

# Revival of flax in Twente

## Project proposal



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Wageningen UR  
The revival of flax in Twente  
Project: 1,261  
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Commissioners:  
Maurits Steverink  
Trix Niesthoven  
Rolf Oldejans

## Executive summary

Historically, flax was cultivated a lot in Twente. When the textile industry disappeared in this region, the flax market collapsed. Nowadays, different stakeholders are interested in a reintroduction of flax production in Twente; partly because of the cultural and historical value of flax production, but also due to the unique qualities of flax and the sustainable aspects of flax production. The three main stakeholders that are involved in this problem are the Province of Overijssel, the Groene Kennispoort Twente and the Stichting Vlasmanifestatie. These actors want to investigate the cultivation and market opportunities for flax. The Academic Consultancy Training (ACT) team is going to fill the knowledge gap about the cultivation of flax in Twente and the market opportunities in Twente. The members of the team have expertise from different backgrounds, which makes it possible to gain knowledge on the following aspects: policy, biodiversity, plant features, market opportunities and the historical/cultural aspects of growing flax. During a time period of eight weeks a literature study and interviews will be conducted. This project will deliver an overview of the knowledge currently available on the different aspects mentioned above. Furthermore, practical suggestion will be done regarding possibilities of flax production in Twente. The results will be presented in a report and used in a presentation to convince farmers and other stakeholder to grow flax. The Province of Overijssel is financing this project, the total budget is 750 euros.

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## 1. Introduction

Flax ('vlas') (*Linum usitatissimum* L.) is a crop that has been cultivated since hundreds of years and is grown for its fibers and seeds (Turner, 1972). Historically, fibers are processed into linen to produce cloths. Oil extracted from the seeds can be used to prepare food and is used for conserving wood. Flax has unique qualities and a sustainable character due to the fact that all parts of the plant can be used. For instance, even the squeezed seeds that form the rest product of oil production are used as cattle-fodder. Flax production was common in the Netherlands but since the beginning of the 20th century competition with cotton and synthetic products was increasing. The position of flax production in Twente on the world market became weak and the flax market in Twente collapsed. In the Netherlands, most flax is currently produced in Zeeland and other clay areas such as Flevoland and Friesland, there are no farmers in Twente who produce flax (Bont et al. 2008). In order to reintroduce flax production in Twente a niche market needs to be found to compete with the world market. Stichting Vlasmanifestatie was established in 2011 and aims to reintroduce flax production in Twente. Since 2011 flax has been grown in collaboration with the municipality of Enschede and Raalte to create awareness of the possibilities of flax production in the region ([www.dekrachtvanvlas.nl](http://www.dekrachtvanvlas.nl), 2014). Several meetings have been organized and participants of the meetings were mostly processors, marketers, financiers, universities and governmental organizations (i.e. province of Overijssel, municipalities). Farmers were under represented at these meetings. At the moment the Province of Overijssel, the Groene Kennispoort Twente and the Stichting Vlasmanifestatie are searching for possibilities to get farmers and landowners interested in the production of flax. All information available on flax production and market opportunities need to be put together, this combined information can then be used to convince farmers and other land owners to start flax production. Relevant topics regarding the revival of flax that need to be considered are: plant features, cultivation methods, the supply chain, market opportunities, policy of (semi)governmental organizations, biodiversity and landscape diversity, the historical and cultural aspect of flax production and recreation which is related to the last two topics. A comparison of, among others, soil features and market opportunities of Zeeland and Twente will provide insight in the possibilities of the reintroduction of flax in Twente. Knowledge of farmers who are currently growing flax and the structure of the supply chain in Zeeland can be translated to the situation in Twente. Another important aspect is to provide insight in possible stakeholders that might have interest in flax production. What does a successful supply chain look like? What can stakeholders do to help the revival of flax production? Governmental organizations can stimulate flax production as being a large-scale consumer but new innovative developments might result in unexpected solutions. The reintroduction of flax in Twente might not only benefit arable farmers but might also benefit dairy farmers in provision of animal feed. What can convince a farmer to start growing a new crop? Policy documents and scientific literature will be used as information source. Three possible types of farmers or landowners that might be interested in growing flax are: arable farmers, dairy farmers and nature organizations such as Overijssels Landschap. The result of the project will indicate opportunities for flax production for each of these potential flax growers. Knowledge, practical solutions and creative ideas will be bundled and can be used as a knowledge base and a source of inspiration to give a new impulse to the flax production in Twente. The purpose of this project is to provide an overview of available information regarding the opportunities for flax production in Twente and to provide clear recommendations how this knowledge can be shared.

## 2. Problem Analysis

### The knowledge gap

In the past, flax production in Twente was the basis of the textile industry (Menting, 2011). However, in the 20<sup>th</sup> century the textile industry was unable to compete on the world market and disappeared. With the disappearance of the textile industry, there was no longer a need to cultivate flax in Twente. Nowadays, the Province of Overijssel, the Stichting Vlasmanifestatie and the Groene Kennispoort Twente have the intention to reintroduce flax in Twente. *Therefore the main problem is how to reintroduce cultivation of flax in Twente. Knowledge about cultivation of flax and market opportunities in Twente is available and needs to be bundled concisely.* The Province of Overijssel, the Stichting Vlasmanifestatie and the Groene Kennispoort Twente are already investigating the opportunities for flax production in Twente. They brought together a group of specialists from different backgrounds into a knowledge platform 'kennisplatform vlas'.

There are a lot of other stakeholders involved in this problem and they need to be organized. These are farmers, potential flax growers in Twente and current flax growers, marketers, processors and consumers of flax, the European Union (EU), the Municipality of Enschede, LTO Nederland and Landschap Overijssel. The stakeholder analysis makes clear what kind of information the different stakeholders can add to the project (appendix 1). For example, farmers can contribute information about cultivation and farmers can give insight in what could move a farmer to start growing flax. Furthermore, processors can give information about the market opportunities of flax and the EU is an important stakeholder that can contribute information about regulations.

## 3. Purpose

The purpose of this project is to investigate the feasibility of flax production in Twente. The feasibility of growing and cultivating flax as well as the costs, benefits and demand will be investigated. Information will be provided which is needed to convince the farmers in Twente to cultivate flax.

### Main research question:

What is the perspective for flax production in Twente?

### Sub research questions:

In order to answer the main question the following research questions were formulated:

1. What technical knowledge is needed for the cultivation of flax in Twente?
2. What is the added value of flax to biodiversity and landscape diversity?
3. What are the costs and benefits of flax production compared to other crops?
4. What are the market opportunities of flax in Twente?
5. What are the policies regarding flax?

More detailed information on the content of the sub questions can be found in appendix 2.

## 4. Output

The main output will be a report, written in English, which provides an overview of the current knowledge on policy, biodiversity, plant features, supply chain, market opportunities and cultural



aspects of flax and our findings on these topics. This report will be written based on: scientific literature, grey literature and reports, interviews, visiting people, literature review on policy. With this information, an analysis of the Strengths, Weaknesses, Opportunities and Threats (SWOT) that can be faced when reintroducing flax in Twente can be provided. Furthermore a decision making tool for the farmers and other landowners will be developed. This tool will help farmers and landowners to find out whether cultivating flax is feasible for them.

Secondly a presentation (in Dutch) for farmers, that will inform them about the advantages and disadvantages of the cultivation of flax in Twente, will be prepared. The ACT group will use the information from the report as a source for the presentation.

## 5. Activities

First, the ACT group will do a literature study. During this literature study all group members will focus on their own discipline. With this literature study the current state of knowledge on the different subjects regarding flax can be determined. Scientific literature will be used, but also other sources (for example the website of the flax foundation), since probably not all relevant information can be found in scientific literature.

Secondly, the group will prepare interviews. The interviews will be semi-structured and will mainly consist of open questions. The group will make appointments with the persons which will be interviewed. The interviews will give us the extra information needed to get a complete overview of the situation. In order to set up questions for the interviews, principles of research methodology will be used, which will increase the scientific value. However, in an interview only one person will give us information which can be biased. Therefore we will take into account that the reliability of the results from these interviews might not be very high.

Data will be collected by means of conducting interviews. The stakeholders that will be interviewed are:

- Landschap Overijssel (on biodiversity and cultural aspects)
- Stichting Vlasmanifestatie
- Alterra (on plant features, biodiversity)
- Farmers (on the current situation in Zeeland)
- Processors (on market opportunities and supply chain) e.g. van de Bilt, Loonbedrijf Breure.

Another way, in which data will be collected, is attending relevant meetings. This will give the group insight in the current situation. The ACT group already attended a meeting with 'kennisplatform vlas' at the Open Innovation Centrum Advanced Materials (OICAM) in Nijverdal. Furthermore, the group will attend a meeting with farmers and other stakeholders organized by the commissioners Maurits Steverink and Trix Niesthoven.

The information gathered from literature together with the data from the interviews will be used to conduct a SWOT analysis and to develop the decision making tool for farmers.

In Figure 1 the research framework can be found. The research framework gives an overview of the planned activities and the outcomes that will result from it.

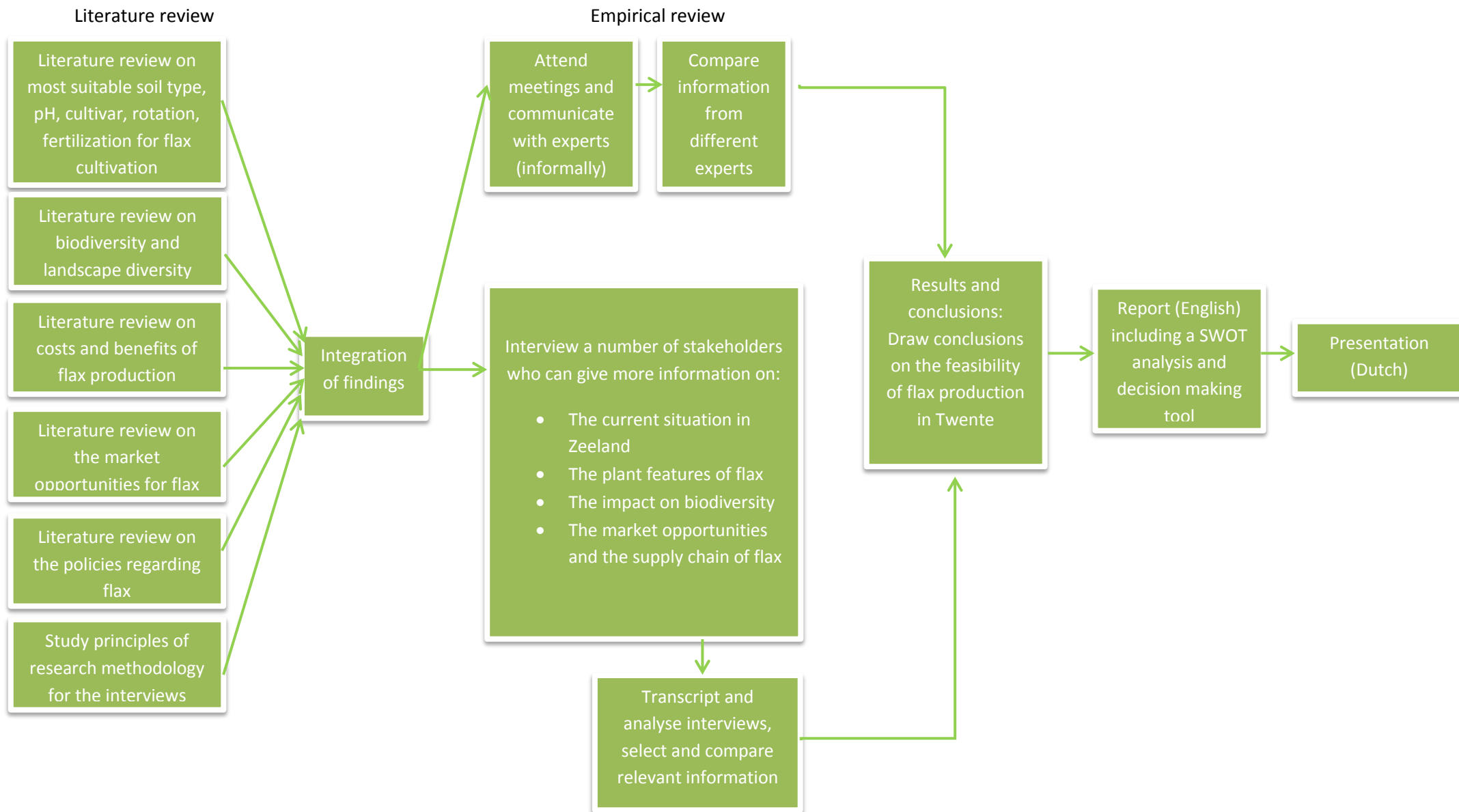


Figure 1. The research framework

## 6. Project Management

The team consists of seven master students from Wageningen University. Each member has a different background and interests (see Table 1). The added value of this team is that we are cross-disciplinary which means that we together have the knowledge to understand and research the entire process of the revival of flax in Twente.

Table 1: Team description

Name	Background	Contribution to the group
<b>Kees van Bochove (Manager)</b>	Master Biology. Specialisation in ecology and biodiversity.	Responsible for the general coordination and functioning of the project. Focus in the project will be on ecology and biodiversity aspects.
<b>Mariëlle Boot (Controller)</b>	Master Management, Economics and Consumer Studies. Specialisation in Environmental economics and policy.	Responsible for planning, budgeting and controlling of both the team work and the project. Focus in the project will be on policy.
<b>Sanne Uijterlinde (Secretary)</b>	Master Plant Science. Specialisation in Greenhouse Horticulture.	Responsible for the planning and preparation of team meeting and responsible for administration, correspondence and public relation. Focus in the project will be on agronomy.
<b>Theophillus Zottorgloh</b>	Master Plant Science. Specialisation in Crop sciences.	Responsible for the content and quality of the report. Focus in the project will be on plant characteristics and functions.
<b>Janet van den Boomen</b>	Master Management, Economics and Consumer Studies. Specialisation in Management studies.	Responsible for the content and quality of the report. Focus in the project will be on the market opportunities of flax.
<b>Shuyao Wang</b>	Master Organic Agriculture. Specialisation in Ecology of agriculture production.	Responsible for the content and quality of the report. Focus in the project will be on ecology and the technical part of cropping system.
<b>Thomas Dankers</b>	Master Management, Economics and Consumer Studies. Specialisation in Supply chains (Operation Research and Logistics).	Responsible for the content and quality of the report. Focus in the project will be on the supply chain of flax.



## 7. Communication Strategy

### Commissioners

Every week Kees van Bochove will send an email update to Maurits Steverink, Trix Niesthoven and Rolf Oldejans.

#### Main commissioner on behalf of the Province of Overijssel: Maurits Steverink

It is expected that the commissioner will give a clear indication of the project and helps the ACT group to get in contact with other stakeholders. Weekly, the group will send an update on the project and it is appreciated if the commissioner gives feedback on this weekly email. In the table below the planned dates for feedback on products are indicated.

Table 2: Agreed meeting dates and deadlines

Week	Date	Time	Activity	Who	Where
3	Mon 20-1		Hand in concept project proposal	Kees	Electronically
3	Tue 21-1	00.00	Feedback on project proposal + draft budget	Commissioner(s)	Electronically
3	We 22-1	12.00	Hand in final project proposal	Kees	Electronically
3	Fr 25-1	00.00	Hand in signed project proposal and budget	Commissioner(s)	Electronically
6	Thu 27-2	17.00	Hand in draft report	Kees	Electronically
7	Mon 3-3	00.00	Feedback on draft report	Commissioner(s)	Electronically
7	Thu 6-3	17.00	Hand in final report	Kees	Electronically
8			Presentation of the project	Project team	

#### Commissioner on behalf of Stichting Vlasmanifestatie: Trix Niesthoven

It is expected that she can help us to get in contact with other stakeholders. She will give feedback when necessary.

#### Commissioner regarding stakeholders: Rolf Oldejans

It is expected that he can help us to get in contact with other stakeholders. He will give feedback when necessary.

#### Coach: Theo Viets

The Coach, working at Animal Production Systems, will support and guide the team and each individual to function well and at an academic level.

### Resources

On the topic of biodiversity and cultural aspects: Landschap Overijssel, Staatsbosbeheer, Natuurmonumenten, Alterra and the Stichting Vlasmanifestatie.

On the topic of the policy regarding flax: websites EU and Pieter de Wolf (PPO Lelystad).

On the topic of the plant features: Experts from Wageningen University, Alterra, Groen Kennisnet and van de Bilt.

On the current situation in Zeeland: Farmers from Zeeland, van de Bilt and loonbedrijf Breure.

On the market opportunities and supply chain: Flax processing companies, farmers in Zeeland (and Twente), OICAM and municipalities in Twente.

Quantitative information on flax and other crops produced last years: CBS, Binternet (LEI).

## 8. References

Bont, de, C.J.A.M., Jager, J.H., and Janssens, S.R.M. (2008) Vlas en vezelhenneep en herziening van het EU-beleid, LEI Wageningen UR, Rapport 2008-050.

Menting, G. (2011) Ooit stond Twente vol met vlas, naober

Turner, W.H.K. (1972) Flax cultivation in Scotland: an historical geography. Transactions of the Institute of British Geographers: 127-143.

## Appendix 1

### Stakeholder Analysis

The main stakeholders in the project are the *Province of Overijssel*, *Stichting Vlasmanifestatie* and *Groene Kennispoort Twente*. These stakeholders can contribute by involving us in meetings and providing current knowledge about flax. In addition, they can bring the group in contact with other important stakeholders which can help to solve the problem. The interests of these stakeholders are mainly gaining more knowledge about the cultivation of flax in Twente and how to implement this crop.

The main stakeholders of the problem are the following:

- **Farmers (potential flax growers in Twente)** are important for the problem because they both have impact on the problem and they will be impacted by the solution. For example, if there is no willingness to cultivate flax in Twente, the problem will become bigger.
- **Farmers (current flax growers)**, in this project, act as an information source. The farmers that already grow flax are able to give more information about the cultivation and other aspects which can be translated into more insights about growing flax in the area of Twente. The solution of the problem has an influence on those farmers. The farmers will be influenced because when flax production is rising in Twente, farmers from Twente will compete with the current flax suppliers. On the other hand those farmers can be positively influenced by an increase of cooperation and/or market opportunities due to the increase of flax production in Twente.
- **Marketers** have impact on the problem, but they can also be influenced by the solution of the problem. For example, this stakeholder can make products of the flax more attractive for processors and consumers, which influences the problem. On the other hand, if flax production has started, the marketers are influenced because this will improve their sales.
- **Processors** can also have an impact on the problem; processors can create a market for flax production. If flax production is reintroduced in Twente, it will be more interesting for processors in the area of Twente to use flax. In this project processors are a stakeholder because they can provide information, for instance about the availability of processors in the area and if there is an opportunity to put more flax on the market.
- **Consumers** influence the solution of the problem. They determine the market demand which is an important aspect of the market possibilities of flax.
- **European Union**, they influence the solution of the problem because the EU regulation can have a positive or negative effect on flax production, by implementing new regulations. Therefore this stakeholder can have a great influence on the problem.
- **Municipality of Enschede** can promote the flax production for example by subsidizing innovations and by buying flax products. Therefore this stakeholder can influence the problem.
- **LTO Nederland**, the 'Land- en Tuinbouworganisatie Nederland', represents the agriculture and horticulture sector in the Netherlands. They can act as an information source, by which they influence the problem.
- **Landschap Overijssel**, is interested in the conservation of biodiversity and landscape diversity and therefore are interested in flax production. If flax has an added value for biodiversity, Landschap Overijssel can lobby for flax production. For this reason, Landschap Overijssel can have an impact on flax production.

## Appendix 2

### Sub research questions

Below the research questions are stated and for each question is indicated what subjects will be discussed, while answering these questions.

1. What technical knowledge is needed for the cultivation of flax in Twente?
  - What is the most suitable soil type, pH, cultivar, rotation, fertilization for flax cultivation?
  - To what extent does Twente meet these required elements?
2. What is the added value of flax to biodiversity and landscape diversity?
  - How does flax production affect the biodiversity?
  - What are the benefits for recreation regarding flax production?
3. What are the costs and benefits of flax production compared to other crops?
  - What other crops are grown in Twente?
  - What are their benefits?
  - What are the costs regarding the changes needed to cultivate flax?
  - What are the benefits of cultivating flax?
  - What types of farmers are interested in flax production?
  - What is the minimal area of flax required at a farm/ in Twente to be profitable?
4. What are the market opportunities of flax in Twente?
  - Can flax produced in Twente compete on the world market?
  - What was the use of flax in the history of Twente?
  - For what purposes is flax used nowadays?
  - What should the supply chain of flax look like in Twente?
  - What are possible innovations of flax products?
5. What are the policies regarding flax?
  - What is the policy of the EU regarding flax?
  - What are the possibilities for local government to support flax production?
  - What are the advantages and disadvantages of growing flax for local farmers regarding policies?

## Appendix 3

### Logical Framework

In the table below the Logical framework can be found. In this table we give an overview of the goal, purpose, outputs and activities we are planning to achieve in this research.

Table 1: Logical framework

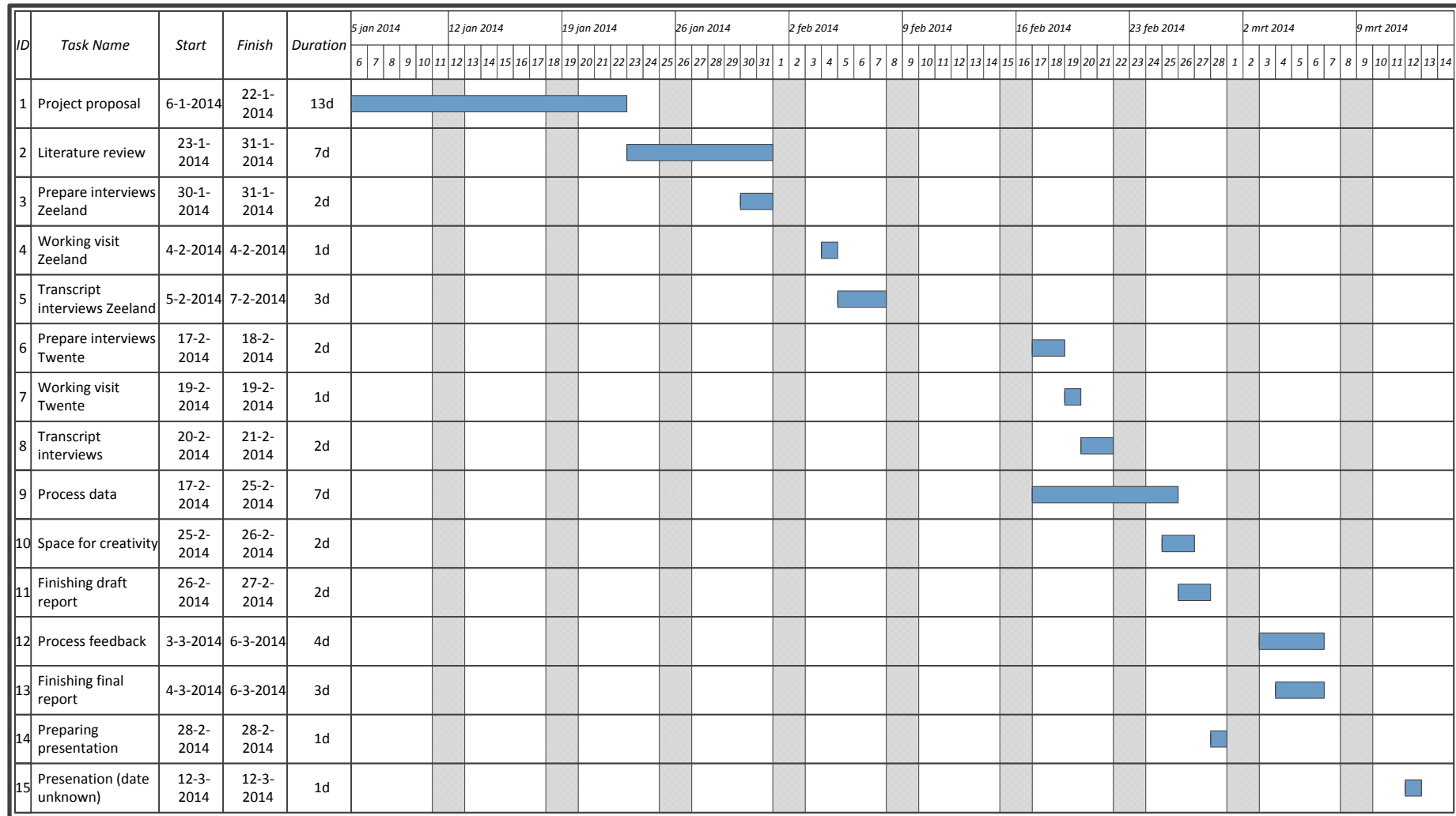
	Summary	Indicator	Evidence	Assumption
<b>Goal</b>	The Revival of Flax ('vlas') in Twente			
<b>Purpose</b>	Investigate the feasibility of flax production in Twente			
<b>Output</b>	<p>1. A report, written in English on current knowledge on the policy, biodiversity, plant features, supply chain, market opportunities and cultural aspects of flax. This report will be written based on: Scientific literature, grey literature and reports, visiting people and interviews. We will make SWOT analysis and a decision making tool.</p> <p>2. Presentation (in Dutch) which can convince farmers and other possible growers of flax that they should cultivate flax. We will use the information from the report as a source for the presentation.</p>	<p>1. Draft version of the literature study finished of January 28.</p> <p>1. Draft version of the report finished on February 27.</p> <p>1. Final report finished end week 7</p> <p>2. Presentation finished end week 7</p>	<p>1. Draft version on Dropbox.</p> <p>1. Draft version of the report send to the expert (WUR) and the commissioner.</p> <p>Presentation and final report send to commissioner on March 6.</p>	<p>The combinations of these outputs gives tools:</p> <ol style="list-style-type: none"> <li>1. To convince farmers and other possible growers of flax (presentation)</li> <li>2. For government to lobby for flax (report).</li> </ol>
<b>Activities</b>	1. Literature study on the policy, biodiversity, plant features, supply chain, market opportunities and cultural aspects of flax.	1. Written text of a minimum of 7 pages.	1. Document containing literature study	1. There is relevant information available in scientific literature.

	<p>2. Data collection, by means of gathering data on the different aspects of flax on the internet.</p> <p>3. Data collection by means of interviewing stakeholders. These are: Landschap Overijssel (on biodiversity and cultural aspects), the Stichting Vlasmanifestatie, Experts (plant features, supply chain), Alterra (plant features), Farmers (current situation in Zeeland) and the processors such as van de Bilt (market opportunities and supply chain).</p>	<p>2. Written data</p> <p>3a. Interviews prepared on January 31.</p> <p>3b. Contact stakeholders for interviews and make appointments.</p> <p>3c. Written data</p>	<p>on Dropbox.</p> <p>2. Document with data on Dropbox</p> <p>3a. Interview questions on Dropbox.</p> <p>3b. List of approached stakeholders and interview dates on Dropbox.</p> <p>3c. Transcriptions of the interviews on Dropbox</p>	<p>3. Stakeholders are willing to cooperate and to be interviewed. And they are available in week 4-5 of the project.</p>
	<p>4. Data collection by means of visiting relevant meetings.</p>	<p>4. Minimum of 2 meetings transcribed.</p>	<p>4. Transcriptions of the meetings of Dropbox.</p>	



## Appendix 4

### Gantt Chart



## Appendix 5

### Budget

Project title	Revival of flax ('vlas') in Twente		
ID nr	1,261		
Controller	Mariëlle Boot		
Period	p3+p4		
Code	Expenditures in €	Estimation	Explanation
1	Office equipment		Not applicable
2	Copy and print costs	€50	Printing costs for 1000 pages (black-white); for team documents, papers (during the literature research), draft/final reports and hand-outs for the presentation(s)
3	Telephone costs	€75	To arrange visits, conduct interviews and to contact the comissioner(s)/coach/experts
4	Travelling expenses	€40	Visit to Nijverdal for a meeting of the knowledge network about flax; by private transport (around 200 km*0.19 €)
		€175	Working visit to Zeeland (Sluiskill and surroundings); by private transport (around 450 km*0.19 €*2 cars)
		€85	Working visit to Twente (Enschede and surroundings); by private transport (around 220 km*0.19 €*2 cars)
		€85	Visit to Twente (Enschede and surroundings) for a presentation about flax for farmers on behalf of the comissioner(s)
		€85	Visit to Twente (Enschede and surroundings) for the presentation of the end-product
5	Other costs	€30	Presents for interviewees during working visits
	Overhead costs	€50	
	Unforeseen costs	€75	
	Total expenditures	€750	