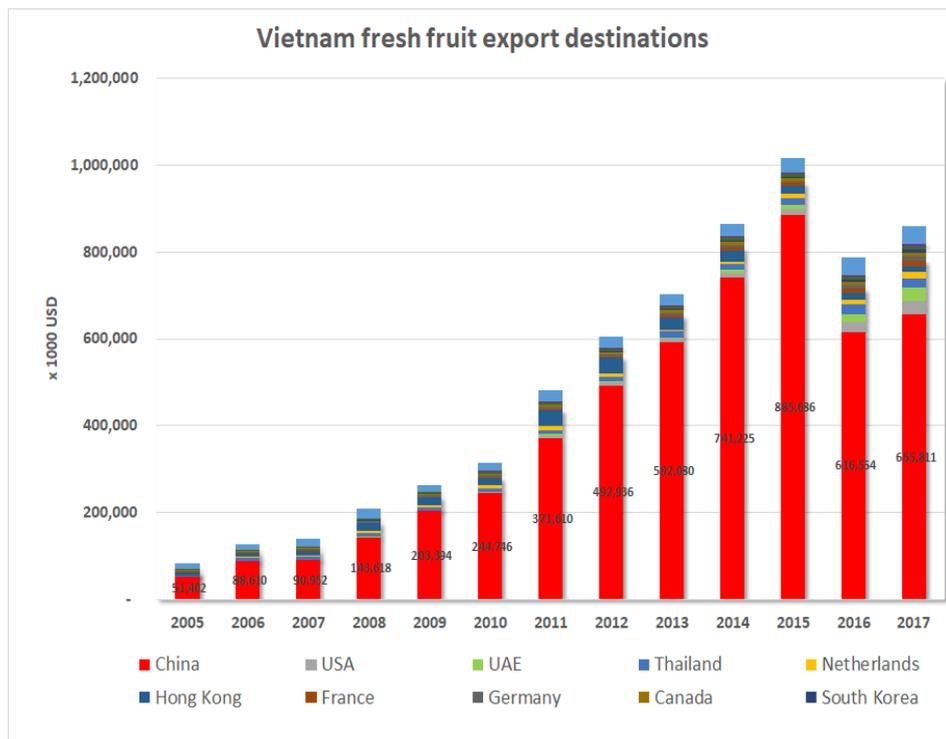
Figure 1 Vietnamese fresh fruit trade balance, export and import value



Source: ICT Trademap, WTO

As can be seen in Figure 2, the Chinese market is by far the most important Vietnamese fresh fruit export destination, with 76% of all fruit exports. The 2<sup>nd</sup> market (USA), receives less than 4% of the Vietnamese fresh fruit exports. Although the Chinese market is interesting from a volume perspective, the prices which exporters and farmers can get are relatively low.

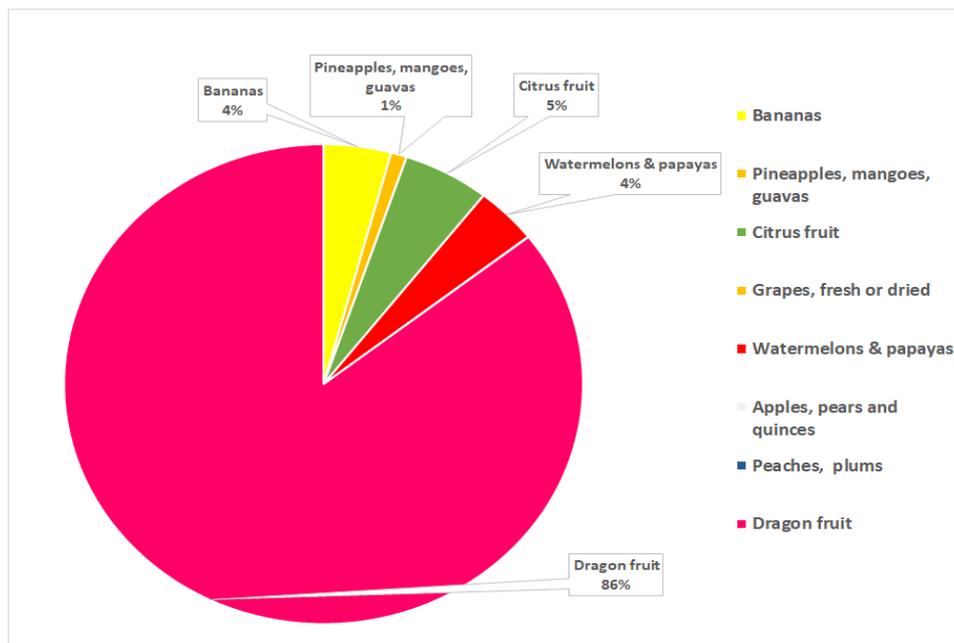
Figure 2 Vietnamese fresh fruit export destinations by US\$ per country



Source: ICT Trademap, WTO

If we look at Figure 2 and Figure 3, it is clear that Vietnamese fresh fruit exports mostly go to China (>90%) and mostly depends (for 86%) on the export of dragon fruit (pitahaya). The dragon fruits are mostly going to China. The second most important export fruit is citrus (just 5%) and bananas. Citrus is mostly going to the Middle East and Europe, while the bananas are mostly shipped off to China.

Figure 3 Share of different fruits in total fruit export value



Source: ICT Trademap, WTO

In fact the Vietnamese export fruit sector can be summarized with just 3 words: Pitahaya to China. The main reason to focus on the Chinese market, despite the low prices, is that their requirements for pesticide residues are lower and less strictly enforced than higher value markets such as Europe, the USA and Japan.

In these markets, strict controls on chemical residues, required certifications such as GLOBALG.A.P. and evidence of fair labour practices make it very hard for Vietnamese farmers and exporters to compete.

This is clearly illustrated by the summary report of results of pesticide residue tests of fruit and vegetables from the Dutch NVWA. Vietnam is the 5<sup>th</sup> worst performer regarding pesticide residues. The 16% of samples with violations means that for a Vietnamese exporter one in every of his six shipments to the Netherlands will be rejected and destroyed.

Figure 4 Results of pesticide residue tests of fruit and vegetables sampled by the NVWA

Country	Number of samples	% above MRL	Average no of Ais found per sample
Thailand	220	26.4	1.5
Turkey	115	22.6	5.1
Suriname	162	19.1	1.5
China	298	16.1	3.8
<b>Vietnam</b>	<b>336</b>	<b>15.8</b>	<b>1.6</b>
Colombia	54	13	2
Egypt	291	12.7	2.8
Dominican Republic	214	11.7	2.1
Unknown	149	10.1	2.1
United States	40	10	2.9
Kenya	854	6.8	2.3
Mexico	51	5.9	2.3
Morocco	191	5.2	2.8
Israel	80	3.8	2.4
India	189	3.7	4
Brazil	244	3.3	2.6
South Africa	232	3	3
Italy	112	2.7	2.2
Peru	360	2.5	3.4
France	41	2.4	1.8
Zimbabwe	44	2.3	1.6
Belgium	54	1.9	3.2
Spain	659	1.4	2.3
Netherlands	1,296	1.1	1.7
Costa Rica	96	1	1.4
Chili	115	0.9	3.4
<b>Total named countries</b>	<b>6,497</b>	<b>6.8</b>	<b>2.4</b>
<b>Total all countries</b>	<b>6,974</b>	<b>7.0</b>	<b>2.4</b>

Source: NVWA, 2017

The screenshot shows a news article from Viet Nam News, dated August 15, 2018. The article title is "Việt Nam struggles to export fruit to demanding markets". The sub-headline reads: "Việt Nam has exported its fruit to high-standard markets in recent years, such as the US, the European Union and Japan, but increasing export volume is no easy task." The article includes a photo of a smiling woman in a green hat holding a large basket of red fruit. The text below the photo states: "HÀ NỘI – Việt Nam has exported its fruit to high-standard markets in recent years, such as the US, the European Union and Japan, but increasing export volume is no easy task. Vietnamese fruit face competition in quality, design and price with fruit from other exporting countries, according to experts." The source is cited as "Source Vietnam News, August 2018".

Source Vietnam News, August 2018

### **Reaction of Vietnamese policy makers**

Vietnamese policy makers are very well aware that the biggest issue for both export and the domestic fruit markets is the control of agro-chemicals and they are taking steps to restrict use. Unfortunately, the way the Vietnamese government is doing this, will achieve the opposite effect.

One target set is to cut down the list of registered pesticides by 30%, from a staggering 6,000 registered products. Through circular number 21/2015/TT-BNNPTNT, the Vietnamese government wants to eliminate all pesticides with a certain toxicity level for fruit, vegetables and tea. These toxicity levels are very general, and Vietnam would be the only country in the world to introduce this kind of rule.

The big issue is that for other crops these pesticides will still be allowed. Thus, if a product is forbidden for fruit but registered for rice then it will still be available within Vietnam's 30,000 pesticide shops and can be bought by each of its 24 million farmers. The farmer is unlikely to know for which crop the product is officially registered and will use it for any crop. However, GLOBALG.A.P. requires compliance with a country's legislation, so if a product is not registered in a country for a specific fruit or vegetable, GLOBALG.A.P. will forbid its use. Government and the private sector need to work together to address this issue so that a plan can be implemented to reduce the number of registered pesticides in a way that improves compliance and market access.

Under Government Resolution 120, published in October 2017, Vietnam has clearly expressed its ambition to develop a commercially oriented agricultural sector that can compete on productivity and quality. This pro agri-business stance has resulted in support for the development of corporate farms of tens of thousands of hectares owned by large real estate-based companies and financed by domestic banks, which are partly state-owned. However, these early efforts have illustrated the challenges of establishing commercial agriculture through a top-down approach, as significant losses have occurred in many of these new ventures.

### **Developing a professional citrus fruit sector**

The approach of the SUCCEEDS project reverses this dynamic by taking a bottom-up approach. Investment focuses on developing farmer capacities through a very strong extension and farmer training program, as well as by providing farmers with new insights through a robust and easy to use software data system that collects, stores, analyses and reports farm management data. Farmers are incentivized to become more professional, because they are linked to high value markets that reward them for better quality and higher yields.

### **Control of pesticides to improve the competitiveness of Vietnamese agricultural products**

Update: November, 28/2018 - 19:00



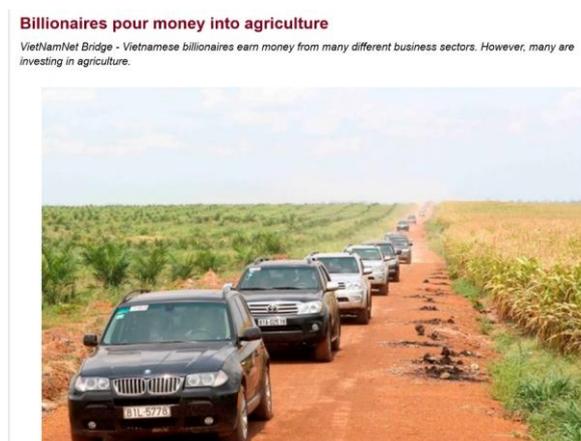
Vietnamese farmers at work. The country controls pesticide to improve the competitiveness of exported agricultural products.— VNA/VNS Photo

**Viet Nam News** HÀ NỘI — The use of pesticides in agriculture production should be properly considered and applied, said Jason Sandahi, an expert from the US Department of Agriculture, at a seminar in Hà Nội on Tuesday.

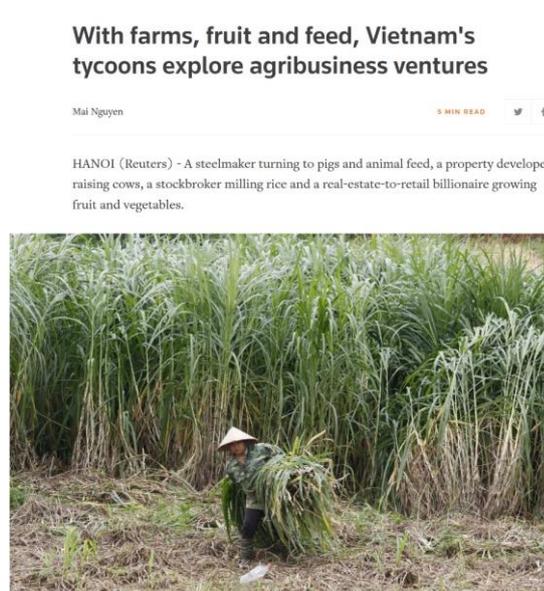
The seminar, titled "Driving Việt Nam Agricultural Exports and Food Safety: the Role of Crop Protection," was organised by Ministry of Agriculture and Rural Development (MARD) and (Life Asia).

Source: Vietnam News, November 2018

Figure 5 News articles about Vietnamese billionaires moving into agriculture obtaining large areas of land



Source: VietnamNet, 2016



Source: Reuters, 2015

### 2.1.2 Problem analysis

As the average farm size of citrus farmers in the Mekong Delta is just one hectare, the yield per hectare and the price which they obtain for their fruit, are crucial determinants of their farm income. To increase the productivity and increase the price a farmer receives for its citrus fruit, the project will address the following problems:

- **Low productivity and short economic life span of citrus trees caused by:**
  - Non-availability of certified virus-free citrus seedlings
    - Citrus greening disease (huang long bing disease) leads to yield reductions of 40% or more. Trees can be bred to be virus-free, but few fruit tree nurseries are able to provide virus-free citrus seedlings.
    - It is estimated that currently 70% of citrus farmers buy seedlings from non-certified nurseries. As a result, 30% of trees typically die within the first three years
  - Lack of knowledge
    - Twenty years ago, most fruit farmers were producing rice. Therefore, farmers had very little knowledge when they started with citrus farming. They planted far too many fruit trees per hectare and had no knowledge on how to prune fruit trees. As a result of this, productivity and the quality (percentage of class 1 fruits) are both low.
    - Research and extension on citrus farming has been almost non-existent in Vietnam, thus farmers have received little support in developing sustainable productivity gains.
    - The lack of good orchard practices and proper nutrient management has shortened the economic life span of citrus trees. For example, citrus farmers in Long An Province already need to replant their citrus trees after seven years, compared with a lifespan of 15 to 25 years in other areas of the world.
- **Current citrus production peaks in the low demand period**
  - Most citrus trees produce their largest volumes at the height of the rainy season (Sept-October), when both the domestic and export market have a low demand for citrus. This results in low prices for farmers.
  - But there is also a very big opportunity in the period March-July, when both the domestic and export markets have a high demand for citrus fruits.
- **Non-compliance with international food safety standards**
  - Most fruit produced in Vietnam for both the domestic and export market does not comply with international food safety standards. Pesticide residue limits are violated for a majority of the fruit.

- No reliable Vietnamese government data are available, as hardly any pesticide residue testing is being done. But a good indicator of the seriousness of the situation, are the results of residue testing by the EU on fruit and vegetables exported from Vietnam to the EU. In 2014 for example, the non-compliance rate was 40.8% of all the samples taken. A recent audit in Vietnam by the EU DG for Health and Food Safety with the aim to evaluate controls of pesticides in food of plant origin intended for export to the EU, concluded that: "... *no effective pesticide control system for food exported to the EU is in place, including those established by the EU.... Since the previous audit in 2014, very little progress has been made, and the recommendations had not been satisfactorily addressed*".
- **Commodity**
  - The current domestic market for citrus is a commodity market, in which an orange is an orange, and there is a sea of sameness. Vietnamese consumers are very concerned about food safety issues, but so far this concern mostly focussed on vegetables. People believe that citrus fruits have less food safety risks, as they are peeled before consumption. Domestic consumers are not yet willing to pay better prices for safe citrus.
  - Within the export market, Vietnam needs to compete, with cheap and good quality citrus fruits from Brazil, Mexico, South Africa, Spain, USA, and Australia. These fruits are mostly produced on very large corporate farms able to offer consistent quality.
- **Pollution effects of fruit farming**
  - There has been no research quantifying the pollution effects of fruit farming in the Mekong Delta, but there are clearly two key issues that are prevalent in farming in the Delta, whether it be rice or citrus:
    - **Overfertilization:** it has been estimated that for rice production in the Mekong Delta fertilizers are applied at rates which largely exceed the levels recommended to maximize either yields or profits. Most rice farmers have been found to apply fertilizers about 20 to 30 percent above the recommended levels. It is estimated that US\$150 million per year is wasted on this overuse in rice farming in the Mekong delta alone (Nguyen Tin Hong, 2017).
    - **Overuse of pesticides:** Many pesticide residues, even banned pesticides have been detected with exceeded limits in soil, water and even drinking water sources (surface, ground water) in the Mekong delta (Sebesvari et al., 2012; Toan et al., 2013; Wilbers 2014; Chau et al., 2015). That these residues are impacting people was demonstrated in a study conducted by Dasgupta et al. (2005), where pesticide residues were detected in the blood of farmers participating in the study. The incidence of poisoning ranged from low acute to high acute poisoning, with 21% of the studied farmers having chronic poisoning levels.
- **Climate change and the Mekong Delta**
  - Over the past 25 years, groundwater exploitation in the Mekong Delta has increased dramatically, mainly through bad farming habits and increasing urbanization in the delta. The delta sank on average with 18 cm. Average rates currently amount to 1.1 cm yr<sup>-1</sup>, with some areas subsiding over 2.5 cm yr<sup>-1</sup>, outpacing global sea level rise almost by an order of magnitude. If nothing is done for the groundwater demand in the Delta, the current rates are likely to increase in the near future<sup>1</sup>.
- **Access to finance**
  - Agricultural finance in Vietnam remains a bottleneck for many smallholder farmers with two main issues preventing farmers from being able tap into the financial sector. Product design is not always appropriate for the needs of farmers, due to lack of understanding of their business model, and barriers to entry are high, due to heavy collateral requirements and lengthy application processes. These constraints raise the risk of lending and prevent farmers from investing more in their farms.

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<sup>1</sup> Miinderhout P.S.J, G.Erkens, V.H. Pham and E. Stouthamer. Impacts of 25 years of groundwater extraction on subsidence in the Mekong delta, Vietnam. Environmental Research Letters, 12(6):064006, 2017

Figure 6 Pictures of issues in Vietnam and how it should be (on the right)

Nursery in Vietnam, seedlings already infected



Nursery in South Africa, under a nethouse



Wrong orchard setup in the Mekong Delta



How the spacing in a citrus orchard should be



### **2.1.3 Public Private Partnerships**

The cooperation in a PPP is crucial and needs to happen at both national and provincial level. At the provincial level the local government can play an important role in developing an enabling environment for TFR's contract farmers:

- Ensure that all the national pesticide legislation is being enforced in the pesticide retail shops in the province. If the farmers can only find legal products in the shops, then one of the root causes of a lot of agro-chemical issues will be addressed.
- For TFR to effectively manage large number of smallholders, TFR will organize the farmers in groups, so farmers can assist each other in complying with all requirements. The whole group will be responsible for the agrochemical use of every group member. The plant protection department of the local government will support TFR in this process by joining the farmer group meetings regularly to provide advice and support in remaining compliant.
- According to the GLOBALG.A.P. standard, empty pesticide packaging materials need to be collected and incinerated at very high temperatures. Individual farmers are not able to do this, therefore the local government will setup a collection system and organize the proper incineration of the empty packaging materials.
- The provincial government is responsible for officially auditing and certifying fruit tree nurseries for being able to supply virus free tree seedlings. After the intensive training programs of the nurseries has been finalized, the province will audit the nurseries annually to ensure they comply with the national nursery standard and regulations.

At the national level, the PPP cooperation is crucial to deal with the following problems and opportunities:

- The earlier mentioned circular number 21/2015/TT-BNNPTNT, which aims to reduce the number of registered pesticides by 30% will make it much harder for fruit companies and farmers to become GLOBALG.A.P. certified, neither will it effectively reduce the amount of harmful agro-chemical used. Through a dialogue between national level policy makers and the private sector, alternative interventions can be developed in order to achieve the goal of the Vietnamese prime minister to reduce the number of pesticide registrations in Vietnam, but without harming the possibilities of farmers and companies to become GLOBALG.A.P. certified
- Market access agreements have not been made with countries such as Thailand, Indonesia, Japan, Korea, Australia, and New Zealand, hindering export opportunities in the Asian region for Vietnamese citrus. The private sector and the Vietnamese trade negotiation team can work together together to open up these markets, which would provide further incentive for farmers to improve quality in order to address the phyto-sanitary restrictions of these high-value markets.

The project will facilitate this process at the national level through national citrus fruit dialogues, held through the "Partnership for Sustainable Agriculture (PSAV<sup>2</sup>)" platform, of which TFR is a member.

## **2.2 Project objective and intervention strategy**

### **2.2.1 Aim and intervention strategy**

The project aims to increase the income of the 150,000 smallholder citrus farmers in the Mekong Delta, through more efficient and more sustainable farming practices. This means that farm income will increase by least 50%, while at the same time, the negative impacts of agrochemical use on water quality, surface and ground water<sup>3</sup> will be reduced significantly.

This goal will be achieved by including citrus smallholders in a global and domestic citrus value chain, which will offer a price incentive to smallholders who are able to comply with all requirements. Farmers will be contracted and have a market for their fruits, with a guaranteed minimum price, so that they can focus on professionalising their farming.

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<sup>2</sup> PSAV is a platform for private public sector cooperation in agriculture, setup by the Vietnamese Ministry of Agriculture and Rural Development. PSAV has several different working groups, of which the fruit and vegetable working group and the agro-chemical working groups are the most relevant for TFR and this project.

<sup>3</sup> The use of ground water is a key factor in land subsidence in the Mekong Delta.

For smallholder farmers to become included of this global and domestic value chain, the project will develop a farmer advisory service as an embedded service of the contract farming offered by The Fruit Republic. This extension team will train farmers to comply with all required standards, monitor the implementation and coach farmers on the job. The extension team will be supported in this process by:

- Two full time international citrus production specialists. International specialists will be based in Can Tho and employed by The Fruit Republic for a period of 4 years. Over this period, they will be responsible for: continuous coaching and development of a team of 50 extensionists; professionalizing nurseries; and developing 3 citrus training centres and demo farms. These experienced specialists will cooperate in this process with Can Tho university to develop Vietnamese training materials and courses which can be used for both extension staff, farmers and students.
- Groen Agro Control, a leading Dutch laboratory. Groen Agro will develop a fertilizer recommendation laboratory service. This will allow the extension teams to provide tailor-made fertilization schedules to each of their farmers
- Three citrus training centres and demo farms. These locations will be used to train farmers in proper orchard setup, pruning and new technologies such as fertigation. Farmers will be able to see and learn new techniques at the demo-farms, for example, how they can shift the current peak production in the August-October period, to the desired period, when market demand and prices are much higher.
- A software system developed for citrus farm management. TFR extension and quality assurance teams will use this system with their 500 farmers and all their workers. The system will be used not only for all documentation and monitoring of both the GLOBALG.A.P and social standards, but also for forecasting and tracking: the use of agro-chemicals, harvested citrus fruits, % division of classes, decay and final quality at arrival of clients. We will also include a module to monitor the loans that farmers received and their repayments.

Productivity problems for citrus farmers often start when they buy seedlings that are already infected with a virus. Therefore, a very crucial step in the project will be to setup a demo nursery and train, professionalize, and certify five existing nurseries for the production of virus free citrus seedlings, so that the TFR contract farmers, and over 20,000 citrus farmers during the project period, can start their farms with healthy and virus free trees.

Farmers will be further supported to professionalize their farms through an access to finance program designed in cooperation with Stichting Rabo Foundation. This program will provide farmers with fit-to-purpose loans to invest in upgrading their farms to meet GLOBALG.A.P. requirements, for example by building agro-chemical storage rooms, toilets at their farms, and small citrus harvest collection centres. In addition, loans can also be used to invest in more general farm improvements, such as buying virus free fruit tree seedlings, replanting to increase productivity through better orchard setup, and installing fertigation systems.

The combination of extension services, high-quality seedlings, and funding for investment will help the farmers to improve their productivity. At the same time, they will be able to earn higher prices by producing a high percentage of class one citrus fruits that comply with and are certified to the highest international food safety standards in the right period of the year.

To ensure market access for farmers, even as the amount of product being sold into the value chain increases, TFR will make two further investments in their own infrastructure. First, the project will invest in high tech sorting and grading equipment. This will allow the company to handle the higher volumes, while ensuring quality and complete traceability. This equipment will provide detailed information per harvested lot on percentage of sizes, colours, weight, skin damage, and quality classes. Second, to better deal with the large volumes of citrus fruit produced in the peak season, TFR will invest in special controlled atmosphere storage rooms, which allows the long-term storage of citrus fruits. This will ensure that TFR can purchase a higher percentage of fruit in peak season, as it can be sold over a longer period. In addition, the project will invest in processing the lowest quality citrus fruit, which would be otherwise thrown away, to make juice.

**2.2.2 Alignment of project with policies of the Vietnamese and Dutch government and Dutch Embassy in Vietnam**

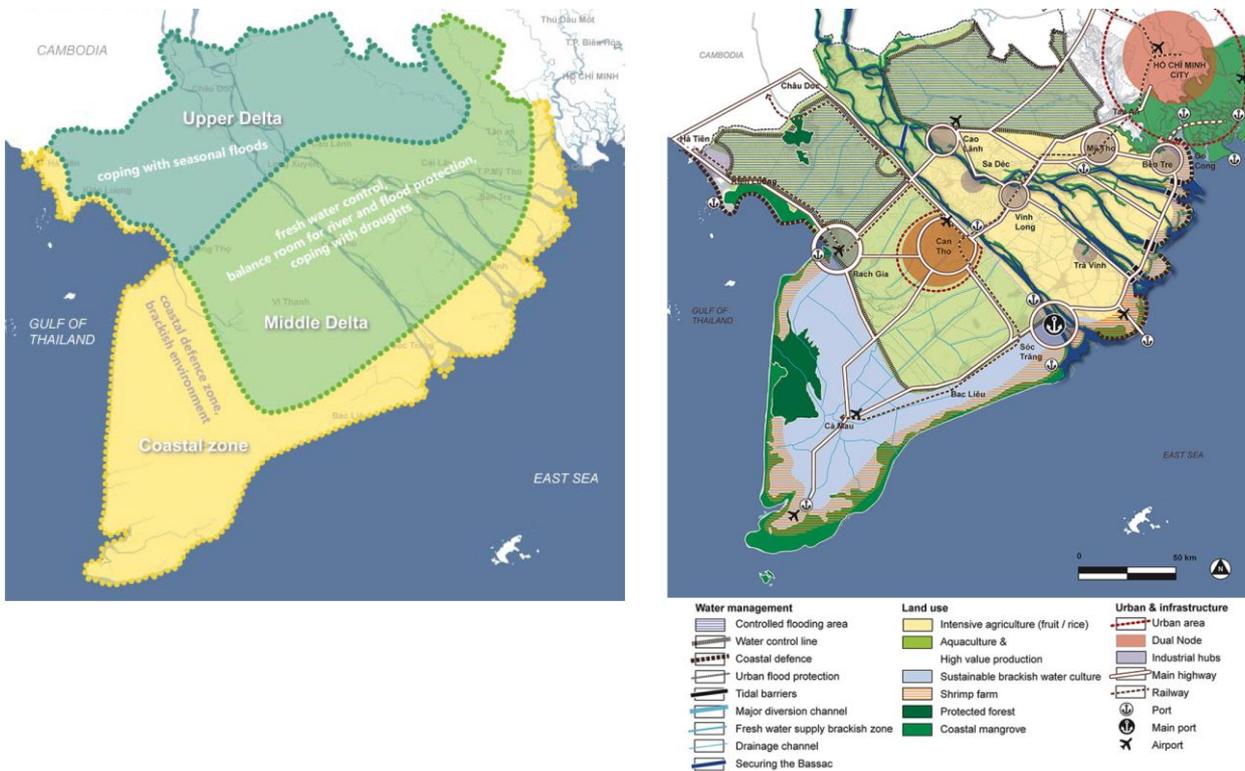
**Vietnamese Dutch government cooperation and policies**

Vietnam is an economic priority country for the Netherlands. The Dutch and Vietnamese prime ministers have signed strategic partnership agreements on “water and climate change” and “agriculture”. These frameworks are the basis for the cooperation between the Vietnamese and Dutch government.

Within these two strategic partnerships, the Mekong Delta is selected as a priority area for both governments because it is a key agricultural production area, producing 50% of the domestic rice and 90% of Vietnamese export rice, as well as 70% of all Vietnamese fruits. It is also ranked among the top 5 deltas in the world most likely to be severely affected by climate change, thus putting this production at risk.

With support from the Dutch government, the comprehensive Mekong Delta plan was developed to mitigate and adapt to the expected changes. Within all the different scenarios made for the Mekong Delta, the intensive agriculture sector (yellow colour in the agri-biz scenario, 2<sup>nd</sup> map below) is envisioned to play a key role, especially within the Middle Delta where the development of the fruit sector, in particular, has been highlighted.

Figure 7 Hydrological zones in the Mekong Delta plan and agriculture land used in Agribusiness scenario



Source: Mekong Delta Plan, 2013

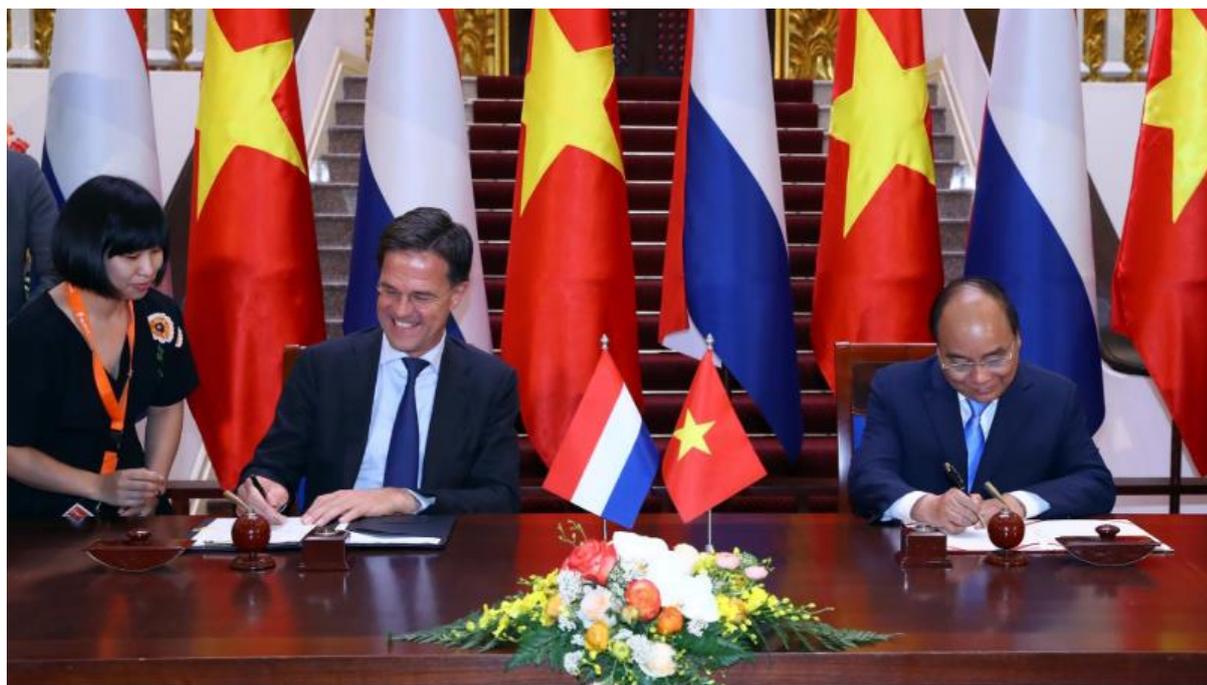
In November 2017, the Government Resolution 120/NQ-CP on Sustainable and Climate-Resilient Development of the Mekong Delta of Viet Nam was signed by PM Nguyen Xuan Phuc. This government resolution presents a vision for the Mekong Delta region in which the overall objective is to fully develop the key agricultural value chains as well as the related business services sector and the enabling institutional environment.

In order to implement Government Resolution 120, the Ministry of Agriculture and Rural Development (MARD) has formulated the Comprehensive Program for Sustainable Agriculture Development to Respond to Climate Change in the Mekong Delta. The main purpose for this program is to review and amend the

agricultural strategies and orientations for the entire Mekong Delta in order to upgrade the existing product value chains into a modern, sustainable and highly competitive agricultural sector. MARD is now finalizing the program and has scheduled submission for approval to the government leaders early 2020.

Anticipating this need, a Memorandum of Understanding on Dutch-Vietnamese cooperation on the Mekong Delta Agricultural Transformation Program has been signed by the VN Prime Minister Nguyen Xuan Phuc and the NL Prime Minister Mark Rutte on April 9<sup>th</sup>, 2019.

*Figure 8 Prime Minister Rutte and Prime Minister Phuc sign the MoU on the Mekong Delta Agriculture Transformation plan*



#### ***Fit with the Dutch Embassy strategic plan in Vietnam***

The Dutch Embassy in Vietnam is working hard to ensure that the above-mentioned Strategic Partnership Agreement (SPA) between the Netherlands and Vietnam is being executed. Together with MARD, the Embassy is developing the Mekong Delta Agriculture Transformation Plan (MD-ATP).

The SUCCEEDS project perfectly fits within the MD-ATP, in fact it can become one of the flagship projects showcasing what the Embassy wants to achieve with the MD-ATP. The SUCCEEDS project focusses completely on agriculture in the Mekong Delta, particularly the Middle Delta, and includes components related to water quality and use. The fruit sector will be strengthened by this project, while at the same time the externalities from fruit farming will be addressed through a much more rational use of agrochemicals, which will minimise negative impacts on water quality and a reduction in ground water use. The strengthening of a value chain to supply the domestic market with safe citrus fruits will further contribute to the reduction in qualitative malnutrition.

Strengthening economic ties with Vietnam for mutual benefit is a key priority for the Embassy. This project fits perfectly in this ambition, as, on the one hand, the project is supporting Vietnam in its development of the agriculture sector, while on the other hand, it will enhance economic cooperation with the Netherlands. The citrus value chain will mainly export to the European market, for which it will use the Rotterdam harbour, and its surrounding logistic hub, to distribute fruits into Europe. Dutch businesses will expand their markets by providing knowledge and technologies, for instance, by introducing the use of new biological control methods for pests and diseases; on soil analysis and nutrient management; on integrated pest management; and on fruit processing technologies.

### 2.3 Target group

The target group of the project are 500 citrus smallholder farmers and their workers. The workers are often smaller farmers, or one of their family members. For all 500 contract farmers joining the citrus value chain, compliance with the Ethical Trade Initiative social standard will be required. This means, for example, that any farm workers should have a contract and should be paid at least above the minimum wage.

In section 2.6 a clear business case is presented, showing how much the citrus farmers will benefit from the project. Per hectare the income will increase by at least 50%. This will result from a higher yield, more class one fruits and, very important, a longer economic life span for the orchard, which should increase from 7 years to 12 years, because of improved farming practice.

### 2.4 Stakeholder Analysis

Stakeholder	Role <sup>1)</sup>	Interest <sup>2)</sup>	Position <sup>3)</sup>	Influence <sup>4)</sup>
Fruit farmers	Beneficiary	High interest to join the TFR value chain: Guaranteed sales of fruits Better prices Training to increase yields and shift production peak to period with higher prices Access to credit to invest in GLOBALG.A.P requirements and technologies	For	Medium. As we will be working with large number of smallholders, one individual farmer might, at first sight, not have a lot of influence. But each citrus farmer that joins our value chain will need to comply with all food safety and social standards, if one single farmer makes a mistake this can have an influence.
Farm workers	Beneficiary	High interest to join the TFR value chain, because farmers need to comply with social standards: Salary above minimum wage, contract, job security	For	Low. Individual farmer workers do not have a lot of influence, though their compliance with requirements is important.
Fruit traders	Supplier	TFR can not work with fruit traders because they are not able to control the quality of the fruit. If you source from a trader it is not clear who produced the fruit and how it was produced. A big % of a local fruit traders fruit will be full of pesticide residues	Against	Low/Medium. Little influence as they target very different markets than TFR. They focus more on domestic wholesale markets in illegal cross border trade to neighbouring countries. Only if the fruit supply is low and prices are high, there can be a certain competition with fruit traders.
Professional agro-chemical input suppliers, mostly international companies who are member of the branch organisation CropLife Asia	Supplier	Keen to join the project as these input suppliers have higher quality, more effective, and safer inputs. But as they are higher priced, it is much harder to sell to Vietnamese farmers. Through this value chain project, farmers can capture the added value of these inputs	For	Low. The project will work directly with preferred input supply partners and supply directly to the farmers to ensure 100% food safety compliance and better prices for the farmers. The project will cooperate with the world leaders in agro-chemicals to ensure the best and safest products can be offered to the farmers.
Input suppliers for biological control of pests and diseases	Supplier	Keen to join the organic citrus value chain, as organic farmers cannot use pesticides which would kill the beneficial insects. And the biological control products can add a lot of value	For	Medium. Companies like Koppert have a range of non-chemical products which can control pest and diseases in a natural way. This will reduce the need for agro-chemicals significantly. As these suppliers are specialized their influence is higher than that of agrochemical suppliers.
Provincial government	Facilitator	Long An Province is very keen to join, as citrus production is an	For	Medium. The provincial governments can support the control of pesticides and the

Stakeholder	Role <sup>1)</sup>	Interest <sup>2)</sup>	Position <sup>3)</sup>	Influence <sup>4)</sup>
		important income earner for very a large number of farmers in the Province.		formation of farmer groups. The project will also engage the provincial extension staff to play a role in the program
National government	Facilitator	The Ministry of Agriculture of Vietnam has setup the Partnership for Sustainable Agriculture in Vietnam (PSAV). TFR is an active member of the Fruit and Vegetable working group under PSAV. The SUCCEEDS project is exactly the type of partnerships MARD wants to support.	For	Medium. An important role for the national government is improving the legislation on agro-chemicals and gaining market access for Vietnamese citrus to Japan, Korea, Indonesia, Thailand etc,
Banks	Supplier	As it is very hard for banks in Vietnam to provide credit to smallholders, banks are interested to lower their risk by providing supply chain finance to a "lead firm" like The Fruit Republic.	For	Low. At this moment domestic banks are very hesitant and hardly providing loans to smallholder farmers to invest in their farms. They will only do this, if they can get the land title as collateral, and they will only finance a max of 30-50% of the land value.
Domestic supermarket and HORECA chains	Client	All leading domestic supermarket and HORECA chains are keen to join the project and support the consumer awareness campaigns for ecologically friendly citrus.	For	Medium. For the domestic market, local supermarkets are important to build a market for sustainable and safe citrus.
EU importers	Client	TFR importers are very interested to engage in the project, as they want to secure large volumes of top-quality citrus year-round from TFR. Therefore, they will provide additional knowledge as well as support, for example, in organizing study tours to citrus farming areas in South Africa and Spain.	For	Medium/High. Various supermarket chains in Europe work with dedicated and exclusive importers who manage their complete citrus category. They are a key partner in providing access to high-value markets.
International supermarket chains	Client	International supermarket chains will fully support a citrus program that goes even further than the normal international certification standards for production, packaging and social compliance.	For	High. Because of the enormous size of the international supermarket chains, their demand for top quality citrus is very large. The current clients committed to the project have in total over 55,000 supermarket stores in Europe.
Domestic consumers	Beneficiary	For the domestic consumer food safety is a very important topic, as is good nutrition. So, there will be a high interest by Vietnamese consumers in the project	For	Low. An individual consumer will have limited influence, but they are of course important for the success of the project, as their buying decision will influence if sustainable citrus products will be a success or not.
International consumers	Beneficiary	For international consumers food safety is a given, as is good quality fruits. They will be more interested in the environmental and social aspects of the citrus products as unique selling point	For	Low. An individual consumer will have limited influence, but they are of course important for the success of the project, as their buying decision will influence if eco-friendly citrus products will be a success or not.

<sup>1)</sup> Type of activity: e.g. decision-maker, supplier, consumer, financier or beneficiary;

<sup>2)</sup> Level of interest in the project output and outcome: High; Medium; Low;

<sup>3)</sup> The position of the stakeholder towards the project objective: e.g. in favour, against, ambiguous towards the change(s) required to meet the development goal

<sup>4)</sup> The degree of influence the stakeholder has in the project context: High; Medium; Low.

## 2.5 Business case

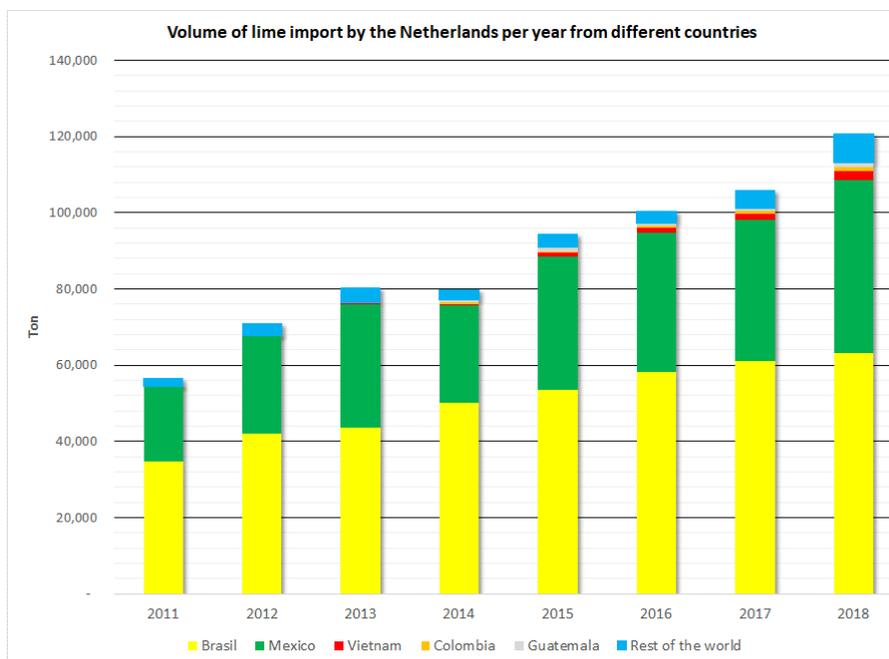
The SUCCEEDS project aims to develop a far-reaching value chain for sustainable citrus fruits. As seedless limes are the most important product for TFR within citrus fruits, this business case description focusses on seedless lime.

### Market analysis

TFR's most important market and the market with the highest returns, is the European market. Within Europe there is only one very small area in Spain where limes are grown, and the season is limited. Thus, most limes consumed in Europe are imported and 95% of these imports enter through the Netherlands.

If we look at lime imports by the Netherlands, Brazil and Mexico are by far the most important suppliers. In 2018 they supplied almost 90% of the limes. It is also important to note that in a period of seven years, lime imports have doubled, as European consumers have discovered uses for lime in food and drink.

Figure 9 Lime import volume by the Netherlands from different countries per year



Source: Compiled from WTO Trademap dataset

After Brazil and Mexico, the next largest category is "rest of the world". These are mostly limes from Brazil and Mexico that have entered the Netherlands from other EU countries. In the past few years, Vietnam has become the 3<sup>rd</sup> largest supplier, although it is still very small compared to Brazil and Mexico.

For European supermarket chains, the most important quality criteria for limes are: a dark green colour, a nice skin (oleocellosis<sup>4</sup>) and a high juice content (>45%). Mexican limes have a reputation for nice colours, but low juice content (<35%) and Brazilian limes are the opposite: a colour more yellow than green, but

with a good juice content. Another important factor for supermarkets is year-round availability. The Mexican lime season is from June till December, while the Brazilian main lime season is from December till September. Although Brazil can supply year-round, there is often a dip in the September-December period, which is not good for retailers especially in the important Christmas period. Mexican lime exporters, on the other hand, allocate volume to the USA or Europe depending on where prices are highest, so they have not gained a reputation for stable supply and European supermarkets do not rely on them.

Almost all imported limes are waxed, to prevent dehydration of the fruit, and treated with post-harvest chemicals, like the fungicides Thiabendazole and Imazalil, to prevent decay. The EU is considering banning Imazalil in 2020.

The success of Vietnamese limes in the European market was singlehandedly created by The Fruit Republic, which, through R&D, developed a completely new lime category: untreated limes. These are limes which are not waxed, and not treated with post-harvest chemicals, making them safer for the consumer, particularly when used in drinks where the wax and chemicals would dissolve and be consumed. For the production of fresh orange juice, the EU has forbidden the use of waxed oranges, despite the fact that the orange skin

<sup>4</sup> **Oleocellosis** is a physiological disorder set off after the rupture of peel oil glands, releasing their content which is phytotoxic to pericarp cells. The occurrence of the disorder is generally associated to mechanical injuries and causes high postharvest losses

would almost never end up in a drink. As limes are a much smaller category and only recently popular, the EU has not yet established any regulations that limes used in drinks need to be untreated. This might change in the coming years, as the risk for contamination of drinks by the wax and post-harvest chemicals is high.

Besides developing a more sustainable and more healthy lime, TFR also succeeded in building a reputation for supplying limes year-round with a nice green colour, a juice content that is always above 45%, and a very high service level. Having these five Unique Selling Points (USPs), explains why the demand for untreated limes from TFR is very high. The table below shows the supermarket chains where TFR limes are available. These chains represent a staggering 55,000 supermarket stores.

Table 1 Number of supermarket stores of current TFR clients

Chain name	Country	Number of stores
SPAR	Austria	1,600
Rewe group	Germany + EU	15,000
Edeka	Germany	10,000
Netto	Germany	3,000
Lidl	Germany + EU	10,000
Tesco	UK	4,000
Waitrose	UK	352
ASDA	UK	631
COOP	UK	4,000
Sainsbury	UK	1,423
AH	NL	966
Jumbo	NL	600
Delhaize	Belgium	775
Rema 1000	Denmark/Norway	868
COOP	Scandinavia	1,000
Grand Frais	France	250
Migros	Switzerland	600
<b>Total</b>		<b>55,065</b>

Figure 10 Example of the 7 regions of the Rewe and Penny supermarket chains



For most supermarket chains, TFR only supplies one country, or one region in a country. This is not because of the lack of demand, but because TFR cannot supply enough. All of the above supermarket chains have asked TFR to supply more of their countries and/or regions. Take for example the Rewe Group in Germany. They have 10,000 Rewe and Penny stores in Germany, divided over 7 regions. TFR is supplying just one region, and Rewe would like to increase the TFR supply to others. Similarly, in the Netherlands, TFR supplies Albert Heijn with limes, and after the merger with Delhaize, Albert Heijn (through its single supplier company Bakker Barendrecht) has asked TFR to supply the Belgium Delhaize stores with lime as well.

Figure 11 TFR export sales manager Mr Jeroen Pasman in a Rewe store, with the TFR untreated limes



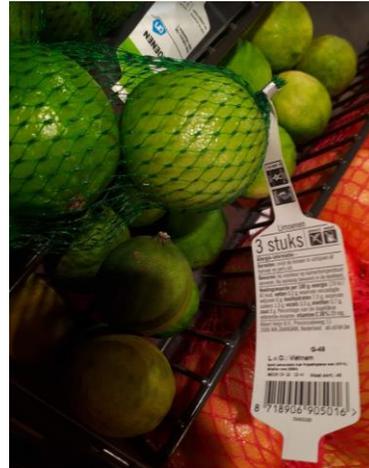
Figure 12 A close up of the TFR untreated limes, called "unbehandelt" in German.



Figure 13 TFR domestic sales manager Ms Hiep with a TFR lime in an AH in the Netherlands in August 2019



Figure 14 TFR limes, packed 3 in a net, contrast with the dried out loose limes from Brazil in the back

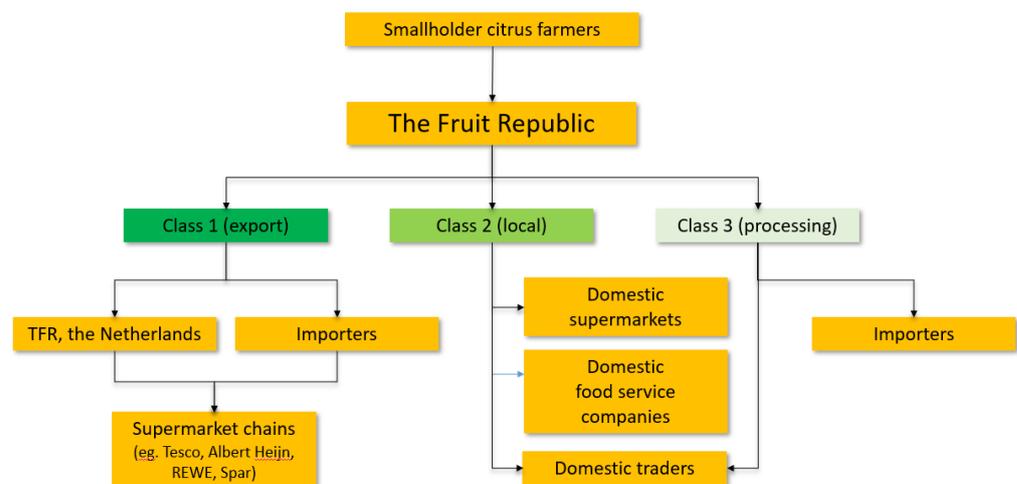


### The TFR value chain and pricing model

A crucial factor for TFR to be able to deliver the five USPs, is the way TFR organised its chain from farm till final delivery (see figure below). TFR buys direct from farmers, packs the fruits itself, exports it to the Netherlands, imports it into the Netherlands and stores all fruits in leased facilities of Kloosterboer in the Netherlands. Every single fruit that leaves the TFR DC in the Netherlands has been checked, to ensure that all European clients always get top quality fruit and TFR even arranges transport to distribution centres of its clients all over Europe. By controlling the chain, quality is ensured.

This degree of control has hardly been done by other (often much larger) Mexican or Brazilian lime exporters, making it easy for supermarket chains to work with TFR. They receive a very stable and hassle-free product.

Figure 15 The TFR value citrus value chain



With most supermarket chains, TFR has developed a very special and good relationship. Annual programs are

established in which the planned volume per week is already agreed one year in advance. Also, all pricing is fixed for the whole year. This is a very different model than applied by Brazilian and Mexican lime exporters, who mostly sell their fruits on commission to Dutch importers. These importers will set a different price each week based on the current market price resulting in an unpredictable return.

The TFR model creates stability and predictability, as a result of which the TFR farmers and staff can focus on ensuring the promised USPs are realized, as well the agreed volumes. For the fruit world, this is quite a unique model. As normally most trade is so called commission trade, in which importers will sell for a weekly market price, deduct their cost and margin, and the remaining result is what an exporter gets. This is a much riskier and a very volatile model, which leads to both exporters and importers, stocking the lime (often too long) when prices are low, or not supplying if they can get better prices in the USA.

In the domestic market, TFR also works directly with supermarket and professional HORECA chains and supplies a much wider assortment of fruits, as well as vegetables. Despite the large population of 100 million people, the number of supermarket shops is still relatively small, less than 500 for the whole of Vietnam. TFR therefore has positioned itself as the most professional supplier of fresh produce in Vietnam. While 95% of most limes are sold through the traditional wholesale and wet markets, TFR does not supply to these markets as they are mostly price, not quality, focused.

The lowest class limes (processing grade), are currently either being destroyed or sold to animal feed companies. Value can be created by extracting the juice from these low grade limes, processing it, and then selling it as a natural, aseptically packed Not From Concentrate (NFC). This is one of the steps planned in our project.

#### *Competition*

For both the fresh and processed lime market, the main competition comes from Mexican and Brazilian companies. Because of the large-scale farming, large exporters and large processors, prices are below the Vietnamese prices. However, because of TFR's unique product – untreated, nicely coloured, and juicy lime, clients accept higher prices. As the overall market for limes is growing rapidly, there is more than enough space for TFR to increase its volumes significantly. Brazilian and Mexican lime companies often have enormous automatic waxing lines and for them to develop untreated limes, for which relatively small volumes are required, separate lines or packhouses would be needed to avoid contamination risk.

Competition from other Vietnamese companies hardly exists for exports of citrus to Europe. Few companies in Vietnam specialise in citrus fruits, with fruit exporters preferring to focus on dragon fruit for China. In addition, exporting citrus to the European market requires complete control over pesticides, which hardly any Vietnamese fruit exporters have. Besides TFR, there are just two other companies in the whole of Vietnam with a GLOBALG.A.P. lime, yet this is a pre-requisite for the European market. Thus, most Vietnamese fruit exporters focus on markets in Asia and the Middle East. These markets are easy to enter, and have little to no requirements on pesticide residues, certification or compliance with social standards.

#### *No market distortion*

There is no risk for market distortion because of this project, because the volumes which will be coming out of Vietnam will be too small to make an impact on Brazil and Mexico's dominance of the world market. This project will help to improve the market, as for lime there are only a few countries of origin which supply Europe, while for other fruits, such as oranges, there are over 20 different countries of origin.

The volumes of TFR are too small to distort the domestic market, given the 3 billion kgs of citrus fruits sold each year. However, this project will help to develop the market by raising consumer awareness on food safety standards, both generally and for citrus. It will also expand the offering of guaranteed food safe citrus.

#### **Business case**

To be able to seize the market opportunity that TFR created with its untreated limes in the European market, this SDGP project investment proposal has been made, which should result in significant increases in the available volume of high-quality limes for TFR clients.

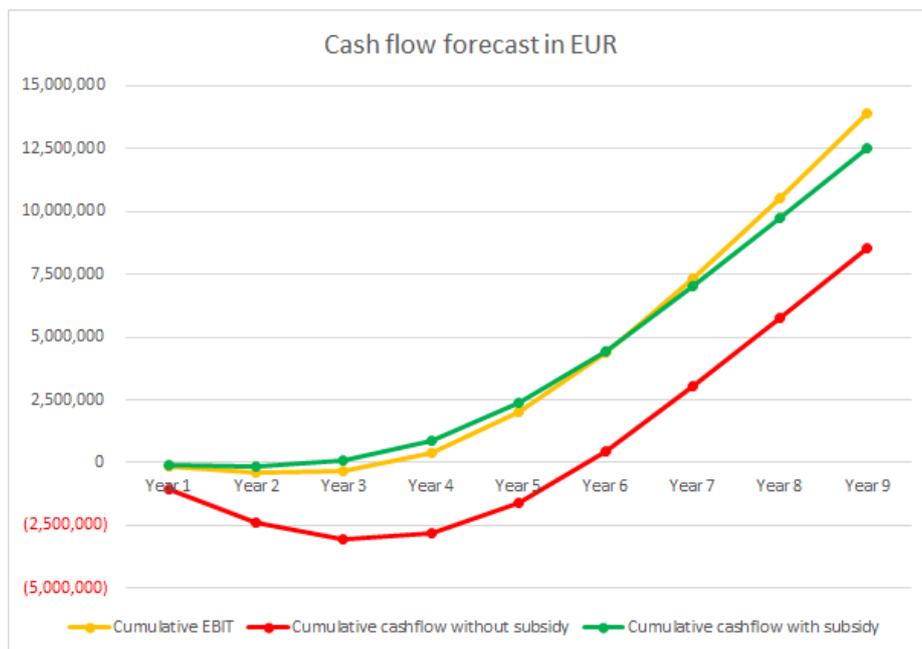
TFR currently has 64 certified GLOBALG.A.P. and social standard compliant citrus farmers, which during the SDGP project of five years, will increase to 500 farmers. Managing these large number of smallholders is only possible with all the described project interventions (nursery, extension system, demo farms, software system, site specific soil nutrition management advise, access to finance, long term citrus storage rooms, high tech sorting line and processing of low grade fruits). One issue not yet discussed is the relatively low percentage of class 1 fruit smallholders produce. In Europe fruit farmers normally have 95-98% class 1 fruits, while Vietnamese fruit farmers have between 30-50% class 1 fruits. The extension package and certified nurseries will improve quality while the small processing line for the lowest grade fruits will turn waste into a value-added product.

The total volume of safe and certified citrus will increase to over 20 million kilograms of citrus fruits per year at the end of the project (year 5). This is also why the project will invest in a new packhouse with special controlled atmosphere cold rooms for long storage of citrus fruits. These facilities will help to manage stock through periods of high and low supply.

As presented in Annex 2 Financial sustainability, after making all these investments TFR returns to a net positive cash profitability in year 4 when larger volumes can be sold due to better infrastructure and more farmers meeting the standards with higher yields, better quality and better seasonality of production.

Without a grant it will take till year 6 before the cumulative cash flow becomes positive for the first time. The IRR (without grant) over the 9-year business case period is 7%, which is too low to attract investment given the risk involved in setting up a complex system dependent on a large group of smallholder farmers. Investors would normally be expecting an IRR of at least 15-20%. With a grant the IRR is 13%, which is a return that better captures the risk and can compete with alternative investment opportunities.

Figure 16 Cumulative cash flow forecast with subsidy and without



### Sensitivity analysis

To better understand the resilience of the business case to changes in conditions, a sensitivity analysis has been conducted that looks at the impact on the project IRR from two changes: a change in the price at which limes are sold and a change in the cost of the limes. As can be seen from the table below a change in either of these variables by +/- 10% has a significant impact on the IRR. As TFR works with a lot of clients based on annual fixed price programs, the risk related to the sales price declining is well manageable. Of course, TFR will not be immune to changes in world market prices, but most clients work with TFR not because they provide the cheapest citrus, but because TFR provides innovative citrus products, of stable quality and with good service. TFR clients also value TFR's strong emphasis on including smallholders in global fruit chains and they understand that all social certifications and compliance should work both ways.

With respect to the cost of the fruit, the biggest component of the cost is the price paid to the farmer. The model is based upon the current average prices being paid to TFR farmers, which are above the prices paid to conventional farmers. The business model assumes that, with the support provided by TFR, many new farmers will enter into the TFR citrus value chain and receive this higher price. Thus, the pressure for TFR to further increase their prices to farmers is low under most circumstance. It is even further reduced by the fact that the support provided by TFR will lead to higher yields and a longer economic tree life, so farmer income will increase from higher volumes as well as higher prices, further limiting price pressure. The one factor that could drive lime prices higher, and consequently TFR's cost price higher, would be a change in climate conditions leading to lower availability of lime, e.g. a drought situation that affects crop yields. However, the SUCCEEDS project is heavily focused on providing the technical support needed to improve farm management so that farms become more climate resilient. It will also expand the geographical area from which TFR sources its citrus, which provides an additional risk mitigation factor as changing climate conditions will not affect all areas of the Mekong Delta to the same degree of severity. For these reasons,

while the sensitivity analysis looks at the impact of costs that are 5-10% higher than the current conditions, these scenarios are considered to have a very low probability.

Table 2 Sensitivity analysis of the citrus business case (IRR at 9 years - with subsidy)

		Sales price (% of initial prediction)				
		90%	95%	100%	105%	110%
Cost price (% of initial prediction)	90%	10.8%	16.8%	20.7%	23.6%	26.0%
	95%	0.5%	12.0%	17.6%	21.3%	24.1%
	100%		3.3%	13.2%	18.3%	21.8%
	105%			5.7%	14.2%	18.9%
	110%			-14.9%	7.6%	15.1%

### Additionality of the investment

This project investment is additional to what TFR is already doing:

- We currently have 64 certified GLOBALG.A.P. citrus farmers. To be able to upscale to 500 certified farmers for GLOBALG.A.P and social standards, requires significant efforts as demonstrated by the fact that Vietnam hardly exports any fruits to Europe, and for the little volume it does, a high percentage is being rejected because of pesticide issues.
- All interventions, like developing professional nurseries, software systems, citrus training centres, fertilizer advice, access to finance, etc., are new to Vietnam and citrus in the region and will benefit both current farmers and farmers that join the TFR value chain.
- Investments into hardware such as the high-tech sorting machine and CA cold rooms are needed to handle larger volumes while ensuring product quality and smoothing supply-demand gaps and surpluses.
- Investments into software address two critical needs. First the need for good monitoring data so that compliance with international standards can be efficiently maintained. Second the need for robust farm management data so that farmers can learn from their own efforts and those of their peers helping to develop best-practices for the local situation. Currently good data management systems to address these issues are not widely available, but they could have an important impact, both in Vietnam and on other markets where smallholders dominate the agricultural sector.

### 2.6 Business case beneficiaries

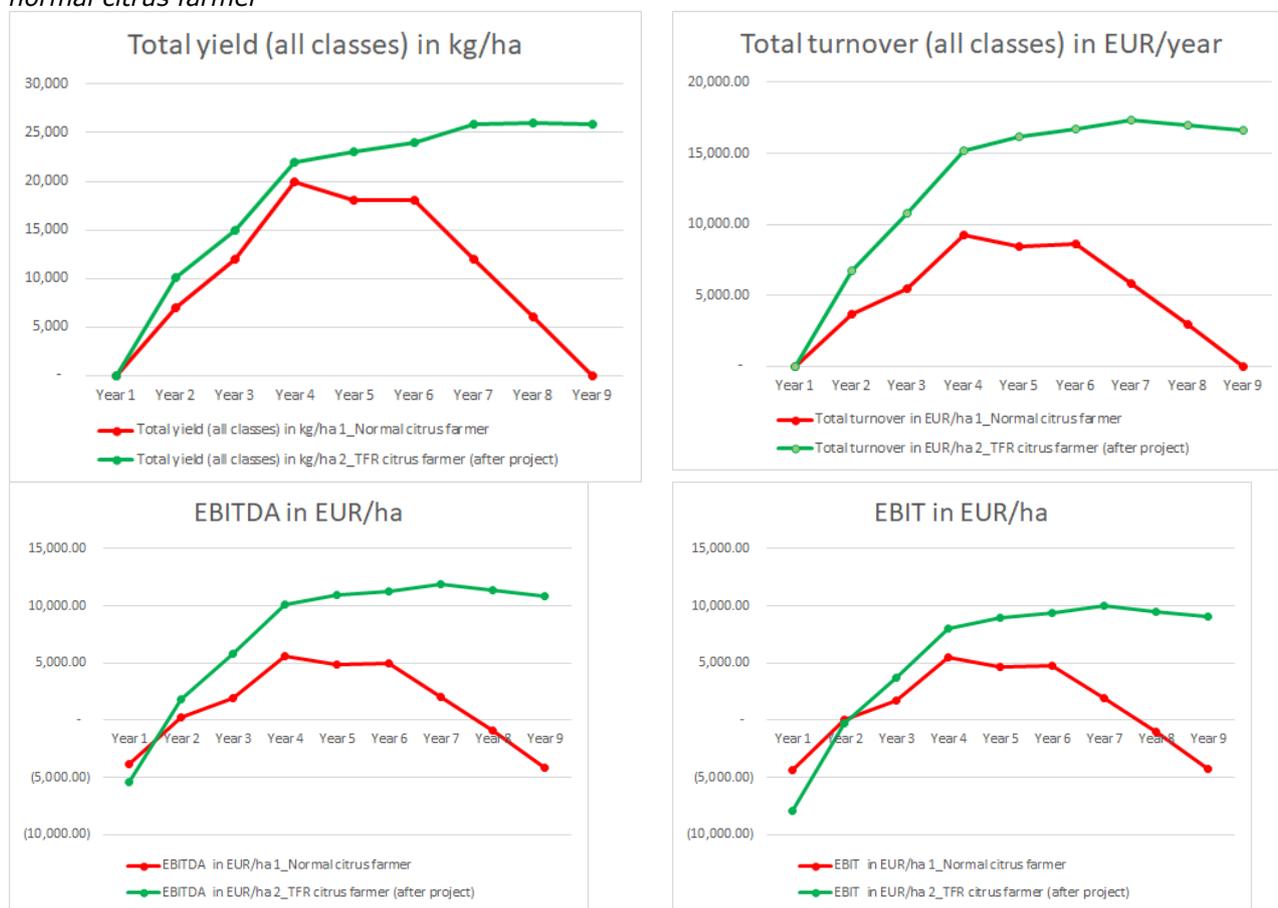
The main beneficiaries of the project are the citrus contract farmers and their workers. The impact on them will be very positive because of the following interventions and mechanisms:

- A farmer joining the TFR value chain by becoming a contract farmer will see his income increase by EUR 0.19 per kg compared to the average market price as a result of the following:
  - As a result of the TFR extension services his percentage of class 1 fruits will increase. Since class 1 fruits earn a higher price than the next class, this will increase his income.
  - Through extension services, his peak production will shift to the period when prices in both domestic and export markets are higher allowing him to earn more.
  - TFR will pay a premium of about EUR 0.08 above the normal market price to farmers if they comply with all requirements of TFR and the various standards (GLOBALG.A.P., GRASP, ETI, Tesco Nurture etc).
- TFR will support the farmer to become GLOBALG.A.P. compliant, by linking farmers with access to finance so that they can make the required investments, such as on-site toilet facilities, pesticide storage spaces and sheds for packing and storing fruit.
- A TFR farmer can sell his/her citrus fruits year-round, 52 weeks per year to TFR
- The average yield over a citrus tree's lifespan will increase from 11,000 kg/ha to 19,827 kg per ha for a TFR farmer. This increase will be achieved by lengthening the economic life span of the fruit tree from 7 to 12 years through better farm management. Since replanting means that farmers lose two years of

yields during the time the tree matures, a longer lifespan of the tree has an important effect as it increases the ratio of income generating to non-income generating years from 5/2 to 10/2.

- Instead of losing 30% of his trees in the first two years to disease brought to the farm by low-quality seedlings, farmers will have access to disease-free high-quality citrus seedlings leading to a higher percentage of productive trees following replantation.

Figure 17 Graphs comparing yield and financial performance of a TFR contract citrus farmers and a normal citrus farmer



All these interventions result in a turnover per ha that will be 2.5 times higher (average over a 12 year period) for a TFR farmer than for a normal citrus farmer, and a net farm income per ha of at least 3 times higher (average over a 12 year period), when the farmer invests in the improved farm management.

Table 3 Summary of impact TFR GG contract farming system + intensive extension + loans for professionalizing farm

Parameter	TFR citrus farmer (after project)	Normal citrus farmer
Number of hectares	1,250	
Average yield for citrus in kg/ha	19,827	11,000
Average price for citrus in EUR/kg	0.61	0.42
Average turnover in EUR/ha/year	13,108	4,983
Average net farm income (EBIT) in EUR/ha/year	5,638	1,667
Average net farm income (EBIT) in EUR/ha/day	15.45	4.57
Total value created in additional turnover in EUR per year	10,155,340	
Total value created in additional farm income in EUR per year	4,963,908	

The impact of professionalising 5 existing nurseries and setting up a demo TFR nursery, will have a big impact on all farmers buying fruit tree seedlings from these nurseries. Each nursery will serve about 800-850 farmers per year, who on average grow one hectare of citrus per farmer. Together these farmers will

replant about 5,000 ha of citrus farms. This will prevent a yield loss of 20% which means that almost EUR 1,000 per ha of yield loss is prevented.

*Table 4 Summary of impact of professionalizing 5 nurseries and setting up one TFR demo nursery*

Parameter	Indicator	Unit
Additional area planted with virus free citrus trees in hectares per year	5,000	hectares
Yield in kilograms per hectare	11,000	kilograms
Total production in kilograms	55,000,000	kilograms
Average price for citrus in EUR/kg	0.42	EUR/kg
Total revenue from additional area planted in EUR per year	23,147,135	EUR
Yield loss prevented because of virus free citrus trees	20%	%
Total value of prevented yield loss in EUR per year	4,573,313	EUR
Value saved per hectare per year	915	EUR

All together these interventions will have a combined impact of additional revenue value of EUR 51 million during the project period, and EUR 176 million over the economic life span of a citrus orchard for TFR citrus farmers and the farmers who will buy seedlings from the professionalized nurseries.

*Table 5 Summary of the overall project impact value (in EUR)*

Parameter	Within project period	Within life time of citrus orchard
Years	3.5	12
Part 1 - TFR GG contract farming system: additional turnover	35,543,690	121,864,080
Part 2 - Professionalizing citrus nurseries: additional revenue	16,006,595	54,879,753
<b>Total impact generated by the project in additional revenue (in EUR)</b>	51,550,285	176,743,833

## 2.7 Risks and mitigation measures

In the table below we give an overview of possible risks, as well as our planned mitigation measures.

One of our key intended outcomes is to increase the income of the 150,000 citrus farmers in the Mekong Delta. This key outcome can be jeopardized by various risks. Ranging from agro-climate risk, world market risks, phyto-sanitary barriers, national pesticide legislation or local nurseries not being professional enough to follow all strict guidelines to produce virus free fruit tree seedlings. For all of these risks we have good mitigation measures, including the overall project approach of jointly working with business, government and farmers to effect change.

<b>Risk item<sup>1)</sup></b>	<b>Effect<sup>2)</sup></b>	<b>I/E<sup>3)</sup></b>	<b>Likelihood<sup>4)</sup></b>	<b>Severity<sup>5)</sup></b>	<b>Risk management and mitigation<sup>6)</sup></b>	<b>Owner /<sup>7)</sup></b>
<i>General</i>						
Extremely long dry season, in some areas resulting in saltwater intrusions	This will result in very limited availability of citrus in the March-June period when we need to supply large volumes to the European market	External	Medium, once per 5 years	Medium	We learned from the long dry season two years ago when all fruit farms were severely affected. We will deal with this by developing more contract farmers in different agro-ecological zones. Long An Province is planning to invest into a water retention system for the citrus area to help farmers during the dry season. Also, the introduction of drip irrigation systems will make water use much more efficient, so farmers can use the available fresh water for a much longer period	TFR BLPC and all project partners
Phyto sanitary rules of the EU change and the Vietnam Plant protection department (PPD) does not respond or responds late	In the worst case our fruit cannot enter the EU because of non-compliance with certain phyto-sanitary requirements. As a result of which we would lose revenue for a certain period and risk losing customers, as clients will not consider Vietnam as a stable source anymore.	External	Low	High	Through close cooperation with both the Vietnamese PPD and the Dutch KCB/NVWA we try to prevent these situations. In this process we are well supported by the Dutch Embassy in Vietnam. For example, we have invited the director of the Vietnamese PPD to our DC in the Netherlands during the visit of the Minister of Agriculture of Vietnam. During this visit we will organise a seminar to discuss various bottlenecks of the Vietnamese fruit sector of which phyto-sanitary topics is one.	TFR/BLPC
<i>Outcome</i>						
New pesticide policy from national government making it harder and harder to become GLOBALG.A.P certified	Without GLOBALG.A.P certification there is no entry to European supermarket chains, as a result of which we would lose revenue for a certain period and risk losing customers, as clients will not consider Vietnam as a stable source anymore	External	Medium	High	Develop dialogue with the responsible persons in MARD to make clear that the policy will not have the desired effect and will harm Vietnamese fruit exports. Join forces with CropLife Asia who have the same concerns and interests to get this policy changed. This will also be one of the important topics which we will discuss during the National Fruit Dialogues.	TFR BLPC
Low prices in the world market for citrus	Selling prices will be lower, as a result of which farmers also get lower prices, and their profitability level will not increase as much as we target	External	Low	Medium	With this project we strengthen our direct supermarket programs, through which we can negotiate relatively stable prices. Over the long term low citrus world prices, will at a certain point also influence the prices for our programs. We try to prevent this by producing unique products of good quality.	TFR and all project partners

<b>Risk item<sup>1)</sup></b>	<b>Effect<sup>2)</sup></b>	<b>I/E<sup>3)</sup></b>	<b>Likelihood<sup>4)</sup></b>	<b>Severity<sup>5)</sup></b>	<b>Risk management and mitigation<sup>6)</sup></b>	<b>Owner /<sup>7)</sup></b>
Farmers having a bad harvest (mostly climatic reasons) and not able to repay loans	Farmers will require support and an extension of their payments.	External	Low	Low	Crucial to have a good farm monitoring system, with a good dashboard, so we can support farmers in time if we see something go wrong with this production. Low impact as this is unlikely to happen with many farmers at the same time.	TFR, RF
Low yields in the citrus training center demo farms	Farmers will lose confidence in the project and the training	External	Low	Medium	Crucial to recruit at least 2 very experienced and hands-on citrus fruit production specialists, in combination with local TFR agronomist who understand the local conditions well. Good laboratory support on soil and leaf analysis as well as disease analysis will also help to optimise the demo-farm	TFR
<i>Output</i>						
Pesticide residue violation for a TFR fruit in the European market	Could lead to a product recall and losing a big supermarket client	Internal	Low	Medium	One of the reasons we are investing in this project is because it will help us to further control agro-chemical use, This is also why find it important to cooperate with provincial authorities to enforce pesticide legislation	TFR and all project partners
Break down of either the high-tech sorting and grading machine	Cannot complete the order of domestic and export clients	External	Low	Medium	Important that for the machine we select, there is a service contract with the supplier which ensures a certain <u>guaranteed response time to be onsite in TFR CT</u>	TFR
Large administrative burden and high transaction costs to get in total 500 farmers certified	High transaction costs to handle large number of smallholders	Internal	Low	Low	We need to develop an IT system to capture all data which needs to be completed for all certification forms.	TFR
Selected nurseries do not adopt all practices, so their fruit seedlings will not be virus free	Citrus farms will become less profitable than we aim for	Internal	Low	Medium	We will undertake a large survey of fruit tree nurseries in the Mekong Delta. Based upon which we will select more nurseries than the target, so in case a nursery is not compliant with the guidelines, we will not continue to work with them and will not give them access to our farmers. In addition, TFR will invest in one example nursery, so that it will be easier for the other nurseries to learn and copy.	TFR, GAC

1) Risk description. 2) Actual effect when risks become a reality. 3) Is it an internal or external risk? External risks are outside the framework of the project. In most cases, the PPP has little influence on minimizing these risks. Internal risks are directly related to the project. The PPP has the influence to minimize the risk and mitigate where needed. 4) What is the probability of the risk becoming reality? Low, medium, high. 5) What is the impact of the risk? Low, medium, high. 6) In what way is the risk minimized /can the risk be minimized and what mitigating actions will be undertaken when the risk becomes reality? 7) Which partners are responsible for risk mitigation?

## 2.8 Upscaling

As described in the business case, TFR has developed a unique cooperation model with importers and the largest supermarket chains in Europe, as well as supermarket and HORECA chains in Vietnam. If we have more smallholder farmers applying professional farm management practices, we will have more volumes available, so that we can supply 55,000 stores in Europe alone.

TFR's existing client base provides ample potential for upscaling our citrus volumes. The systems we develop in this project will allow us to bring large numbers of smallholder farmers into a true value chain and manage them in an efficient way that ensures that every individual fruit supplied by thousands of different smallholders complies with international food safety standards.

Besides upscaling the citrus volumes, the sales channels that we have developed will also provide a perfect platform to upscale by supplying other exotic fruits to our current importers and supermarket chains. Products for which we see a lot of potential are passion fruit and young drink coconut. If every store takes one box of drink coconuts per week and one box of passion fruit, we will already need 110,000 boxes per week. However, as with citrus, we will only be able to do this, with the same kind of intensive training and extension systems that we first plan to develop for citrus farmers.

## 3. Public-Private Partnership

### 3.1 Need for a PPP

As explained in the context analysis, to be able to include large number of smallholders in a global fruit value chains, it is crucial that there is a good enabling environment. As a company we are making a lot of efforts to create this enabling environment, but there is a limit to what a company can do and is allowed to do. For our project the following elements are crucial elements that should be arranged by the public sector in order to create a better enabling environment for the farmers:

- The government can certify nurseries with virus free citrus seedlings, so that farmers know which products to trust.
- Enforcement of the Vietnamese pesticide laws in our citrus sourcing areas. This is hardly happening, and shops are selling many illegal and counterfeit pesticides. In addition, a lot of pesticides are sold that are legally registered for rice, but not for other products like fruits. An individual company cannot enforce the pesticide laws. Therefore, TFR has setup its own supply of agro-chemicals with correct and legally registered pesticides to contract farmers; but this program is only available to TFR farmers. To create a sustainable sector all agro-chemical retail shops should comply with the Vietnamese pesticide laws. Meeting European standards is crucial for allowing access to high value markets, so the official national pesticide laws need to be enforced in the agro-chemical shops where the farmers go.
- Implementation of effective pesticide laws. As explained in the context analysis, the new pesticide law (circular 21/2015/TT-BNNPTNT), will be ineffective in reaching its goals. On the contrary it will make it much harder for fruit and vegetable farmers to become certified for GLOBALG.A.P., as this new law is poorly designed.
- The usual practice in Vietnam is to throw empty pesticide packaging materials in the ditch next to the farm or anywhere on the ground in the farm. Besides all the plastic waste, there is often also some pesticide remaining in the "empty" packaging material, which is very harmful for the environment. According to the GLOBALG.A.P. standard, farmers need to collect all empty packaging material and then hand it in to the official waste collection system, so it can be incinerated in a professional way. In case there is no official waste collection system in the rural areas, like in Vietnam, the farmers must burn the materials themselves. As this is neither healthy nor safe, we want the local government to set up a waste collection system. This will also be a very strong message to our farmers, showing that also the government really cares.
- The national government should arrange market access for Vietnamese citrus fruits to: Thailand, Indonesia, the Philippines, Korea, Japan, China, Australia and New Zealand. Until now the Vietnamese government team that is doing these kind of trade negotiations, was not really aware that there are great export opportunities for Vietnamese citrus to these markets. As no phyto-sanitary market access has been arranged to these markets, Vietnam cannot export to these countries

Changing national policy and practices are hard to do as a single company. However, this PPP brings together stakeholders from many different parts of society to more effectively influence the Vietnamese government. Working together will be the Vietnamese private sector (TFR), the provincial government (Long An Province), the Dutch government (Netherlands Embassy) and a university (Can Tho University).

By setting up an official five-year project with Long An Province, and thereby working to improve the enabling environment at the provincial level, the project will increase the chance of making smallholder farmers successful in global fruit chains. In addition, having the Long An provincial partner active during the national citrus dialogue, during workshops in Hanoi and engaging together with them with the national government, will be very powerful.

### 3.2 Composition partnership

Organisation	Role <sup>1)</sup>	Type <sup>2)</sup>	Country <sup>3)</sup>	Year established	Size (FTE) <sup>5)</sup>	Core activity <sup>6)</sup>
Kloosterboer Investments bv	Lead partner	Company	Netherlands	1925	600	Cold chain logistics service provider
The Fruit Republic	Partner	Company	Vietnam	2012	250	Fruit company
Bien Luc PC, Long An Province	Partner	Government	Vietnam	1982	440	Provincial government
Stichting Rabo Foundation	Partner	NGO	Netherlands	1974	40	Providing access to finance to smallholders
Groen Agro Control	Partner	Company	Netherlands	1995	54	Laboratory
Can Tho University	Partner	Knowledge University	Vietnam	1966	2,000	Education and research

1) Role in SDGP-project: Lead (partner), (formal SDGP-project) Partner. 2) Organisation type: Company, Government, Knowledge Institute, NGO. 3) Country where the partner is legally registered. 4) Year in which the organisation was established. 5) Organisation size in FTE (Full Time Equivalents of employees). 6) Core activity of the organisation.

Company ownership:

- The Kloosterboer company is a family owned company, owned by the four Kloosterboer brothers, each with an equal share
- The Fruit Republic company is a family owned company, owned by Siebe van Wijk and Irmen Mantingh with both equal shares (45%-45%). Kloosterboer Investment bv has a 10 percent share in The Fruit Republic.
- The Groen Agro Control company is owned by the managing director, Mr Bert van Tol.

### 3.3 Added value and interest in project output and outcome

*Kloosterboer Investments bv*

Kloosterboer was founded in 1925 as an exporter in seed potatoes, fruit and vegetables. Right from the start, Kloosterboer has always been an independent family company. Over the years the business model of Kloosterboer changed from a trader to a logistic service provider for temperature-controlled food (chilled and frozen). The company did this very successfully and Kloosterboer has now become of Europe's leading temperature-controlled food logistics services firm. The services of Kloosterboer include chilled and frozen warehousing, turnkey high tech fully automated temperature-controlled warehousing, stevedoring, forwarding, customs, product insurance, agency, dedicated ICT solutions and barge operation.

Because of the importance of agriculture for the business of Kloosterboer today and the strong ties with farmers within the company history, the Kloosterboer family decided in 2011 to support The Fruit Republic (TFR) in Vietnam. Later TFR started to use all logistics services of KB in the Netherlands in order to sell its fruit directly to European clients.

This experience taught KB how an upstream investment, in a value chain as far away as Vietnam, strengthening its core business in the Netherlands. For this reason, as well as from a CSR point of view, KB has strong interest to invest in professionalising the value chain of TFR. KB sees the enormous impact which TFR has on improving farmer income and making the citrus value chain more sustainable.

KB provides added value to the project, through their experience in the design, construction and management of packhouses, fruit storage facilities, frozen fruit puree and juice processing, and their significant network in the fruit and processed fruit world. In addition, KB has a lot of experience in developing software, as it owns its own software company, which created software for warehouse management systems.

#### *The Fruit Republic Ltd.*

TFR was founded in Can Tho (Vietnam) in 2012 by a team of experienced fresh produce professionals. The company aimed to fill a gap in Vietnam where, despite the 800,000 hectares cultivated with tropical fruits, no professional fruit company existed. The mission of the company is to let the world discover the fantastic Vietnamese fruit and make the Vietnamese consumers proud again about their own homegrown food. TFR opened its state-of-the-art facility in Can Tho Province in late 2012.

Over the years the company developed well and is now employing 250 staff. TFR is still the only Vietnamese company that is exporting fruits by sea container to the European market in year-round programs while also being a key supplier of supermarkets and HORECA in Vietnam.

While in other countries like South Africa, Brazil and Mexico, smallholder citrus farmer have been excluded and replaced by large corporate farms of thousands of hectares, the TFR citrus value chain includes large number of smallholders. With farmers having a guaranteed market and a dedicated buyer like TFR, farmers can focus completely on improving their farm management. Together with KB, TFR's interest in this project is to develop the best private sector extension team on fruits in Asia and introduce farmers in the Mekong Delta to new citrus production technologies, which will allow farmers to tweak their production and produce more fruits in the March-July period, when market prices are much higher.

#### *Bien Luc District People's Committee, Long An Province (BLPC)*

Bien Luc district in Long An Province is one of the areas where the most seedless lime are grown in the Mekong Delta. With an area of 6,000 hectare planted with seedless lime and about 10,000 farm households depending on lime for their family income. Because of the importance of lime for the economy of the district, the BLPC has a high interest to join this project. TFR is very much appreciated in the province as it is the only company which buys citrus year round from farmers, 52 weeks per year, pays a premium market price for its contract farmers and protects its farmers from low prices in the main production season (August till November) by guaranteeing a minimum price that is far above market price in this period. The BLPC can add a lot of value by enforcing pesticide laws in the district, setting up an empty pesticide packaging material collection system, as well as supporting TFR to organise farmers in farmer groups. Also, the extension staff from the plant protection department under DARD, can play a role in supporting the farmers.

#### *Stichting Rabo Foundation (RF)*

Rabo Foundation is a Dutch NGO ("Stichting") and focuses on building sustainable futures for poor and disadvantaged groups through the provision of financial resources, the Rabobank expertise and network. It recognizes that lack of access to financial services for smallholder farmers is a key barrier to self-sufficiency and seeks to remove this barrier by catalysing investments in agricultural value chains. In the SUCCEEDS project, RF will help develop the financial product offered to TFR's smallholder contract citrus farmers. Once developed, assessed and approved, RF is anticipated to provide funding for the financial facility, thereby allowing it to achieve its organizational mission in a priority country. This access to finance, will allow the citrus farmers to invest in improving their orchards and in irrigation and fertigation systems which will lower costs and increase production in the right period of the year.

#### *Groen Agro Control b.v (GAC)*

Groen Agro Control is the leading laboratory in the Netherlands for pesticide analysis, soil analysis, microbiology, plant virus/disease identification and fertilizer advice. The activities of Groen Agro Control are a unique combination of technically oriented services and expertise focused on companies in the fields of horticulture, trade of fruit and vegetables and food safety. The connection between laboratory analyses and specific expertise of our specialists result in the development of effective and innovative solutions. GACs

services are focused around two central topics: (1) Optimization of production and quality (2) Optimization of food safety.

TFR and GAC have been working together since 2014. GAC is performing pesticide residue analyses for TFR. Both GAC and TFR want to further expand the relationship by developing a small laboratory in TFR, where both soil, plant tissue and fruit samples can be processed and prepared, so GAC can perform the analysis in a more efficient way. This will be done with the aim to develop farmer site specific nutrient management advice. TFR staff will take soil and leaf samples from the contract farmers, TFR lab staff trained by GAC staff, will prepare the samples in such a way that they can be sent more easily and quickly to the Netherlands for further detailed analysis. Based upon which GAC can provide a site-specific nutrition management program in close cooperation with the international citrus agronomist of TFR.

GACs interest to join the project is to support its client TFR in its work to professionalize the fruit sector of Vietnam, and for GAC to get experience of working in Vietnam, which ultimately could lead GAC to invest into a laboratory in Vietnam.

#### *Can Tho University (CTU)*

Can Tho University (CTU) is the biggest university in the Mekong delta. Since its founding in 1966, CTU has been continuously improving and developing itself. It has an enrolment of about 54,000 undergraduate students, 3,000 master students and around 300 PhD. candidates. CTU has got over 2,000 staff members including nearly 1,200 teaching staff and 800 supporting staff. CTU has nearly 100 undergraduates, 36 Master and 15 Doctoral training programs. CTU's main missions are training, conducting scientific research, and transferring technology to serve the regional and national socio-economic development. In addition to its training responsibilities, CTU has actively taken part in scientific research projects, applying the advances in scientific and technological knowledge to solving problems related to science, technology, economics, culture and society in the region. From achievements in its scientific research and international cooperation projects, the university has developed a variety of products and technological production processes that benefit people's lives and promote export, thus helping the University gain prestige in national and international markets.

CTU's role in the project will be to support the development of the training program for the extension team and provide training courses on all aspects of fruit farming, soil fertility management and integrated pest management. CTU is keen to join the project, as it will allow their staff to share and apply their knowledge and expertise in a real value chain. The project will also select every year a group of master students to undertake their thesis work at the project demonstration farms, to collect and analyse data and compare different farming practices and the impact this has on yield and profitability.

#### *Fresh Studio/Fresh Academy (not a project partner)*

Fresh Studio is a consulting and R&D company whose main interest to assist its clients in the sustainable production and marketing of food. Although FS is not an official partner of the project, TFR will subcontract Fresh Studio for the work that needs to be done for the baseline study and the nursery survey as the FS team has a lot experience in both the data collection, as well as reporting. In addition, the expertise of Fresh Studio, in developing access to finance programs, will be used to help TFR get this very important program from the ground and train the TFR team (loan officers and extension team) in managing the farmer loan program. Finally, the experience of FS with setting up Fresh Academy, to develop applied and hands 'on training programs together with Vietnamese universities and international private sector product specialists' staff and graphic designers, will add a lot of value added to the project.

### **3.4 Institutional and local embedding**

This consortium and project proposal are extremely well embedded in Vietnam. All activities are geared towards financial and institutional sustainability, so that all developed activities will continue and grow in Vietnam after the project has finished:

- SME Vietnamese fruit tree nurseries will be professionalised and certified for providing virus free fruit tree seedlings. These nurseries will become preferred suppliers for the TFR contract farmers. In addition, as a result of the project support these nurseries will earn a very good reputation enabling them to grow and obtain a premium for their better-quality seedlings

- The continuous training and development of the TFR extension team by two permanent based international citrus production specialists, in combination with the training from Can Tho university, will ensure that all the knowledge will be embedded within the organisation so that it can be offered to contract farmers continuously. This will be further strengthened by the 3 citrus training centres and the software system for collecting all farmer input, output, and required certification data.
- For the farmer fertilizer advisory service, the project will use the experiences gained from advising the citrus farmers, to develop a business model that can add value to other Vietnamese smallholders. For example, if the costs of the lab test is US\$ 50-75, and a farmer can increase yields and quality, and possibly save fertilizer costs, earning an additional US\$ 1,000 per year, Vietnamese farmers will be keen to adopt such a service. If this works out well, this could eventually lead GAC to decide to invest into a laboratory in Vietnam
- The cooperation with CTU university is aimed towards creating closer ties between education, research and the private sector. The aim of the joint developed citrus production training materials is that these will also be incorporated in the education programs of the university
- Both the provincial and national level cooperation with the project will ensure that policies at different levels will create a better enabling environment for farmers and companies, such as the pesticide policies, as well as market access
- Also, for the access to finance program, the aim is that towards the end of the project, local banks get involved with the program, so that also this credit program becomes locally embedded.

### 3.5 PPP and project governance

The complete project organisation chart and governance structure is presented in the figure below. TFR will be responsible for the overall project management but will always report to the project director of Kloosteboer bv. Every project partner appoints one project principal, who will be a member of the project management team. The Project Management Team (PMT) is responsible for the daily management of the project and will organise quarterly or bi-annually progress meetings and keep a close eye on the progress in each result area.

Figure 18 SUCCEEDS project organisation chart

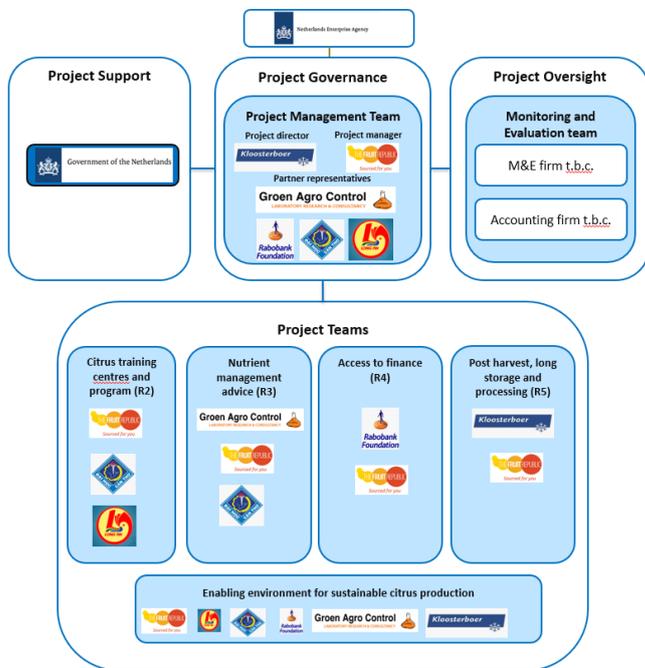
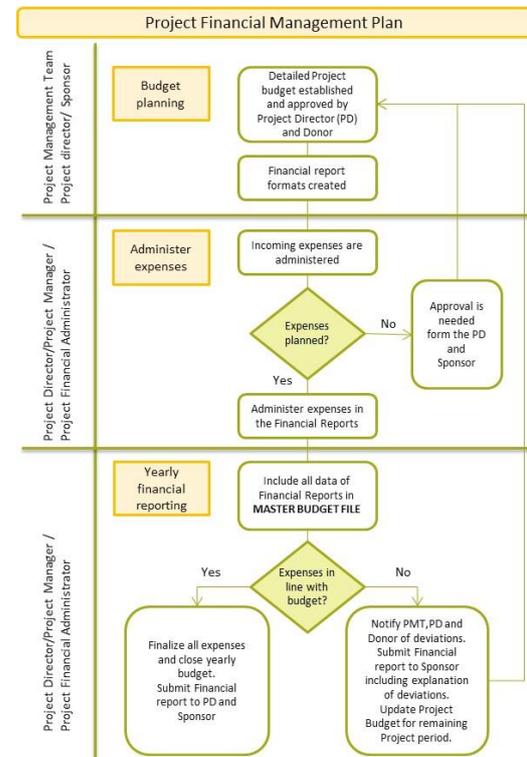


Figure 19 SUCCEEDS project financial management



The PMT is also responsible for writing progress reports and communicating regularly with the Monitoring & Evaluation (M&E) team, to make sure the project is running according to plan and budget. The Financial & Administrative Support (FAS) will support the PMT in all financial and administrative matters of the project and will make sure that compliance is organised efficiently and according to the rules of the subsidy provider.

The project will start with a inception workshop in the Mekong Delta (Vietnam) in which all partners will join, after which every year one annual project progress workshops with all project partners will be held. In the beginning more frequent PMT meeting conference calls (quarterly) will be organised to touch base, but also to make decisions which are carried by the whole consortium after consulting each partner. When there is no consensus on a certain decision, the project director has the final say. Consortium meetings will occur less frequently as the project develops (bi-annually) and communication among consortium partners happens on a regular and structural basis.

Figure 19 shows the project financial management plan, where there is close collaboration between the donor, project director, project manager and project financial administrator in all phases of the financial management: budget planning; expense administration and the yearly financial reporting.

Regarding the ownership of the project's output in hardware, all hardware will be owned by The Fruit Republic. Smaller hardware items for the nurseries will be owned by the participating nurseries in the project.

## **4. Financial**

### **4.1 Project budget**

The project budget is presented in Annex 3. Some small notes about the sheet:

- The contribution sheet calculates the subsidy per project partner automatically as a 50% of the total costs. In our project we will want to allocate the subsidies a bit different:
  - A part of the subsidy of KBI and all of Rabobank Foundation will be shifted to Can Tho university
  - Can Tho University will be subsidized for all their costs
- In the overview sheet (no. 3), M&E is shown as 0, while in reality we plan budget for M&E. We will hire M&E services from a third party. So, the costs for M&E can be found in the third-party cost of the applicant partner. But also quite some of the project management activities, like organising the kick-off workshop, progress workshops, the baseline survey are important elements of the M&E activities. These costs are now categorised under project management costs.

### **4.2 Financing of the own contribution**

#### *Kloosterboer Investments bv*

- If this proposal will be supported by the SDGP program, KBI will invest EUR 649,755 in cash.
- In the financial statement attached to this proposal KBI shows that it has sufficient resources at its disposal to make this investment according to the SDGP financial ratio's as mentioned in the financial guidelines

#### *The Fruit Republic*

- If this proposal will be supported by the SDGP program, TFR will invest EUR € 1,280,028 in cash.
- In the financial statement attached to this proposal TFR shows that it has sufficient resources at its disposal, to make this investment according to the SDGP financial ratio's as mentioned in the financial guidelines

#### *Rabo foundation*

- If this proposal will be supported by the SDGP program, Rabo Foundation will invest EUR € 28,380.
- This investment will be in kind, for time spent on the project, as some small cash costs such as travel and hotel costs

#### *Groen Agro Control*

- If this proposal will be supported by the SDGP program, GAC will invest EUR € 35,845
- This investment will be in kind, for time spent on the project, as some small cash costs such as travel and hotel costs

## 5 Sustainability and ICSR

### 5.1 Impact of the project on the three crosscutting policy themes

#### a. Climate adaptation

The Mekong Delta is one of the delta regions in the world predicted to be most negatively affected by climate change, and its resultant global warming and rising sea levels.

Our project will contribute to climate adaptation through the reduction of the use of surface and ground water, which is a major factor for land subsidence. This will be achieved through the introduction of water saving irrigation systems for citrus farms. Three demonstration farms in the key production regions will be setup to demonstrate to the farmers the positive impact of irrigation and fertigation systems. Through the access to finance program, farmers will then have the ability to invest in these systems on their own farms.

#### b. Circular economy

The project is contributing to the circular economy by:

- Reducing agro-chemical inputs significantly
  - Currently citrus farmers just apply fertilizers based on advice from the sales staff from fertilizer companies. Unlike in Europe, in Vietnam fertilizer companies are very much focused on selling as much fertilizers as possible, and not focused on helping farmers to get the best result. So, farmers mostly overuse chemical fertilizers and apply it in the wrong ratio. This is a lot of waste of materials.
  - The project is investing in tailor-made fertilizer advice service, so the farmer will only apply the nutrients which the plant really needs. This will prevent a lot of fertilizer over use. For example, the World Bank calculated that for rice farming in the Mekong Delta, about US\$ 150 million dollar is wasted per year because of the overuse of fertilizers.
  - The project will also have a big impact on reducing the amount of pesticides that farmers use for citrus farms. Again, farmers main source of advice are the pesticide retailers, who just have short term sales target in mind, instead of what is best for the farmer. Through our high-level extension system, we will help the farmer to reduce pesticide use.
- Recycle low class citrus fruit, which would otherwise have been destroyed, to produce juice and oil:
  - Normally low-class citrus cannot be sold to consumers anymore, so it will be destroyed. In our project we will invest into a machine to extract juice and oil out of low-class citrus fruits. This juice and oil will be sold to the food processing industry. In our five-year project period, we can prevent the wastage of almost 7,500,000 kg of citrus fruits with this investment.

#### c. Gender strategy

In Vietnam, women traditionally already play a very strong role in agriculture. Both as producers and as traders. In Vietnam there are many more women involved in farming and agri-business than in the Netherlands, for example.

Most citrus farms are managed by husband and wife. There is a certain task division, where, for example, men apply the chemicals (fertilizers and pesticides) and women take care of harvesting and weeding. The reason men are responsible for applying the agro-chemicals, is because farmers know that this could have a negative impact on the reproductive health of women and on her ability to safely breast feed her children (in the rural areas, women breast feed their children at least 1 year).

Also, within the TFR company, women already have at least 50% of the lower, middle and higher management positions in the company. This is for Vietnam quite normal, as often companies (from small to large) are founded and led by women.

The main area of concern for which we will implement a special gender strategy is for all training programs and workshops. Often the training workshops are dominated by men, and the women remain working on the farm or at home taking care of the household during the workshop time. As both husband and wife are busy with the farm the whole day, there is simply no time for both of them to attend to the training workshops. Without any special strategy to attract women to the training workshops, the participation of women would only be about 20% of the participants, while this should be 50%.

Several strategies which will be used to ensure that also all women are trained:

- Split men and women in different training groups and ensuring that the training sessions take place at separate times. This will allow the women to attend the training session, while the men take care of the household
- During the baseline survey we will ask the women which time, which day of the week would fit their schedules the best and at which location. Based on this information we can then ensure that the training groups for women are organized at the most convenient time and place
- We will require that to become a certified contract farmer of TFR, both husband and wife need to follow all training courses and pass the tests.

Also, for the access to finance programs, care will be taken that both the husband and wife will be engaged in the program.

## 5.2 Other Corporate Social Responsibility (CSR) themes based on OECD guidelines

The General Policies of the OECD guidelines on CSR cover a wide range of themes including: sustainable development; human rights; local capacity building; and facilitating employment, training opportunities and workers' rights. The guidelines expect companies to promote respect for these themes with their workers and in their business dealings and supply chains.

With respect to sustainable development, local capacity building, and facilitating training opportunities and employment, the SUCCEED project's support for these themes is already well documented in the description of the project aims and activities. On respect for human rights and workers' rights, all partners in this consortium are strongly against the use of child labour and forced labour and also have strict policies on this that apply to their own dealings as well as their trade and business with other parties. The partners in this project will make all efforts required to prevent the use of child labour and forced labour in the whole trade and investment chain of all activities they are involved in. TFR, for example, is monitored and audited on these topics by independent third parties as part of the social standard certification (SMETA), which is accredited for this by the Ethical Trading Initiative (ETI).

The project itself will take the following efforts to ensure compliance with international social standards in the operations of TFR, as well ensuring that these labour standards are also applied at the contract farmers:

- The TFR factory will be audited and compliant with the Ethical Trading Initiative (ETI) SMETA standard.
- All contract farmers will be audited and compliant with the Ethical Trading Initiative (ETI) SMETA or the social standard of GlobalGAP named GRASP.

*Figure 20 The Mekong Delta during the dry season and during an excessive rainfall situation in the rainy season*



*ICSR risks*

According to the MVO risk checker, the selection "Vietnam" and "Citrus" resulted in the following risks:

<b>Theme</b>	<b>Identified risks</b>	<b>Likelihood</b> Low, Medium, High	<b>Level of Impact</b> Low, Medium, High	<b>Risk mitigation activities</b>	<b>Responsible partner</b>
Disclosure	Unclear disclosure policy due to lack of understanding of (new) concept for some partners and possible language barrier.	Medium	Low	Clear guidance during kick off workshop and relevant documents translated into local language	KBI and TFR
Human Rights	Vietnam is considered to be "not free" according to the Freedom House Country List. The main risk related to our project could be the illegal appropriation of land by the government and farmers losing this land. As "land grabbing" is a very sensitive topic in Vietnam, this is not something which happens often, as farmers will not accept this. Land conflicts can happen when business parks or residential areas are setup. As we mostly work in remote rural areas, the risk that this happens is rare.	Low	Low	We ensure to not work with Vietnamese companies of whom it is know that they have obtained land from the government and kicked out the farmers.	TFR
Employment and Industrial Relations	Vietnam scores a 4 on the ITUC Global Rights Index (scale 1-5) for freedom of association and workers' rights, which stands for systematic violations of labour rights. There is a risk that suppliers of for example packaging materials to TFR violate worker rights. Also, farmers could violate the rights of workers	Medium	Low	TFR requires all contract farmers to be compliant with the ETI social standard, which addresses this issue.  As part of the inception phase, TFR will carry out an review of key suppliers and see how they score on the Employment relations. IN case of a bad score we will either stop to work with this supplier, or if the supplier is willing, help them to solve noted issues.	TFR
Living wage	The individual living wage set for Vietnam is VND 4,752,300 per month. This is above the official minimum wage. It is not clear if the individual living wage is for urban areas or for rural areas as this will be quite different. But at this level of VDN 4.7 mln per month, there is a risk that suppliers of TFR, of f.e. packaging materials, only pay their workers the minimum wage which is below the living wage. For the provincial government partner and Can Tho University it is also quite likely that they will have pay scales which are below the living wage	Low	Medium	During the above-mentioned supplier review, we will also asses if suppliers pay living wages.  During inception phase we will review with Vietnamese partner the pay scales in their organisation  Make 'living wages paid' a selection criterion for TFR suppliers	TFR CTU BLPC
Child labour	According to the ILP child labour is a problem in Vietnam. Most farmers ensure that their children got to school and spend most time on this and not on working on the farm. For TFR contract	Low	Low	The non-use of child labour is a crucial selection criterion of the selection of fruit farmers and any other supplier of TFR;	All

<b>Theme</b>	<b>Identified risks</b>	<b>Likelihood</b> Low, Medium, High	<b>Level of Impact</b> Low, Medium, High	<b>Risk mitigation activities</b>	<b>Responsible partner</b>
	farmers this is not a risk, as this a key criteria for farmer selection and audited several times per year by an independent auditor. But during the selection of new farmers, there is a risk that some farmers use child labour			Both TFR and TFR contract farmers are ETI certified and audited on this aspect  This will also be included in the project cooperation and partnership agreement between partners	
Environment	Changing behaviour on how to deal with the environment and all related resources in a sustainable way.	High	Medium	A big part of the project is focussed on this topic, providing: <ul style="list-style-type: none"> <li>- Training</li> <li>- Certification</li> <li>- Pesticide waste collection</li> </ul>	TFR, CTU, BLPPC
Combating Bribery, Bribe Solicitation and Extortion.	Corruption in Vietnam is a big problem. It will be difficult to identify among project partners, farmers and suppliers.	Medium	High	A non-bribery clause will be included in the partnership/cooperation agreement in the inception phase	All
(Sexual) Misbehaviour by project staff	Difficult to identify and assess the risk level	Low	High	Emphasize the abolishment of this behaviour in the partnership/cooperation agreement	All
Consumer Interests	Unsafe agriculture products are a big risk in Vietnam, this is one of reasons we are undertaking this project.	Low	High	Therefore the project will provide training, quality control, and certification	All
Science and Technology	No risk identified				
Competition	No risk identified				
Taxation	No risk identified				
Animal welfare	No risk identified			-	-

## **6. Project monitoring, evaluation and learning (MEL)**

### **6.1 Project monitoring and evaluation (M&E)**

A very detailed impact pathway document has been made, in which we have setup six impact areas, with in total 58 activities, and 128 sub-results and means of verification. All these activities and sub results, lead to 25 concrete outputs, 14 immediate outcomes, 9 intermediate outcomes and 8 ultimate outcomes. This file is attached as a separate annex to the proposal. This impact pathway file will be used as the roadmap and guideline to monitor the project progress over the five-year lifespan.

The project will start with a kick-off workshop with all project partners, during which specific persons of each project partner will be made responsible for each activity and result. The kick-off workshop will also be used to plan in detail the workplan for the first project year. This is a very important activity, in which all partners will participate, so that all partners will be aligned (in-depth) about the current situation of citrus farming in the Mekong Delta.

In the inception phase an external third party will be contracted for the five years of M&E of the project. Based on our very detailed Impact Pathway document, the M&E consultant will develop a monitoring and evaluation framework and finetune the data that will need to be collected. The M&E consultant will be part of the design team for the baseline survey. The M&E consultant will prepare an annual M&E progress report, and during the third progress workshop, will organise a project mid-term review with all the project partners.

Every year all project partners will come together in Vietnam, for a project progress workshop, where all partners will present their executed activities, achieved results, status of planned versus actual results, planning for the next year.

### **6.2 Project learning (L)**

#### **6.2.1 Impact Pathways**

To achieve this project aim, we have developed an impact pathway strategy which consists out of the inception phase and five main impact pathways:

1. Inception phase
2. Citrus training centres and a professional citrus farm management program
3. Farm specific nutrient management advice service
4. Access to finance program for citrus smallholders
5. Efficient, high-tech and big data driven citrus processing chain
6. Developing an enabling environment for sustainable citrus production

The complete impact pathways figure is presented in Figure 21. We have added the "impact pathways" file as an additional annex (O) to the project proposal. This is an excel workbook with seven worksheets, starting with one worksheet showing the overall project pathway and then providing a detailed worksheet per result area in which the activities and means of verification are provided.

Figure 21 SUCCEEDS project impact pathway

Impact areas	Key Activities	Outputs	Immediate Outcomes	Intermediate Outcomes	Ultimate outcomes
ID Description	ID Description	ID Description	ID Description	ID Description	Description
<b>R1 Inception phase</b>	2.1 Develop software system with dashboard to manage and support 500 farmers to comply with GLOBALG.A.P. and international social standards, to manage the citrus loan program and improve productivity, profitability and training extension and qc staff of TFR and local gov extension staff in organic/GLOBALG.A.P./social standard implementation and professional citrus farm management	1 Software dashboard system is operational and capable of monitoring large numbers of smallholder farmers and supporting them with quality standard compliance/farm management/loans	1 Increased productivity and farm revenue of TFR contract citrus farmers, generating a total value of US\$ 35 mln over the total project period	1 TFR contract farmers increase the economic life span of their citrus orchards from 7 to 12 years, resulting in a total value of US\$ 121 mln	Doubled farm incomes of 150,000 citrus farmers in the Mekong Delta, through the adoption of more sustainable and profitable production practices
<b>R2 Citrus training centers and professional farm management training program</b>	2.5 Training extension and qc staff of TFR and local gov extension staff in organic/GLOBALG.A.P./social standard implementation and professional citrus farm management	2 500 TFR and 25 Provincial extension staff trained in GLOBALG.A.P./social standard implementation and professional citrus farm management	2 Certified citrus tree nurseries provided virus free fruit trees to 20,000 farmers over the total project period. The total value of prevented yield loss has a value of approx US\$ 16 million in the project period	2 Project production protocols, training materials, demo farms, farmer field days, certified nurseries, trained provincial governmental staff, media coverage, and project training videos will result in ~20,000 citrus farmers adopting more sustainable	Sustainable citrus production practices applied by farmers on 136,000 hectares of citrus in the Mekong Delta
	2.7 Training citrus farmers and their key staff in organic/GLOBALG.A.P./social standard implementation and professional citrus farm management	3 750 citrus farmers and 1000 farm staff trained in GLOBALG.A.P., social standard implementation and professional citrus farm management	3 Increased net farm income per hectare of TFR contract farmers with at least 50% compared to their farm income before they joined the TFR value chain	3 TFR will roll out the project model to other exotic fruits like young drink coconut, dragon fruit and passion fruit, creating the same impact as for citrus	Increase the export earnings of the Vietnamese citrus sector to US\$ 250 mln and diversify the export markets, lowering the current dependency of the Vietnamese export fruit sector on Japan, Korea and China
	2.8 Setup contract farming system and auditing of 500 citrus farmers for GLOBALG.A.P. and for social standard (ETI-SMETA)	4 500 TFR contract farmers GLOBALG.A.P. and social standard certified	4 Increased the net farm income per hectare of citrus farmers buying citrus seedlings from the 6 certified nurseries by at least 20%	4 Other Vietnamese companies will adopt the model of The Fruit Republic, as a result of which more successful chains will be	All 250 privately owned fruit tree nurseries in the Mekong Delta produce certified virus free fruit tree seedlings
	2.10 / 2.11 Detailed monitoring and input-output data analysis of the implementation of the citrus production standard and correlation of all data along the complete chain, fed back to farmers	5 Annual farm management performance reviews with 500 farmers, benchmarking financial, quality, environmental and loan performance	5 The number of people directly employed through the TFR value chain for citrus reaches 5,000 persons by the end of the project	5 Vietnamese banks will start to provide more access to finance through value chain cooperation projects with Vietnamese fruit	All provincial governments in the Mekong Delta, actively enforce the national pesticide laws and audit 25% of the pesticide shops in their province
	2.12 Setup 3 citrus training centres and demonstration farms and organise bi-annual farmer fields days in each demo farm in four project years	6 2 MSc thesis from international university quantifying the differences in environmental impacts from conventional citrus farming versus the TFR GG certified farmers (water, fertilisation of citrus in the Mekong Delta)	6 Decreased the negative environmental effects from the misuse of agro-chemicals and overuse of water in citrus farming by at least 50% compared with normal practices	6 Groen Agro Control invests in Vietnam by establishing a laboratory offering fertilizer advisory services to a wide range of agricultural sectors in Vietnam.	All provinces in the Mekong Delta collect and incinerate agro-chemical packaging materials
<b>R3 Farm specific soil nutrient management advise services</b>	3.1 Organisation of the seminar "Profitable and Sustainable Nutrient management for citrus in the Mekong Delta" bringing together all experts from private and public sector	7 10,000 farmers visited the 3 citrus training centres and demonstration farms	7 Tested and extensively proven production protocol for sustainable and economically efficient citrus production in the Mekong Delta made available to 10,000 citrus farmers visiting the 3	7 Influenced national policies on agro-chemical legislation and enhanced enforcement of these laws at the national and provincial level	Prevented the loss of the domestic citrus market to cheap citrus fruits imported from large corporate farms in South Africa and Latin America
	3.2 Setup small lab in TFR and train staff in preparing soil and leaf tissue samples for analysis	8 Seminar report summarizing state-of-the-art available knowledge on fertilisation of citrus in the Mekong Delta	8 Successful access to finance model allows TFR to upscale to more farmers and sets an example to be used by other agriculture companies operating in Vietnam	8 Supported the national market access trade negotiation team of Vietnam to obtain market access for Vietnamese citrus to Japan, Korea, Thailand, USA, Australia and New Zealand	Prevented smallholder fruit farmers from being crowded out by large corporate farmers, by including them in fruit value chains
	3.6 Training TFR staff in translating lab results into farm specific nutrient management advice	9 One soil and plant tissue analysis lab, which prepares 500 soil samples and undertakes first measurements, operational in TFR. Final analysis occurs in the Netherlands	9 Successfully supply the domestic and international market with 55 mln kg top quality, certified sustainable, healthy and food safe citrus in project period	9 The positive cooperation between the provincial authorities and TFR creates a good basis to cooperate more and become an example for other provinces in the Mekong	
	3.7 Providing site specific nutrient management programs and monitoring the impact	10 25 agronomist TFR staff able to provide farm specific soil management nutrient advice	10 Successful supply the world market with at least 2.5 mln kg processed citrus juice during the project period, adding value to 7.6 mln kg of low quality citrus that would otherwise be		
	3.8 Monitoring and evaluation of actual nutrient management practices and comparison with advice	11 500 farmers received individual soil nutrient management protocols	10 Stimulated the consumption among 1,000,000 domestic consumers of healthy vitamin and fibre rich citrus		
<b>R4 Access to finance program for citrus smallholders</b>	1.4 Development of financial product for farmer loans	12 Two MSc thesis analysing the impact of the nutrient management advise	11 Long An pesticide waste collection system, collected and incinerated 25,000 kg of empty agro-chemical packaging materials during the project	11 National pesticide laws enforced at provincial level, setting an example for other provinces	
	4.4/ 4.5 Farmers selected for loans, contracts signed and loans disbursed	13 Loan agreement between TFR and a financial institution for a loan program for TFR contract farmers	12 National waste collection system, collected and incinerated 25,000 kg of empty agro-chemical packaging materials during the project	12 Large number of national and local public and private actors inspired by the SUCCEEDS PPP: developed extension system, access to finance and high tech fruit farming technology for more sustainable and profitable citrus farming, continued and financed by the private sector, as an example model for other agriculture subsectors	
		14 200 farmers and 5 nurseries received access to finance to comply with GLOBALG.A.P. and upgrade their nursery	13 Stimulated the consumption among 1,000,000 domestic consumers of healthy vitamin and fibre rich citrus		
<b>R5 Efficient, high-tech and big data driven citrus value chain</b>	5.1/ 5.2 Setup state-of-the-art citrus sorting, grading machine	15 Trained staff use state-of-the-art citrus sorting/grading line to handle 14 mln kg per year	14 200 farmers and 5 nurseries received access to finance to comply with GLOBALG.A.P. and upgrade their nursery		
	5.4/ 5.5 Setup controlled atmosphere cold rooms for long-term storage of citrus	16 HACCP certified CA coldstore for long term storage of citrus operational. 50 staff trained	15 Trained staff use state-of-the-art citrus sorting/grading line to handle 14 mln kg per year		
<b>R6 Creating an enabling environment for sustainable citrus production</b>	5.6 Setup citrus juice and oil extraction system to add value to low quality citrus	17 Citrus juice and oil extraction line processing 5.8 mln kg of low grade citrus fruits in the project period	16 HACCP certified CA coldstore for long term storage of citrus operational. 50 staff trained		
	6.2 Long An Province strategic citrus sector development plan implemented	18 Long An pesticide waste collection system, collecting and incinerating, from 500 farmers	17 Citrus juice and oil extraction line processing 5.8 mln kg of low grade citrus fruits in the project period		
	6.1 Setup TFR demo nursery and select/train/upgrade 5 existing citrus nurseries	19 In total 50 pesticide shops in Long An Province audited for compliance with Vietnamese pesticide laws	18 Long An pesticide waste collection system, collecting and incinerating, from 500 farmers	18 Long An pesticide waste collection system, collecting and incinerated 25,000 kg of empty agro-chemical packaging materials during the project	
	6.4 Develop national consumer awareness campaign for sustainable citrus	20 5 citrus nurseries professionalised and one 1 TFR example nursery and certified for selling disease free	19 In total 50 pesticide shops in Long An Province audited for compliance with Vietnamese pesticide laws	19 National pesticide laws enforced at provincial level, setting an example for other provinces	
	6.5 Organise National Sustainable Citrus Dialogue which brings stakeholders in the citrus sector together aimed to strengthen the sustainability and competitiveness of the Vietnamese citrus	21 1,000,000 Vietnamese consumers reached by consumer awareness campaign for sustainable citrus	20 5 citrus nurseries professionalised and one 1 TFR example nursery and certified for selling disease free	20 Stimulated the consumption among 1,000,000 domestic consumers of healthy vitamin and fibre rich citrus	
	6.6 Recognition by public/private sector education/training organisations of the training modules for the sustainable citrus production	22 3 national sustainable citrus dialogues have been organised resulting in concrete action plans for both the public and private sector	21 1,000,000 Vietnamese consumers reached by consumer awareness campaign for sustainable citrus	21 Long An pesticide waste collection system, collected and incinerated 25,000 kg of empty agro-chemical packaging materials during the project	
	6.7 Large Mekong Delta fruit sector conference, showcasing the impact of the SUCCEEDS project and presenting the PPP as model for developing the agriculture sector	23 Letters by authorised public/private sector indicating adoption of and/or willingness to integrate the modules in their curriculae	22 3 national sustainable citrus dialogues have been organised resulting in concrete action plans for both the public and private sector	22 National waste collection system, collected and incinerated 25,000 kg of empty agro-chemical packaging materials during the project	

## 6.2.2 Overall development impact of project

As can be seen in the above figure we have 9 intermediate outcomes, which will hopefully result in 8 ultimate outcomes. While the project period is five years, the impact of the nursery program and farm management program will be much longer. Thus when describing the intermediate outcomes we should, in fact, look at a period equivalent to the economic life span of the citrus orchards, which we target to expand from just 7 years to 12 years. This should lead to the following intermediate outcomes:

- TFR contract farmers increase the economic life span of their citrus orchards from 7 to 12 years, resulting in a total value of US\$ 121 mln
- On the longer run, we want to upscale all project production protocols, training materials, demo farms, farmer field days, certified nurseries, trained provincial governmental staff, media coverage, and project training videos to many more citrus farmers than the 500 contract farmers. Through good cooperation with media and the ministry of agriculture, we aim to have 20,000 citrus farmers adopting more sustainable and profitable production
- TFR will roll out the project model to other exotic fruits like young drink coconut, dragon fruit and passion fruit, creating the same impact as for citrus
- By sharing our approach and results in various national workshops, we expect that other Vietnamese companies will copy and adopt the model of The Fruit Republic, as a result of which more successful chains will be developed.
- A successful track record with our access to finance program with Rabo Foundation should lead to Vietnamese banks starting to provide more access to finance through value chain cooperation projects with Vietnamese fruit companies
- Based on the experiences in the project, Groen Agro Control is expected to invest into a laboratory in Vietnam, offering fertilizer advisory services to a wide range of agricultural sectors in Vietnam, as well as all pesticide residue testing, so that TFR does not have to send all samples to the Netherlands by air anymore, and also other VN companies can get access to professional (and fast) lab results.
- We will use the experiences with Long An Province to show case how the province enforced pesticide laws at provincial level, and let this model be rolled out to other provinces. As a result of which we will have influenced national policies on agro-chemical legislation and enforcement of these laws at the national and provincial level.
- We will have supported the national market access trade negotiation team of Vietnam in obtaining market access for Vietnamese citrus to Japan, Korea, Thailand, Indonesia, Australia and New Zealand
- The positive cooperation between the provincial authorities and TFR creates a good basis to cooperate more and become an example for other provinces in the Mekong Delta

## 6.2.3 Key Impact Pathways

### ***R2 Establishing citrus training centres and the implementation of a professional citrus farm management program***

As can be seen in Figure 18, R2 consists out of 13 key activities with 32 outputs and means of verification. R2 will start immediately after the inception phase and will continue till the end of the project.

#### *R2 Pathway Hypothesis:*

The main hypothesis for the result 2 pathway is that by providing training (to farmers and extensionists), setting up demo farms and citrus training centres, and developing detailed data collection from which the resulting analysis is shared with farmers, we can improve farm management practices significantly, as a result of which:

- yields will improve,

- the percentage of class 1 fruits will increase,
- the peak production period will shift towards the March-June period, when prices are much higher; and
- the economic life span of the tree will increase from 7 to 12 years.

The ultimate outcomes and key impacts are well described in the figure above and the annex, so they will not be repeated here.

#### *R2 Assumptions*

- A key assumption is that we will be able to find high level citrus production specialists from South Africa, Australia, Spain etc, who will be willing to stay four years in the Mekong Delta and work closely with our staff and farmers. We also assume that they will be open to adapt to the local situation and listen to the experiences and ideas of our staff and farmers. We are confident that we will find the right two candidates, as through our international fruit trade network, we have contact with people all over the world who are active in citrus farming.
- Using local knowledge and their vast experience on nurseries, farm management and extension, we assume that these specialists will be able to develop improved nurseries and cropping systems, which will double the economic life span of the orchards and increase productivity. Looking at the current low-level farm management, we are confident this is possible.
- Another key assumption is that we will be able to efficiently handle the very large administrative burden of 500 contract farmers. For both GLOBALG.A.P. and the social standards a lot of record keeping is required, for which the farmers will need a lot of help. Our assumption is that with our newly developed software system and a dedicated special admin team that supports the extension team, we will be able to handle this
- The final important assumption for this result area is that we will be able to develop a very strong integrated software system to support and monitor our farmers rather than buying existing software or hiring an IT firm. Within TFR we have a team of four people, with quite some experience in database and software development. This team understands all company processes very well, as they have worked with TFR for a long time. Our team has reviewed available farm monitoring/supply chain software and will continue to do so, but so far we have not found anything that fits us well. As TFR is based in Can Tho, it is also not easy to get a good locally based software company to support us. On the other hand, we are confident that we can recruit a team of up to 3 experienced software and database programmers, who will focus fulltime on this activity. By offering them good salaries and clear KPIs we have more confidence, that we will be able to retain these programmers for long term, as we have a lot of good people management experience.

#### **R3 Create farm specific nutrient management advice**

R3 consists out of 9 key activities with 15 outputs and means of verification.

#### *R3 Pathway Hypothesis:*

- The main hypothesis for the result 3 pathway is that individual farm soil and leaf sampling will result in an optimal fertilizer advice, which will significantly increase the yield and the percentage of class 1 fruits while decreasing the leaching of overused (esp. urea) fertilizers into surface and ground water.
- In order to upscale the individual farmer fertilizer advice service at the end of the project, our hypothesis is that the cost for the soil sample and the fertilizer advice, will be outweighed by the benefit of a higher yield and more class 1 fruits.

The ultimate outcomes and key impacts are well described in Figure 18, so we will not repeat this.

#### *R3 Assumptions*

- A key assumption is that with the experience and knowledge of our own team, soil scientists from Can Tho University, our international citrus production experts and the expertise of Groen Agro Control, we can develop a very good and effective fertilizer recommendation.

#### **R4 Establishing an access to finance program for citrus smallholders**

R4 consists of 7 key activities with 17 outputs and means of verification.

##### *R4 Pathway Hypothesis:*

- The main hypothesis is that the farmers are limited by negative cash flows in the first three years after planting a citrus orchard and access to credit would increase farmer participation in the TFR GLOBALG.A.P. program by allowing farmers to invest in their farms and become GLOBALG.A.P. compliant.
- The second hypothesis is that if farmers see the impact of advanced farm management e.g. more spacing between trees, fertigation systems, and better seedlings, they will want to invest in these farm inputs and a citrus farm improvement loan would become a valued service provided by TFR.

##### *R4 Assumptions*

- A key assumption for the loan for compliance with GLOBALG.A.P., is that farmers will be able to pass the GLOBALG.A.P. audit, as a result of which they will join the domestic and export value chain. Sales of high-value lime to TFR will become a means of repaying their loans and increasing their income, thereby covering the cost of borrowing.
- Another key assumption is that the current low rate of borrowing among farmers is the result of poor product design, difficult application procedures and high collateral requirements and that credit provided by TFR that fits the business cycle and investment needs of lime farming will encourage investment.

#### **R5 Efficient, high-tech and big data driven citrus processing chain**

R5 consists of 7 key activities with 14 outputs and means of verification.

##### *R5 Pathway Hypothesis:*

- The main hypothesis is that with the high-tech sorting machine, we can improve the quality of our citrus, in the following ways:
  - Citrus fruit will be better sorted, resulting in batches of fruit that are more evenly sized and coloured, with similar skin quality
  - Through the provision of (automatic) quantified feedback about the quality of each sorted lot, from each individual farmer, our field staff and the farmer will be incentivized to improve his quality.
- In addition, our hypothesis is that with this machine we can improve the productivity of our packhouse operations, so that higher volumes can be managed more easily
- Another key hypothesis is that by using special control atmosphere (CA) cold rooms, we can better deal with the peak production of the citrus farmers, and in this way are able to handle more volume
- The processing of low-class citrus into Not For Concentrate (NFC) juice, which will be frozen for long shelf life will improve our efficiency and will lead to much less waste.

##### *R5 Assumptions*

- Our assumption is that the high-tech sorting and grading machine will be easy to maintain and repair.
- That through the enormous network of Kloosterboer in the frozen juice industry we can find clients who will buy high quality NFC citrus juices. One big client f.e. of Kloosterboer, is Innocent. Innocent has become the biggest fruit smoothie company in Europe, and they need fruit purees and NFC juices. They care a lot about social and environmental sustainability. This project fits perfectly with their and our values. So, this is one large potential customer that we could approach.

#### **R6 Creating an enabling environment for sustainable citrus production**

R6 consists of 7 key activities with 24 outputs and means of verification.

#### *R6 Pathway Hypothesis:*

- We hypothesize that nurseries are willing to invest, to be trained and upgraded so that they are capable of guaranteeing that the seedlings they sell are virus free, thereby enabling a sustainable citrus sector.
- Our hypothesis is that a consumer awareness campaign can convince Vietnamese consumers to purchase safe and sustainably produced citrus at a higher price than conventional products.
- Our hypothesis is that by forming a strong partnership with citrus farmers, Long An provincial officials, and an export company, national policy makers will adapt the current agrochemical policy to better support the sector.

#### *R6 Assumptions*

- Our assumption is that the project results will lead to quite some interest from both the private and public sector for the PPP model which we developed with the SUCCEEDS project, and that this model will be applied for more crops in different provinces in the Mekong Delta. The most effective way to do this will be the Long An Provincial officials themselves to convince their provincial peers. At the same time, we would, for example, plan to use the new Dutch – Vietnamese program for the Mekong Delta Agriculture Transition Plan, (MD-ATP) as a platform to share the SUCCEEDS experiences and lessons learned.
- We assume that through our national citrus dialogues, we will get the national level government actively lobbying for market access for Vietnamese citrus to Japan, Korea, New Zealand, Australia, Thailand and the USA.

### **6.3 Inception phase**

#### *R1 Inception phase*

All 15 key activities that will happen in the inception phase and the 24 outputs and means of verification, are presented in the Figure 22. The inception phase will take an estimated period of six months.

During the inception phase we will also contract an M&E third party<sup>5</sup>, who together with the project team will develop the M&E plan and collect data during the project period.

An important activity in the inception phase, is the project kick-off workshop where the project team building will start and a detailed workplan, budget, roles, project communication protocol, project management structure, etc. will be agreed. During this workshop the baseline survey will also be planned, in which most project partners will participate. This will ensure that all project partners understand the citrus sector and citrus farmer situation very well.

The results of the baseline study will also be used as input for developing the Long An citrus sector development strategy. The Vietnamese partners will plan several meetings to develop the first concepts and then organise a stakeholder workshop in the province to develop a participatory sector strategy, with inputs from all the various types of chain actors.

We will also conduct a fruit tree nursery sector study in the Mekong Delta, which we can use to identify the nurseries who are interested and have the potential to join the nursery improvement program.

Another important output in this phase will be an official loan agreement signed between a financial institution and TFR, to provide the TFR contract farmers with loans. Besides Rabo Foundation, several Vietnamese banks have also expressed an interest in cooperating with TFR in a supply chain financing model. But as Vietnamese banks are quite risk averse, it could be that they first would like

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<sup>5</sup> In the Annex 3 project budget, the M&E budget is not shown clearly as most budget spent on M&E is hired from a third party, which is not shown in the summary project budget sheet. In fact a lot of the project management is about collecting all MoVs, which then can be easily used for the M&E. So in reality also some of the PM budget can be considered as part of the M&E .

to see a pilot taking place with Rabo Foundation and TFR, after which this model can be upscaled with local banks at the end of the project.

Locations for the citrus training centres will be selected and designs for the special long-term citrus storage cold rooms and high-tech sorting lines will be made. Thus, after the inception phase has been approved by RVO, the construction can start immediately.

Figure 22 Detailed activities and Means of Verifications of the outputs of the inception phase

<b>Sustainable Citrus Value Chain Empowering and Developing Smallholders (SUCCEEDS)</b>		
<b>Result 1</b>		
<b>Title result</b>	Project initiation phase	
<b>Start-date</b>	01-06-2020	
<b>End-date</b>	31-12-2020	
<b>Sub-result (outcome and output)</b>	<b>MoV of the outputs</b>	
1.1	Establishment of the partnership between Kloosterboer, The Fruit Republic, Bien Luc People Committee, Can Tho University, Groen Agro Control and Rabo Foundation	1.1.1 Copy of the signed management agreement (further developed partnership agreement) between Kloosterboer, The Fruit Republic, Bien Luc People Committee, Can Tho University, Groen Agro Control and Rabo Foundation. 1.1.2 Report of the project kick off workshop
1.2	Legal financial agreement signed between KBI and TFR to incorporate their investment into the sustainable citrus chain project	1.2.1 Copy of the signed legal agreement, which details the investment of KBI in the SUCCEEDS project
1.3	Finalised technical assistance program	1.3.1 Copy of the detailed technical assistance program (including knowledge transfer), containing number of people to be trained, subject of training, time planning and trainer.
1.4	Development of financial product for farmer loans	1.4.1 The development of the following documents: the terms and conditions of the loan product(s) developed for citrus farm investment; the loan application; the loan contract template; credit policy and procedures; and a description of the reporting and monitoring framework to be applied. 1.4.2 Loan application from TFR to a financial institution approved and a loan agreement signed. The loan that TFR receives will be used to finance the TFR loan program with its farmers, allowing them to improve their farms
1.5	Selection of location of 3 citrus demo-farms and one TFR citrus demo nursery location secured	1.5.1 A document with a description of 3 selected locations for the citrus demo farms and one for the demo nursery. Showing the exact locations, farm map, soil characteristics, investment plan for developing the demofarm and demo-nursery 1.5.2 Copy of Vietnamese contract to develop demofarms and demo nursery legally signed by the owner of the land or a permission for land use from authorised authorities and English translation
1.6	Undertake baseline survey of citrus fruit tree nursery sector in the Mekong Delta	1.6.1 Report with result of the survey 1.6.2 Database with nurseries which can be approached for the citrus nursery professionalisation program
1.7	Expansion plan of packhouse with new state of the art citrus sorting and grading technology selected	1.7.1 Copy of the design and engineering plan. 1.7.2 A document with the selected state-of-the-art citrus sorting and grading technology: capabilities, specs, price quote
1.8	Develop strategic Long An provincial citrus sector plan	1.8.1 Minutes of a workshop to create a provincial strategic citrus sector development plan 1.8.2 Copy of a letter in which the strategic citrus sector plan is endorsed by Long An Province and commitment on interventions and support by the Long An PPC
1.9	Make design and engineering plan for new long term citrus storage cold rooms	1.9.1 Copy of the design and engineering plan for packhouse 1.9.2 Copy of the design and engineering plan for DC
1.10	Make final hardware plan.	1.10.1 Copy of the hardware plan, specifying type, amount, design, costs (investment), operation and maintenance costs and lifespan
1.11	Carry out baseline study among citrus farmers	1.11.1 Copy of the baseline study on the parameters as included in the M&E plan.
1.12	Make monitoring and evaluation plan.	1.12.1 Contracted an M&E third party for the whole project period 1.12.2 Copy of the monitoring and evaluation plan. This plan includes specification of the parameters to be measured and the used methodology(ies). Indicators align with the result framework of the Ministry of Foreign Affairs.
1.13	Make final updated detailed budget for the project.	1.13.1 Breakdown of budget by Sub-Result. 1.13.2 If one or more budgets at Result level deviates from the original project plan: Substantiate this deviation and specify the total costs for project management, Monitoring and Evaluation, Technical Assistance, Hardware for this or these Results. 1.13.3 Liquidity prognoses for the remainder of the project.
1.14	Updated impact pathway workplan	1.14.1 Updated version of the workplan
1.15	Make progress and completion report R1	1.15.1 The Progress Report elaborating on the implementation of the project, containing all documents stated in this result.

SDGP core indicators		Targets (entire) project		
Overarching Indicators	Unit	Dutch	Local	Other
Private sector co-financing generated	Euro	€ 650,000	€ 1,280,00	
Companies with plans to invest or trade	Number			
Jobs supported by project (FTE) - outcome	Number	15		5,000
<b>Result area 1: Combating malnutrition and undernourishment (obligatory for theme 1 projects - nutritional value)</b>				
Indicator	Unit	# Total	# of women	# of children (<5 yrs)
People directly reached - output	Number			
People indirectly reached - output	Number			
People with improved food intake - outcome	Number			
People with improved access to appropriate food- outcome	Number			
<b>Result area 2: Development of value chains (obligatory for theme 2 projects - sustainable value chains - for which either result 2 area and/or result 4 area indicators are obligatory)</b>				
Indicator	Unit	# Total	# of women	# of youth <35 yrs
Farmers directly reached - output	Number	20,500	10,250	10,250
Farmers indirectly reached-output	Number	10,000	5,000	5,000
Farmers with increased productivity and/or income - outcome	Number	20,500	10,250	10,250
Farmers with improved access to input and/or output markets - outcome	Number	20,500	10,250	10,250
Farmers whose farming enterprise became more resilient to possible stresses and/or shocks - outcome	Number	20,500	10,250	10,250
<b>Result area 3: Contributing to sustainable and climate-resilient food production systems (obligatory for theme 3 projects – sustainable and climate-resilient food production systems)</b>				
Indicator	Unit	Total		
Farmland directly reached - output	Hectares	20,750		
Farmland used more eco-friendly - outcome	Hectares	30,000		
Farmland that agro-ecologically became more resilient to possible stresses and/or shocks - outcome	Hectares	20,750		
<b>Result area 4: Contributing to better work and higher income for young people (&lt;35) and/or women (obligatory for theme 4 projects - better work and higher incomes for young people (&lt;35) and women; optional for theme 2 projects - efficient value chains - for which either result 2 area and/or result 4 area indicators are obligatory)</b>				
Indicator	Unit	# Total	# of women	# of youth < 35 yrs
Trained workers such as farmers and workers that are not farmers - output	Number	1,500	600	300
Workers (land and factory) with improved labour conditions following international agreements - outcome	Number	4,000	1,000	1,000
Workers with improved labour productivity - outcome	Number	4,000	1,000	1,000
People assisted to develop economic income generating activities - output	Number	5,000	2,000	1,000
People enrolled in formal or non-formal education and training-output	Number	2,500	1,000	750