Sweden’s financial support system for implementation of wetlands in agriculture;

Key enabling and disabling factors

Charlott Svensson

Miljö 15hp

Halmstad 2015-06-16
Sweden’s financial support system for implementation of wetlands in agriculture;

Key enabling and disabling factors

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Abstract
The main objective of this study, conducted by the request of the Swedish Environmental Research Institute’s (IVL) office in Beijing, was to analyse and draw lessons from Sweden’s financial support system regarding the implementation of wetlands in agriculture. Of special interest were the factors that motivate or does not motivate farmers to implement wetlands on their lands. The study was based mainly on a literature analysis, with elements of a more participatory kind, such as interviews and questionnaires with professionals from governmental and guidance agencies. The study was carried out in February to March 2015. According to the result, key factors for successful wetland projects are: 1. Put more effort into developing long-term relationships with farmers, 2. Provide more information regarding the efficiency of the wetland to the landowner, 3. Create more flexible contracts for farmers, 4. Establish a nutrient “credit” system.

Keywords: farmers willingness, financial support system, Rural Development Programme, support grants wetlands, agri-environmental measures
Summary
The implementation of wetlands in agriculture has been adopted as an agri-environmental measure in Sweden in order to make agriculture more environmentally sustainable. In order to raise interest among Swedish farmers various kinds of financial support systems has been adopted, however, the majority of farmers in Sweden today are still hesitant in implementing wetlands on productive land, hence not as many are constructed as needed in order to decrease the leaching of nitrogen and phosphorus from agricultural run-off.

The main objective of this study, conducted by the request of the IVL Swedish Environmental Research Institute’s office in Beijing, was to analyse and draw lessons from Sweden’s financial support system regarding the implementation of wetlands in agriculture, with a special interest to identify key enabling and disabling factors that make farmers want/not want to implement wetlands on their lands. The study is both a literature- and participatory analysis, containing an analysis of scientific articles, interviews and smaller questionnaires, based on interviews with professionals from governmental-and advisory agencies. The study was carried out in February to March 2015.

The main financial support for wetland projects today is the partly EU-financed Rural Development Programme (RDP), which offers support for costs related to the implementation of wetlands and to some extent, maintenance support. The County Administrative Boards (CABs) manage permits and financial support. Complementary national support grants and funds are available, of which the most significant is the Marine Environment Grant. In some cases municipalities also provide financial support.

To construct or restore a wetland is a voluntary act decided by the farmer, hence providing incentives in the form of financial support and advisory-services plays an important part in the decision-making process. The key barriers and limitations for progress in Sweden expressed in the study were:

- Burdensome bureaucracy; too much paperwork and regulations that change.
- Economic risk; financial incentives are not enough for investing in wetland projects.
- Lack of knowledge regarding the purpose of the wetland; what is it actually good for?
Key enabling factors identified were:

- The support from wetland advisors such as *Focus on Nutrients*; contribute with information and valuable support throughout the process.
- Financial support; the most important incentive.
- Recreation; nice feature in the landscape.

These findings suggest that the way projects are financed and regulated is very important. Drawing on these lessons, the following factors are suggested for a continuous successful implementation of wetland projects:

- Put more effort into developing long-term relationships with farmers; a satisfied farmer is likely to invest in more projects.
- Provide more information about the wetland to the landowner; how efficient is its nutrient removal?
- Create more flexible contracts; more farmers would be willing to invest if the contracts were adjustable.
- Establish a nutrient “credit” system: provides the farmer with an opportunity to make money of the wetland.
Acknowledgements

This study was conducted by the request of the IVL Swedish Environmental research’s office in Beijing, with the aim to provide the office in Beijing with more information regarding the financial support system for the implementation of wetlands in the agricultural landscape in Sweden.

I would first of all like to thank my supervisor Stefan Weisner, for helping me through this process, without him I would have most likely never finished. I would also like to thank IVL, especially Senior Coordinator Si Gao, for providing me with the opportunity to write this thesis, as it is a subject I personally find very interesting. Si Gao has throughout the process provided me with the necessary support needed in order for me to finish this study. Furthermore I would like to thank Emma Svensson, Official in the Agri-environmental Support Division, Swedish Board of Agriculture, for the taking the time to answer my questions and help me to find further information needed. Finally, I would like to thank all interviewees for participating in this study, without you I would not have a result to present.
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<th>Description</th>
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<tbody>
<tr>
<td><strong>CAP</strong></td>
<td>Common Agricultural Policy (Europeiska jordbruksfonden för landsbygdsutveckling)</td>
</tr>
<tr>
<td><strong>EPA</strong></td>
<td>Environmental Protection Agency (Naturvårdsverket)</td>
</tr>
<tr>
<td><strong>LIP</strong></td>
<td>Local Investment Programmes (Lokala investeringsprogram)</td>
</tr>
<tr>
<td><strong>Lmiva</strong></td>
<td>Environmental compensation for maintenance of wetlands and ponds (Miljöersättning för skötsel av våtmarker och småvatten)</td>
</tr>
<tr>
<td><strong>LOVA</strong></td>
<td>Local water conservation projects (Lokala vattenvårdsprojekt)</td>
</tr>
<tr>
<td><strong>LRF</strong></td>
<td>The Federation of Swedish Farmers (Lantbrukarnasriksförbund)</td>
</tr>
<tr>
<td><strong>Miva</strong></td>
<td>Restoration and Establishment of Wetlands and Ponds on Arable land and Semi-natural Grazing land (Miljöstöd för anläggning och återställande av våtmarker och småvatten)</td>
</tr>
<tr>
<td><strong>MRA</strong></td>
<td>Ministry for Rural Affairs (Landsbygsdepartementet)</td>
</tr>
<tr>
<td><strong>NYLA</strong></td>
<td>New Features in the Landscape (Nya inslag i landskapet)</td>
</tr>
<tr>
<td><strong>PS</strong></td>
<td>Project Support (Projektstöd)</td>
</tr>
<tr>
<td><strong>RDP</strong></td>
<td>Rural Development Programme (Landsbygdsutvecklingsstöd)</td>
</tr>
<tr>
<td><strong>RDS</strong></td>
<td>Rural Development Support</td>
</tr>
<tr>
<td><strong>SAM</strong></td>
<td>Coordinated Application for Agricultural Aid (Samordnad ansökan om jordbruksstöd)</td>
</tr>
<tr>
<td><strong>SEK</strong></td>
<td>Swedish crowns (1EURO=9,38SEK, 2015-04-28 money value) (Euroinvestor, 2015)</td>
</tr>
<tr>
<td><strong>SJV</strong></td>
<td>Swedish Board of Agriculture (Jordbruksverket)</td>
</tr>
<tr>
<td><strong>SLU</strong></td>
<td>The Swedish University of Natural Sciences (Svenska Lantbruksuniversitetet)</td>
</tr>
<tr>
<td><strong>SwAM</strong></td>
<td>Swedish Agency for Marine and Water Management (Havs-och vattennyndigheten)</td>
</tr>
<tr>
<td><strong>WFD</strong></td>
<td>Water Framework Directive (Vattendirektivet)</td>
</tr>
<tr>
<td><strong>WWF</strong></td>
<td>World Wildlife Fund (Världsnaturfonden)</td>
</tr>
</tbody>
</table>
Dictionary

<table>
<thead>
<tr>
<th><strong>Agri-environmental measure</strong></th>
<th>Defined according to the European Commission as “a measure that provide payments to farmers who voluntary subscribe to environmental commitments related to the preservation of the environment and maintaining the countryside”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leaching</strong></td>
<td>Waterborne transport of nutrients from soil to surface and groundwater</td>
</tr>
<tr>
<td><strong>Mitigation</strong></td>
<td>Elimination of a potential impact of a threat or warning.</td>
</tr>
<tr>
<td><strong>Nutrient Sink</strong></td>
<td>Wetlands can serve as a trap to immobilize chemicals such as plant nutrients, organic pollutants, or metal ions through natural processes. The nutrients are removed to such an extent that the water is relatively low in concentrations (NALMS, 2015).</td>
</tr>
</tbody>
</table>
1. **Introduction**

Some European countries have adopted the construction of wetlands as an agri-environmental measure to help make agriculture more environmentally sustainable (Hansson, et al. 2012). Though Sweden has actively promoted the creation of wetlands in the agricultural landscape, studies show that there are national differences, not only in terms of wetlands added, but also in terms of the financial support available for the construction of wetlands (Andersson, 2012). These issues encourage a deeper assessment of the financial support system in Sweden regarding the implementation of wetlands. Wetlands are valuable in many ways, generating benefits as biodiversity improvement and removal of nutrients such as nitrogen and phosphorus from agricultural run-off (Svensson, et al. 2004). A key issue identified in this study was the need to increase the interest among Swedish farmers.

This study analyses and reviews Sweden’s experiences with implementing wetlands as an agri-environmental measure in agriculture and examines the previous and current financial support system available to Swedish farmers, with a special interest to identify key factors that make farmers want/ not want to construct wetlands in the agricultural landscape.

1.1 **Background**

As there is a great variety in terms of appearance and function within a wetland, it is difficult to find an appropriate definition. According to the Ramsar Convention on Wetlands, wetlands can be defined as; “areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres” (Pedro et al., 2007), while the Swedish Environmental Protection Agency (EPA) has the following definition; “wetlands are areas where the water table for the main part of the year is close below, at, or above the ground level, including vegetation-covered lakes. A site is called a wetland when at least 50% of the vegetation is hydrophilic, i.e. water loving. An exception is periodically flooded shores along lakes, seas and rivers, which are classified as wetlands despite a lack of vegetation” (Swedish EPA, 2009). The latter definition is considered applicable to wetlands in the agricultural landscape and will from hereon be the definition used throughout this paper.
In the beginning of the 19th century, Sweden was, due to the growing population, forced to take measures in order to increase the food production. One of the measures was to drain wetlands in order to gain more arable land. This led to losses of biodiversity and decreased the nutrient retention capacity in the landscape. It was not until the late 1970s early 1980s that Sweden set up its first financial support system for construction of wetlands, called NYLA, “New features in the Landscape”, which was later transferred into Conversion 90 and remained there until Sweden obtained a membership in the European Union in 1995 (Andersson, 2012). There have been several forms of subsidies throughout the years, all with different coverage of costs to promote wetlands construction, hence the objective of this study to investigate this subject further.

1.2 Objective
The main objective of this study, conducted by the request of the IVL Swedish Environmental Research Institute’s office in Beijing, was to analyse and draw lessons from Sweden’s financial support system regarding the implementation of wetlands in agriculture, with a special interest to identify key enabling and disabling factors that make farmers want/not want to implement wetlands on their lands.

2. Methodology
The study is both a literature- and participatory analysis, containing both an analysis of scientific articles, interviews and smaller questionnaires sent out by mail to professionals from governmental and advisory agencies between February-March 2015. Table 1 below provides their names and affiliations. The result was divided into three parts; results from the literature review, results from the interviews and finally results from the questionnaires. The study does not contain any material related to the purification process that takes place in wetlands, nor does it contain any information about wildlife or how the wetland should be constructed, the aim is merely to provide information regarding the financial support system and the support grants available, hence the demarcation.

2.1 Methodology: The literature review
The literature review included materials recommended by the interviewees, reports and scientific articles collected online. The overall collected data dated from a period of 2000-2014. Data regarding legislation, chapter 2, was mainly collected online via official governmental sites, such as “miljomalen.se” or the Environmental Code, while Emma
Svensson, Swedish Board of Agriculture (SJV), provided data regarding legislation targeting wetlands in particular. Chapter 3 was mainly based on the information leaflet for the RDP support period 2007-2013, provided by the CAB, Halland County, along with oral reference J. Strand. The information was then translated and put together with figures created by the author. All data regarding the support grants in chapter 4 was collected online using Google as main search engine. Database used when collecting scientific articles was ScienceDirect, with keywords such as; *agri-environmental measures, wetlands, Rural Development Programme, financial support wetlands, support grants wetlands and multifunctional wetlands*. Once the articles had been selected, they were each reviewed, searching for themes related to the objectives of this study. In some cases, new articles were found based on the reference list in the chosen article. The four articles below in particular provided valuable information on which the discussion was later based on in large parts.

- “Are farmers prosocial? Determinants of the willingness to participate in a Swedish catchment-based wetland creation programme” (Söderqvist, 2002).
- “Multifunctional Wetlands and Stakeholder Engagement; Lessons from Sweden” (Andersson, 2012)
- ”Nutrient farming: The business of environmental management” (Hey et al., 2004)

Finally, a short summary of each article was written and presented in the result, where key factors were highlighted along with quotations.

All reports were collected online using Google. The same key words were used when searching for reports as with the scientific articles. The same method was used as with the scientific articles, where a short summary was written for each report containing material that the author deemed relevant for the objective of this study.

**2.2 Methodology: The interviews**
The interview part of the study was conducted as a “Qualitative study”, as the numbers of interviewees’ were few and the questions were based on the interviewees’ point of views and experiences. A qualitative study is beneficial when the author knows little or nothing in advance about the chosen subject (Ahrne, 2011). Qualitative studies are based on a small
amount of people, with the aim to investigate on a deeper level—"the less is more" (Mc Cracken, 1988). Data consists of words and descriptions, i.e. “qualities”. The amount of people participating in a qualitative study are few, usually 5-10 people, as the purpose is to obtain “high quality” data, i.e, data that is not based on as many answers as possible, but based on a small, yet, highly relevant amount of answers. It is not the amount of answers that is important; it is the content of the answers.

The interviewees’ John Strand and Hans Bjuringer were chosen by the author due to their substantial knowledge regarding the chosen subject “implementation of wetlands” and their roles in the public sector. For more information regarding their roles, see table 1 below. The interviews were conducted according to the semi-structured method, meaning each interviewee was interviewed one at the time and in person (Bylund et al., 1995: Halkier, 2010). The interviews took place in February and March 2015 at the workplace of the interviewee. Throughout the interviews notes were taken. Each interviewee received a request for a meeting by e-mail and it was made clear from the beginning the meeting was voluntarily. The e-mail contained information about the author, the study and its objective; along with the author’s contact information should any questions arise before or after the interview. In this study, time was a crucial factor; hence the author chose to conduct few interviews, making a Qualitative study an appropriate method.

The questions selected for each interview were based on the area of expertise of the interviewee and related to the objective of this study. The purpose of asking a broader set of questions rather than narrow was to make the conversation flow naturally, letting the interviewee decide the direction of the interview. During the interviews new questions arose that was later used for the discussion. For an overview of questions, see appendixes 4 and 5.

The answers from each interview was read through several times and finally put together into a continuous text. The text contains highlighted quotations that are of special interest and should be brought to the reader’s attention. In order to ensure the reliability of the result, the interviews are objective; hence they contain no personal opinions from the author.
2.3 Methodology: The Questionnaires

As the study is both a literature- and participatory analysis, only a sampling of key stakeholders was consulted since the goal was to highlight key lessons and insights from Sweden’s experience, not to present a comprehensive study.

Questionnaire regarding the support grants available for implementation of wetlands on arable land

The questionnaire was, as with the interviews, conducted as a Qualitative study. See section 1.3.2 for more detailed information regarding the concept “Qualitative study”. In this study, 10 participants were chosen mainly due to the following factors;

- The aim was to perform a Qualitative study, hence 10 participants was an appropriate choice.
- Due to the time limiting factor, a smaller study with few participants was chosen.
- The participants were mainly chosen due to their expertise within the chosen subject; implementation of wetlands, but also due to their roles in the advisory and governmental sector.

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emma Svensson</td>
<td>Official in the Agri-environmental Support Division</td>
<td>Swedish Board of Agriculture</td>
</tr>
<tr>
<td>Hans Bjuringer</td>
<td>Official in the Rural Development Unit.</td>
<td>County Administrative Board, Halland</td>
</tr>
<tr>
<td>John Strand</td>
<td>Wetland Advisor</td>
<td>Lilla Böslid, Halland County</td>
</tr>
<tr>
<td>Lukas Österling</td>
<td>Administrator</td>
<td>County Administrator, Skåne County</td>
</tr>
<tr>
<td>Hanna Johansson</td>
<td>Plant Cultivation Adviser</td>
<td>Västra Götaland County</td>
</tr>
<tr>
<td>Karl Holmström</td>
<td>Wetland advisor</td>
<td>Ekologgruppen, Skåne County</td>
</tr>
<tr>
<td>Tuve Lundström</td>
<td>Wetland advisor</td>
<td>Naturvårdsingenjörerna AB, Skåne County</td>
</tr>
<tr>
<td>Tette Ahlström</td>
<td>Wetland advisor</td>
<td>Ekologgruppen, Skåne County</td>
</tr>
<tr>
<td>Rolf Lindholm</td>
<td>Crop-and EU-advisor</td>
<td>Lilla Böslid, Halland County</td>
</tr>
</tbody>
</table>
In order to diminish the scope of the study, the author chose three counties to compare regarding the wetland construction process. The three counties have geographical similarities and all three of them fall outside area 1, meaning they are considered suitable for implementation of wetlands. The counties represent production zone 1 and 5, plains in southern Sweden and forest districts in southern Sweden, according to Sweden's production division, see figure 7. The questionnaire aim to provide a deeper assessment regarding implementation of wetlands in these three counties only, whether the process differs in other counties the author has chosen not to speculate in. The questionnaire was constituted of five questions, based on the following reasons:

- A questionnaire containing too many questions could make the participants less willing to participate in the study.
- The questions were based on previous and current RDPs, as this is the main financial support available today for wetland projects.

A self-administered questionnaire (SAQ) was sent out by e-mail, containing a short presentation of the author, a short description of the study and its purpose, along with an attachment of the questionnaire. A SAQ refers to a questionnaire that has been designed specifically to be completed by a respondent without intervention of the researchers (e.g. an interviewer) collecting the data (Lavrakas, 2008). It was made clear from the beginning that it was entirely voluntarily to participate. Though a list of the participants is available, the answers from each participant are kept anonymous in order to make sure that the identities of the participants are not compromised. When reading the result, the reader is able to look upon the result in an objective way. Throughout the process the aim was to find divergent or new data that could be used for the discussion. One of the participants, Emma Svensson (SBA) received two questionnaires, mainly to reach the goal of 10 participants, but also to gather information regarding the decision process for the new Rural Development Programme.

**Questionnaires sent out to Emma Svensson & Rolf Lindholm**

The author chose to use the same method as with the previous questionnaires; A Qualitative study. The participants received an e-mail containing a presentation of the author, the purpose of the study, along with an attached file containing a set of 4-5 questions. It was made clear that it was voluntarily to answer the questions. The questions were based on the participant’s area of expertise and related to the objective of this study. The author chose a
maximum of 5 questions to make sure the participants did not feel the questionnaire was too time-consuming, while maintain the concept of using a broader set of questions rather than narrow ones in order to receive a broader set of answers. The aim was to provide the author with a better understanding regarding the wetland application process.

During the process of interpreting the data, the same method was used as with the questionnaire regarding “support grants available for implementation of wetlands for agriculture”, however, in the case of Lindholm the author chose to use Lindholm’s set of answers and implement them in section 3.2 The SAM-application, as the author had been unable to find specific information about the application process single-handedly. The identities of Lindholm and Svensson are not kept anonymous, mainly due to the facts that Lindholm is used as an oral reference in the text, while Svensson provided information regarding the new RDP 2014-2020 that the author was unable to find elsewhere.

3. Results

3.1 Legislation: The Environmental Code

When it comes to relevant legislation regarding wetlands, the most crucial legal document is The Swedish Environmental Code, adopted in 1998. The Code contains of 33 chapters and has the function of a modernised environmental legislation aimed at promoting sustainable development (Ds 2000:61). This means that all regulations regarding the environment can be found in the Code, including regulations on wetlands. The Code’s general rules about consideration always apply when preforming any sort of activity that might have an effect on the environment. The rules state that “every person who carries out, or intends to carry out, activities must obtain the knowledge and take measures necessary for protecting human health and the environment against damage or inconvenience” (Ibid.). The Code primarily decides what types of environmental issues that can be examined in the court of law, for example the start of an environmentally hazardous activity.

3.2 Legislation: Regulations SFS 2007:481 & SJVFS 2007:42

While the Environmental Code provides guidelines regarding activities that might be classified as hazardous towards the environment, the regulations SFS 2007:481 and SJVFS 2007:42, provides more specific rules regarding wetlands and serve as foundations on which the financial supports are based upon.
The regulation on *Support for Rural Development Measures*, SFS 2007:481, contains regulations on “cross compliance for environmental compensations and compensatory allowances”, the definition of cross compliance in this case are the criteria’s that according to the law, are required to apply for financial support (SFS 2007:481). The authority responsible is the Ministry for Rural Affairs (MRA).

The regulation on *Environmental Investment According to Actual Costs; Construction & Restoration of Wetlands*, SJVFS 2007:42, deals specifically with the support available for wetlands. According to §59, financial support will mainly be given to “measures that purifies nutrients leaked from arable land or benefit the biological diversity in the agricultural landscape” (SJVFS 2007:42). According to §60 the wetland will be under a 5-year environmental compensation commitment from the year of construction, furthermore the wetland must remain a wetland for 20 years, unless a valid reason can be provided for to the local CAB.

### 3.3 Legislation: Environmental Quality Objectives

In 1999 and 2005 the Swedish Parliament adopted 16 environmental quality objectives for different areas guiding the development of the National Environmental Policy (*Sweden's Environmental Quality Objectives*, 2014). The goal is to, by 2020, have a society where the now major environmental problems facing the society have been solved. The Swedish Parliament adopted the 16 goals as a promise to provide clean air, a healthy living environment and opportunities to enjoy nature for future generations to come (*Fördjupad utvärdering av miljökvalitetsmålen*, 2012). The following objectives are linked to wetlands;

- Thriving wetlands
- Flourishing lakes and streams
- Zero eutrophication

Thriving wetlands: The goal is to “preserve wetlands in the landscape for future generations and maintain their ecological and conserving function” (*Will the Environmental Quality Objectives be achieved?*, 2012). Authority responsible is the Swedish EPA.

Flourishing lakes and streams: The goal is to “have lakes and watercourses that are ecologically sustainable, with habitats that are preserved for the next generation” (Ibid.). Authority responsible is SwAM.
Zero eutrophication: “Levels of nutrients in the soil and water must not exceed set limits so as to have an adversely effect on human health, a varied use of land and water” (Ibid.). Authority responsible is SwAM.

The Environmental Quality Objective “Thriving Wetlands” will not be fulfilled by 2020 (Fördjupad utvärdering av miljökvalitetsmålen, 2012)

3.4 Legislation: Who is responsible for what?
While it was the Swedish Parliament that adopted the 16 environmental quality goals, it is the Swedish Government that carries the overall responsibility. The Government keeps track of the progress being made and decides on how to act in order to reach set targets. The Government has divided the responsibility between eight central government agencies, each responsible for a different objective. The agencies in turn co-operate with companies in their respective sectors to attain them and have their own follow ups (Will the Environmental Quality Objectives be achieved?, 2012). The annual results are collected by the Swedish EPA, which in turn submits an overall report to the Government. Table 2 below displays the implementation of wetland projects at different levels in Sweden and its key stakeholders and roles.

Table 2. Key stakeholders and roles

<table>
<thead>
<tr>
<th>Key Stakeholders</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Swedish EPA</td>
<td>A public agency that conducts national monitoring of conditions in the environment and progress in environmental policies. The Swedish EPA allocates funds from the national government (Andersson, 2012).</td>
</tr>
<tr>
<td>SwAM</td>
<td>A government agency that is responsible for the national planning and administration of water resources, such as lakes, seas and streams. One of its many fields is to develop planning material for the implementation of wetlands and distribute financial support through the Marine Environment Grants (Ibid.).</td>
</tr>
<tr>
<td>SJV</td>
<td>Develops the regulations associated with financial support for wetland implementation within the Rural Development Programme and distributes funds to the CABs (Ibid.).</td>
</tr>
<tr>
<td>Land &amp; Environmental Courts</td>
<td>Handle environmental and water-related issues, including permits for wetland construction (Ibid.).</td>
</tr>
<tr>
<td>CABs</td>
<td>The CABs play the most important role in wetland implementation in Sweden, as they are in charge of developing regional strategies and plans,</td>
</tr>
</tbody>
</table>
process applications, and administer financial support programmes (Ibid.).

<table>
<thead>
<tr>
<th>Municipalities</th>
<th>Do not have a formal regulated role in wetland implementation. They can, however, play a financial role.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td>The landowner must actively choose to participate in a project and allow the construction of a wetland on his/hers land.</td>
</tr>
<tr>
<td>Advisory services</td>
<td><em>Focus on Nutrients</em> is a collaborative initiative between SJV, LRF, CABs and wetland consultants. Financed through the RDP, it offers free advisory services to farmers on construction of wetlands (Ibid.).</td>
</tr>
<tr>
<td>Non-governmental</td>
<td>Organizations LRF has supported wetland implementation, representing the interests of farmers with regard to general conflicts and overall regulations (Ibid.).</td>
</tr>
</tbody>
</table>

4. Application procedure for the farmer

4.1 From idea to wetland

The following process is mainly based on the information leaflet “*From idea to wetland*” support period 2007-2013, provided by the CAB, Halland County.

![Figure 1. Step 1-3 of the wetland application process](image)

**Idea**

The first step is to contact the nearest CAB or nearest advisory agency, such as *Focus on Nutrients*. The farmer will then receive information about wetlands either via the CAB newsletter, the advisory agency or via peers’ good experience.

**Counselling**

The advisory agency will provide information about how the wetland should be shaped and maintained, possible conflicts with local residents that might be affected, financial support
available and an estimation of costs. This summary will then be sent to the CAB as an application of interest. There are 2 types of production advisory (J. Strand, personal communication, March 10th, 2015):

- 14A: Wetland planning, applicable for all farms
- 14B: Restoration/Maintenance of wetlands, applicable for all farms

**Application of interest**

Once the CAB has received an application of interest, the first step is to evaluate the environmental benefits that come from constructing this particular wetland. The CAB only visits projects that seem promising. The CAB must agree with the chosen shape and location, otherwise the project will not be approved. Once the location and shape has been approved, the CAB will send out a pre-notice to the farmer containing information whether or not he/she will receive financial support from the RDP.

**From idea to wetland: step 4-6**

![Figure 2. Step 4-6 of the wetland application process](image)

**Application**

In most cases the application is handed according to the Environmental Code and the application for construction support grants, however, there are exceptions; in these cases the CAB will notify the farmer in advance. The application is made based on the form; “Application for water operations according to the Environmental Code, chapter 11, 9a §” (J. Strand, personal communication, March 10th, 2015). When filling out the form it is of the outmost importance to describe in detail the shape of the wetland, its purpose and location. Closest local residents, drainage enterprises and the municipality have a saying about the
planning. The CAB will then evaluate to what degree public interests might be affected, for example cultural values. When the evaluation is finished a written decision will be sent to the farmer. The decision often contains conditions that might limit the construction or measures for the protection of different interests. For wetlands smaller than 5 ha, the application can be handled within the CAB, however, larger projects require an application for a legal permit that is then sent to the Land & Environmental Court (Länsstyrelsen Halland, 2012).

**Application for construction support grants**

The application is based on the note: “*Application for designated environment-environmental investment according to actual costs*” (Länsstyrelsen Halland, 2012). A project plan should be attached with the application. In this project plan the farmer must describe the purpose of the project, calculated costs and financial means. For bigger projects a quotation from at least two different contractors must be attached (Ibid.).

**Execution**

Once the application has been approved it is time to start the actual execution process. During the project the farmer can apply for instalments. Before the final inspection it is possible to receive instalments for a maximum of 90% of the support grants, the final 10% is paid when the CAB approves the wetland at the final inspection (Länsstyrelsen Halland, 2012).

**From idea to wetland: final steps 7-8**

![Diagram](image)

*Figure 3. Step 7-8 of the wetland application process*

**Final inspection**

When the construction of the wetland is finished, the farmer schedules a meeting for a final inspection with the CAB. The CAB will make sure that the wetland has been constructed according to the project plan and measure in the wetland with GPS.
Maintenance
After the farmer has received a decision regarding maintenance commitment, the next step is to apply for annual instalments of maintenance compensation for wetlands in conjunction with the SAM-application.

4.2 The SAM-application
The SAM-application is specifically designed for those who wish to apply for EU-support grants and is available online. The application is open for 2 months, during which all applications are accepted. The amount of financial support to be applied is based on the environmental measure in the application, such as wetlands (R. Lindholm, personal communication, March 20th, 2015). If the application is not sent in before the final date, usually during springtime, there will be sanctions. The CABs will control the land applied for and should any mistakes be discovered, a deduction is made, which in turn can lead to the farmer missing out on great sums of money (Ibid.). Crop-advisors play an important role in providing support and counselling for applicants throughout the process.

4.3 Which project will receive funding?
Based on the financial support distributed through the RDP, prioritized projects are:

- Areas with excessive nutrient leakage (southern parts of Sweden)
- Areas that suffered extensive loss of wetlands over the last centuries (southern parts of Sweden)

The CABs make the final decision regarding financial support for wetland projects guided by national regulations and guidelines, but also based on the wetland’s effect on the environment as a whole. According to the report “Quality criteria for wetlands in agricultural landscapes: Criteria for the purification of plant nutrients with regard to biodiversity and cultural environment”, (Lagerkvist, 2004) the following criteria can be included for wetland support:

- “High priority to large projects, preferably projects larger than 5 ha”.
- “Wetlands in vicinity of any form of water body, such as the sea, rivers, archipelago’s, lakes or streams are prioritized recipients”.
- “Restoring wetlands where the agri-environmental benefits can be increased”.
- “Cost-efficiency (cost per treated kg of nitrogen or phosphorus)”.


Information, regarding which areas have the highest priority regarding the retention of nutrients, is shown in figure 4 below. The map is divided into three areas, where area 1 has the highest priority, area 2 the second highest and area 3 the least priority.

Area 1: Areas with the highest priority are part of the goal to diminish emissions of nitrogen to the ocean. The leaching of nitrogen is the highest in this area.

Area 2: Prioritized due to the importance of establishing a good ecological status for the sensitive coastal areas.

Area 3: Cultivated areas that are dewatered to lakes Vänern, Mälaren and Hjälmaren.

There is generally no direct specification made regarding criteria for ecological status, furthermore, certain restrictions for other functions such as irrigation may lower or remove the financial support (Andersson, 2012). In cases like these the CABs often reduce or deny support for the sake of other highly prioritized projects.

4.4 Agri-environmental payments: What does it entitle?

The purpose of agri-environmental payments is to “compensate farmers for their higher costs due to changed land use” (Agri-environment measures, 2015) and function as instruments in the Common Agricultural Policy of the EU. The payments are calculated based on lost revenue (productive land) and reduced income. Previous RDP contracts for agri-environmental payments for wetland maintenance had a lasting period of 10-20 years, mainly to ensure the duration with the landowner, now the commitment is 5 years. The payment is not only based on to what national support category the area belongs to, which in turn is based
on agricultural productivity (see figure 7), but also on the type of land the wetland will/has been implemented on (J. Strand, personal communication, March 10th, 2015). Based on the RDP for 2007-2013 the following criteria for maintenance support applied:

- “SEK 4000kr/ha and year for arable land, SEK 5000kr/ha if constructed on particularly precious arable land or as an extra compensation for loss of harvest”.
- “SEK 1,500/ha for other land such as former grazing”.
- “Wetlands for nitrogen removal or biological diversity can normally be compensated with 90% support up to a maximum SEK 200 000kr/ha water surface. Wetlands with fewer benefits can be compensated with SEK 50 000kr/ha water surface”.

Compensation can also be given for the whole- or parts of a wetland that has been restored in the agricultural landscape with the purpose to improve the environment, if the environmental use is strengthened by maintenance or if the restoration has led to the value of the land being less (Länsstyrelsen Halland, 2012)

4.5 Investing in wetlands: A financial risk?

Investing in wetlands today does not have to be a financial risk, mainly due to the investment support available for landowners. Regulation SJVFS 2007:42, §61 contain information regarding the amount of compensation available for wetlands. The investment support covers 90% of the actual costs for construction and for each single wetland the amount of compensation is a maximum of SEK 200 000/-/ha in the counties Östra Götaland, Kalmar, Gotland, Blekinge, Halland, Skåne and Västra Götland (SJVFS 2007:42). Other counties are eligible for an amount of maximum SEK 100 000 kr/ha. Exceptions on the upper limit of SEK 200 000/ha, can be made for the construction of ponds for phosphorus sedimentation, which are entitled to a maximum investment support of 300,000 SEK/ha (SJVFS 2007:42). The amount of compensation is based upon the area of the wetland noted in the application.

Since 2010 the investment support can cover all relevant project costs, such as design and application expenditures, even if the project for a reason cannot be approved (Andersson,
2012). The support is given on a periodic basis, or once the construction project has been completed.

5. Support grants for wetlands

In 1996 it became possible to apply for financial support for construction of wetlands and today, all the EU-member countries can design their own programmes and measures to protect the environment in the agricultural landscape. Since Sweden entered the EU the amount of financial support to apply for has increased in numbers, the most important ones are dealt with in historical order below.

5.1 Support grants for wetlands: Before the EU-membership

As mentioned in chapter 2, Sweden set up its first financial support system (NYLA) for construction of wetlands back in the late 80s. One of the requirements to receive these government grants was to permanently remove cereal area from production and replace it with, for example, a dam or a wetland. SJV was responsible authority on a national level, while the CABs were responsible on a local level. The Stately funded compensation for constructing a wetland with a NYLA-grant was, based on the 1991 money value, estimated to SEK 135 000:-/ha (Andersson, 2009). The actual cost was difficult to estimate as the landowner had accounted for some of the costs themselves (Ibid.).

NYLA was later transferred into Conversion 90 and remained there until Sweden obtained a membership in the European Union in 1995 (Andersson, 2012). In order to decrease the Swedish excess production, a decision was made in 1990 to remove areas of arable land out of production. This decision was given the name Conversion 90 and provided farmers conversion support. Rather than using the land for production of grain, arable land would be used for other purposes, such as wetlands (Grönvall, 2011).

5.2 Support grants for wetlands: The Rural Development Support

The Rural Development Support, Miva, was directed towards the creation of wetlands in the agricultural landscape, whose main purpose was that of nitrogen retention and biological diversity. Previous supports had not targeted wetlands in specific. In order to guarantee the duration of the action, the landowner had to sign a contract that lasted for 20 years, for which an annual environmental compensation was paid throughout this period. Miva lasted from 1996-1999, however, since the contract was for 20 years, the support is, in some cases, still
being payed and will cease in year 2020. The average cost/ha wetland was SEK 50 000-60 000:- and EU stood for 50% of the finance (Andersson, 2009).

While Miva was more directed towards the construction of wetlands, Lmiva was directed towards the actual maintenance of wetlands and ponds. The environmental aspect was fundamental; therefore projects with the greatest use for the environment were prioritized. The minimum support was SEK 3000:-/ha and lasted for 20 years (Ibid.). Lmiva received a 25% funding from EU and 75% nationally and still exists.

Apart from Miva and Lmiva, the so-called Project Support (PS) is also part of the RDS, and covers mainly the construction of wetlands and ponds. The support does not cover all costs, but contributes to projects that are prioritized by the CABs. PS does not differ from wetlands financed by Miva or Lmiva with regard to nutrient retention (Weisner, et al., 2005).

5.3 Support grants for wetlands: Local Investment programmes

Originally the Government decided on grant applications regarding the Local Investment Programmes (LIP), however, since 2002 the LIP funding was decided by the Swedish EPA. The main concept of the LIPs was to award grants to entire action programmes, not to individual projects in various sectors, which is otherwise a common feature of government grants (Local Investment Programmes, 2004). According to the report “Local Investment Programmes- The way to a sustainable society”, the aims (relevant to the environment) of the LIP were:

• “To achieve environmental improvements in Swedish municipalities”
• “To improve knowledge about ecologically sustainable development”
• “To help to ensure that sustainability is given higher priority in local efforts”
• “To encourage all actors in society to work together to achieve sustainable development”

The majority of the grants were given to projects focusing on renewable energy, while only 6% went to projects focusing on nature conservation, see figure 5 below.
One of the main reasons for this is that it is difficult to measure and monitor environmental effects within this area. Projects that fall under the nature conservation projects are seas, lakes, rivers and streams, along with the construction of wetlands and dams, see figure 6 below.

The Swedish EPA was responsible for information regarding the application procedure and produced information on the results and outcome of previously completed programmes (Local Investment Programmes, 2004). SEK 6.2 billion was allocated to cover 1800 environmental projects in 161 municipalities between 1998 and 2002 (Ibid.). The last program ended in 2005.

5.4 Support grants for wetlands: The Rural Development Programme

The Rural Development Programme has played and continues to play an important part as one of the main support grants for construction and restoration of wetlands. The RDP is financed 50% by the EU and 50% with national funds. Each programme lasts for a 7-years period, current period is 2007-2013. Each programme undergoes an evaluation 3 times, which sums up current faults that are to be brought to attention when constructing the next programme. Within the RDPs member countries have the opportunity to shape different kind of environmental payments for different kind of areas, such as wetlands. The managing authority is the SJV, while the CABs are responsible for the implementation of agri-environmental measures in the RDP.

The new RDP 2014-2020 is currently under negotiation and is not yet finalized. The programme has a planned budget of SEK 36 billion and contains, according to the report “Summary of the Partnership Agreement for Sweden, 2014-2020” (2015) the following suggestions, which are based on evaluations of previous programmes:
“Costs that arise at the time of application of permits to construct and restore wetlands and ponds are eligible for support, so-called project expenditure”.

“Farmers and others implementing operations for the environment should be able to receive information about new information via counselling”.

Given that the commitment stretches out over a period of time, some grants remain when a new programme starts; hence some landowners are still under “old” support when the new programme starts.

For the RDP of 2000-2006, support was only given to projects outside area 1, with an amount up to 90% of total costs (Andersson et al., 2008). Projects had to be connected to agriculture and in order to receive RDP support; the landowner could not receive any other type of support. The CABs could divide the country into different geographical regions with different levels of support, based on the environmental use. During the period of 2000-2006 the leaching of nitrogen was biggest in the southern parts of Sweden, i.e the environmental compensation in this region was the highest and could be given to landowners in the counties of Kalmar, Gotland, Blekinge, Halland, Skåne and Västra Götaland (Ibid.). Basic compensation for maintenance started at SEK 3000/ha/year and lasted for 20 years; furthermore, an annual additional compensation of SEK 800/ha could be applied for regarding removal of plants for grazing (Ibid.).

The current RDP 2007-2013 is still under use and will continue until this fall, 2015, when rules for the new programme are announced. The total budget for the programme was 2,702 million euros in 2007, which was dedicated “to improve the environment and the countryside by means of support for land management”, which in turn stood for 69% of the total budget (Swedish University of Natural Sciences, 2010). According to the midterm evaluation of the programme, made in 2010 by the SLU, “a simpler, result-oriented system is needed, possibly based on a contract between a farmer and the society”(Ibid.). The following things were brought to attention as something that might be improved for the upcoming programme:

“Difficulties in finding good location for wetlands due to high land prices make the process slow, hence not as many wetlands are being constructed as hoped for”.
“Wetlands located near the sea or other prioritized recipient will receive maximum funding”.

“Some provinces want to offer compensation for pre-investigations or project related costs for projects that could, for various reasons, not be completed”.

The SLU (2010) made the following counter-measures suggestions in their report:

- “The environmental effects should determine how the measures/payments are designed; this in turn may involve offering a higher/lower payment”.
- “Funds should be reallocated from general to site-specific payments, since the latter have been found more cost-efficient”.
- “A new way of drawing up contracts between farmers and the SBA or CABs should be investigated”.
- “Payments should be designed based on the environmental effect the wetlands have”.

All these factors are taken into consideration when designing the new RDP for 2014-2020.

5.5 Support grants: The Marine Environment Grant and LOVA

The authority responsible for the Marine Environment grant is SwAM, which provide support to CABs regarding wetland implementation. The grant covers environmental measures such as restoration of wetlands. Another type of support grant available for non-profit organizations is LOVA, which was initiated in 2009 to support local water conservation projects (Miljödepartementet, 2011). This fund is not directly intended for the construction of wetlands, but can be used as a complement to the RDP. Co-financing is a prescribed requirement, since only 50% of the total project cost can be covered by LOVA support (Ibid.).

6. Literature review

The following chapter summarizes scientific articles related to financial support for wetlands and farmers willingness to construct wetlands on arable land.

6.1 Main drivers and barriers for implementation of wetlands

According to the result from the study “Landowners’ incentives for constructing wetlands in an agricultural area in south Sweden” (Hansson et al., 2012), adequate subsidies were one of
the key factors that would encourage landowners to construct wetlands. The study identified the following key factors that are needed in order to reach a successful result when implementing wetlands;

- “Identify additional services that the wetland can provide and make it multifunctional”
- “Identify local environmental benefits”
- “Make sure all key stakeholders involved have sufficient knowledge”
- “The importance of ‘peers’ good experience’”

Furthermore the study identified key factors that are, according to the participants in the study, perceived as hindrances;

- “Burdensome management”
- “Deficient knowledge”
- “Time-consuming application procedures”
- “Unclear effectiveness of nutrient reduction”

According to the result the main reason for not wanting to construct a wetland was that the chosen area was classified as productive by the landowner i.e. suitable for food production. The study then proposed that landowners be treated as “Eco system service entrepreneurs” in contrast to being treated as individuals and have subsidies cover costs, which is the norm today. According to the study this would “stimulate improved design and the placement of wetlands”.

Based on the results from the interviews it became clear that in order to attract landowners to invest time, money and effort in wetlands, the changes for the environment have to be implemented in such a way that it does not affect the business in a “negative way”. According to the result, all the applicants knew about the subsidies, but were less certain about who could actually apply and how the application was handled. Some participants perceived the rules in Sweden as stricter than those of EU-standard, which led to the suggestion of “authorities playing a role in removing hindrances and implementing follow-up schemes providing feedback to landowners about the function of their wetlands”. According to the study “more wetlands will be constructed by providing feedback to landowners regarding their wetland’s contribution to nutrient removal and biodiversity”, leading to a lasting
confidence in wetland construction among landowners. Furthermore, the study suggests that landowners should be paid for the amount of nutrients removed in their wetlands, making the wetland more cost-effective, while the development of a financial system for nitrogen and phosphorus reduction might serve as yet another incentive.

6.2 Studying Farmers’ willingness

The study "Farmers’ perceptions of biodiversity and their willingness to enhance it through agri-environment schemes" (Herzon & Mikk, 2006), provided an extra perspective on how one can go about to interest farmers in agri-environment schemes. Based on interviews with farmers that participated in agri-environmental schemes in Estonia and Finland, the study took a particular interest in the relationship between farmers’ interest and willingness to undertake practices favouring farmland wildlife. The study concluded that an “increase of knowledge, increases the willingness to invest time in projects”. Another key factor was the positive feedback from the society, which is needed not only in financial terms, but also to “boost the farmer in his every day work”. Farmers tend to feel overlooked by authorities; hence the importance of providing landowners with the appropriate incentives in order to raise the interest.

6.3 Studying farmers’ willingness: Determinants of willingness

The study “Are farmers prosocial? Determinants of the willingness to participate in a Swedish catchment-based wetland creation programme” (Söderqvist, 2002), examines at close hand ways to encourage voluntary cooperation and asks the question; -Why contribute to the common good? According to the study “knowledge of non-financial motives, if any, is an important piece of information to several actors”. The results showed that farmers are likely to be more interested in an environmental programme if the programme is designed with non-financial motives in mind.

In 2003 landowners were offered rental payments that were equal to wetland construction costs plus opportunity costs of land. The results showed that “if a landowner is judged to benefit financially from the conversion, the policy has to be more than 60% of the construction costs”. The study indicates that public environmental benefits are important motives for farmers’ participation. Therefore a programme must be designed so that
“participants have the opportunity to gain private environmental benefits and perceive public environmental benefits”.

6.4 Studying farmers’ willingness: Determinants of willingness to participate

In the study “Determinants of farmers’ willingness to participate in subsidy schemes for pesticide-free buffer zones” (Christensen et al., 2011), the main purpose was to identify “requirements that farmers perceive to be less restrictive and attracts an interest in agri-environmental schemes”. The results showed that the professional pride in high yields were of great importance among the participants, so was the importance of keeping up family traditions. Furthermore, the results showed that farmers are willing to trade off payments for less burdensome scheme requirements, meaning less paperwork and shorter contracts. The authors believe this would “increase participation rates, without increasing government expenses to the schemes”. The effect on the environment was ranked as less important, while flexibility ranked high. Some of the negative aspects that were brought up were:

- “Lack of trust in authorities”
- “Lots of paperwork”
- “Long contracts”
- “Subsidy should cover more than direct costs”

The study suggested that payment should be provided as lump sums, as well as yearly payments. By doing so, this would “decrease overall payments while increasing participation rates”. Payments above and beyond direct costs are “a necessary condition for showing interest in a subsidy scheme”, along with a release-option when it comes to the contract. Information concerning the environmental goals of the agri-environmental scheme, such as feedback on how the participant has contributed to the environment, serves as an incentive for participation.

6.5 Multifunctional Wetlands and Stakeholder Engagement

According to the working paper “Multifunctional Wetlands and Stakeholder Engagement; Lessons from Sweden” made by Stockholm Environment Institute in 2012, the key barriers and limitations for progress in Sweden regarding the financial support system for implementation of wetlands in agriculture are:
“Too much emphasis on nutrient retention”
“County Administrative Boards and Swedish Board of Agriculture regulations often change”
“Not enough agri-financial support to Swedish farmers”

Furthermore, the study came to the following conclusions based on the interviews:

“Wetlands are prioritized among a large number of authorities and organizations”
“The existence of a strong knowledge base through agri-environmental advisors within the Focus on Nutrients initiative facilitates”
“Financial support is not limited to RDP. Providing additional support can contribute to long-term communication with farmers while compensating for investments not covered by the RDP”

The study emphasizes the need to promote wetlands as multifunctional, creating more possibilities for farmers to implement wetlands on their lands.

6.6 Nutrient farming
In 2004 the study "Nutrient farming: The business of environmental management” (Hey et al., 2004), proposed the concept nutrient removal credits, which would compensate for the restoration of wetlands. The idea was that these credits could be bought, sold and traded on an open market or through long-term contracts. According to the study, nutrient farming would “demonstrate the economic value of the land, creating new financial opportunities for farmers and give the wetland a multifunctional purpose”. The study points out “that economics control how we use land and therefore controls the environment”, hence nutrient farming addresses the two facts that; restoring wetlands is expensive and no one has yet developed a financing scheme large enough to effect large-scale restoration. The Nutrient-removal credits can be measured at the intake and outfall of the nutrient farm and then sold by the landowners, either “through an open market or long-term contracts, to other crop or livestock farmers, municipalities or industries that release excess nutrients to surface waters and cannot cost effectively remove these nutrients themselves”.
6.7 The Ramsar Convention
According to the report “National Report on the implementation of the Ramsar Convention on wetlands” (2013), the following aspects have been identified as successful regarding the implementation of the Convention in Sweden;

- “More wetlands have been constructed”
- An online news-letter published by SEPA provides the public with information regarding wetlands and their function

While the following aspects have been perceived as hindrances;

- “Insufficient resources for measures”
- “On-going challenge regarding the sustainable use of wetlands”

Furthermore, the report suggests the following countermeasures;

- “Consideration for wetlands in conjunction with the use of land adjacent to wetlands needs to improve”
- “Interest in wetland restoration and construction need to be further stimulated among landowners”

The report highlights the fact the interest among landowners is something that needs to be improved, along with the challenge regarding sustainable use of wetlands.

7. The interviews
The following section contains information conducted from interviews with Hans Bjuringer and John Strand.

7.1 Interview with John Strand, wetland adviser, March 10th 2015, Halland County
According to Strand (2015), most applicants “possess little information about wetlands at the beginning of the application process, especially regarding the retention of nutrients”. The source of information regarding wetlands come, in the majority of the cases, from peers’ good experience or via the information leaflet sent out by the local CAB. Given that the level of knowledge is usually quite low among the farmers, false perceptions are quite common. The most common mistakes has mainly to do with the design of the wetland, such as too much
vegetation is bad, too little water is bad and that it is good to have fish in the wetland. Another common false perception is that there is a lot of paperwork in the application process, which Strand feels is uncalled for as there is “a lot of support available today for that process”.

These days it is possible for the farmer to receive support grants that cover the entire cost, which is an improvement compared to previous programs. Another factor that is worth taking into account says Strand, is the fact that “the maintenance support is now valid for 20 years, not 10 as with previous programs”. As of 2010 the CABs provide 100% compensation for construction of wetlands. The RDP plays an important part in the decision making, without proper funding, Strand means, “it is very difficult to attract applicants”.

Strand finds it quite surprising that many of the farmers are interested in constructing a wetland simply because “it is nice to look at” or “it is a great place for the kids to go ice-skating in the winter”, however, this has turned out to be a contributing factor in more cases than one. Another important motivator is the “peers’ good experience” or the “mouth-to-mouth” method, “once the rumour spreads, everyone wants one”. Strand means that the support grants are indeed attributing factors, however, “one must not underestimate a simple thing such as “my neighbour has one”, which tend to have “a more striking effect than the CAB information leaflet””.

When asked about the application process and the related paperwork, Strand explains that “the whole application process is as smooth as it can be”; however, there does tend to be more paperwork regarding the SAM-application, as EU-laws are known to be more “complicated and frustrating”, creating hindrances for projects and improvements. Strand is of the opinion that very little work is required by the farmer to start the actual process with constructing a wetland. The actual process is described in detail in section 4.1.

7.2 Interview with Hans Bjuringer, February 19th 2015, Official in the Rural Development Unit, Halland County

When asked why each County have different support grants Bjuringer (2015) explains that “nutrient leaching is known to be higher in the southern parts of Sweden; therefore projects in these counties receive more in funding”. Each County decide independently on how to divide the budget and which projects receives funding. His role in the process as Bjuringer explains is to “make all the decisions regarding financial support for construction/restoration
of wetlands”; doing the best he can with the budget he has been given. The primary reason as to why the EU-support for agriculture ceased was, according to Bjuringer, the confusion regarding EU regulations and in some part, the economic situation.

Bjuringer mean that “the farmers are never fully satisfied when it comes to financial funding, there is always room for more”, however, the fact that it is possible to receive 100% funding through the RDP is a contributing factor as to why so many wetlands are restored and constructed here in Halland County. According to Bjuringer, “the RDP has improved over the years, however, there is always room for improvement, perhaps more flexibility with contracts is the solution to attract even more applicants?.”

8. The Questionnaires

The following section contains information obtained from the questionnaires “the support grants available for implementation of wetlands on arable land” & “questions regarding current & previous national support grants”.

8.1 The Questionnaire regarding the support grants available for implementation of wetlands on arable land

Results from the questionnaire regarding “Support grants available for implementation of wetlands on arable land”, for an overview of the questions, see appendix 1.

Based on the answers from question number 1: **What do you feel has worked well with previous support systems for the implementation of wetlands on agricultural land?** it became clear that the participants overall were quite satisfied with current support grants, the CABs receive a good amount of money so that many wetlands can be built, the maintenance support helps to attracts interest among applicants, *Focus on nutrients* is a “nice supplement in the process as it helps to get projects started”. An important factor is, according to one of the participants that “it is possible to receive 100% financial support; it helps to raise the interest among the applicants”.

For question number 2: **What do you feel has worked poorly with previous support systems for the implementation of wetlands on agricultural land?** Bureaucracy was perceived as a limiting factor, each CAB has its own assessment, the bureaucracy can be perceived as too heavy, too much paperwork for the applicant. Regarding the administration,
some of the participants felt that CAB processing times are bad and so is the service. One of the participants answered “some administrators have little or no expertise on wetlands, hence time spent on administration and various controls-the process take too long”. Furthermore, the majority of the participants felt that there is still much to be improved regarding the financial support; No advance-payment for the construction, “incentives for constructions are not good enough, hard to find good projects that will receive support grants”.

The key factors noted for Question 3: **What do you feel can be improved for the new Rural Development Program 2014-2020?** were: Regulations and administrative procedures should be simplified and made more legally secure, since farmers seem to have a lack of trust in authorities. Furthermore, the CABs “should have mandatory courses for the administrators dealing with wetlands so that they know what they’re doing and perhaps diminish their influence in the judgement process would be good”? By generating funds for the work of finding suitable areas for wetlands of interested farmers, this would help them complete their projects and make the whole process more effective. “We should aim to make the wetland multifunctional and more profitable”, one of the participants answered.

When it came to the financial situation some of the participants suggested starting with advance-payment, facilitating co-financing from various parts of the projects, “to fulfill the Environmental Quality Objective “Thriving wetlands” more money is needed, at least 5-10 times more.

For question 4: **What do you think are the key factors that make farmers not want to implement wetlands on agricultural land?** One of the participants replied “It might be perceived as negative if the action programs for the water directives point out wetlands and other measures on agricultural land as cost-effective, a feeling or threat of coercion can make you become hostile, but it can also act as a spur and make you look for support voluntarily as long as there is such a system. You want to do things voluntarily rather than through legislation”. A recurrent pattern was the trouble with bureaucracy: a lot of bureaucracy, enough trouble with EU-bureaucracy when applying for support “to make do” compensations for pastures, along with dissatisfaction regarding support grants: “economic incentives are too bad (compensation payments would help)”, economic risk, compensation for land can be perceived as low in comparison to land value, advance-payment would make things easier, if the financial part does not work-no interest, compensatory allowances, single-payment, “usually it is land value that is a decisive factor”.

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According to answers gathered from question 5: **What do you think are the key factors that make farmers want to implement wetlands on agricultural land?** It is often the little things that acts as the most efficient incentives, for example: the feeling of having built something by yourself-positive inspiration, their own interests of the landscape, hunting and recreation, genuinely interested in the environment. One of the participants answered “*there has to be some sort of interest from the beginning, otherwise there is no point*”. In most cases the landowner has a piece of land with low consumption value that can be “sacrificed” for this purpose and thereby make use of low productive land. It is better to do these measures willingly than “*being forced by legislation which the water directive could lead to*”, the fear for future regulations does, in some cases, reinforce motivation.

### 8.2 Questions sent to Emma Svensson, Swedish Board of Agriculture regarding current & previous national support grants

According to Svensson (2015) the main reason as to why the EU-support ceased for a period was the “*confusion regarding EU regulations*”; therefore a decision was made to postpone the start of the new CAP to 2015, until the new rules had been made clear. For the new RDP, SJV has chosen to investigate some previously unanswered questions more deeply, which in turn has resulted in a new set of questions. This, Svensson explains, is often the case when one is first to investigate; therefore the process takes longer than usual. Once the new version of the program is decided, the official version is sent to EU-KOM for a read through. The SJV and EU-KOM decides the new rules for the RDP, each RDP must undergo an independent evaluation of the entire program, which is usually done mid-term and once the program is finished. It is now too late to affect the new RDP 2014-2020 and according to Svensson, the new RDP will bring “*several negative changes in the form of a decreased budget and less possibilities for co-financing*”.

When asked why some counties receive more in financial support than others, Svensson explains that “*nutrient leaching from agriculture tend to be higher in the southern parts of Sweden, therefore there is a higher priority for projects in these areas*”. When the time comes to decide on how the support grants should be divided between the counties, the amount is based upon the amount of nutrient leaching, hence the southern counties Halland and Skåne receive a higher amount in support grants. The SJV has not conducted studies about the farmers’ opinions on the support system; however, Svensson agrees, “*there is definitely a need to explore this area more*”.

When asked about the new RDP 2014-2020, there does not appear to be any larger improvements regarding regulations, mainly due to resistance from EU-KOM. The development of a new IT-system for administration has turned into a long and complicated process and has not reached the set standard. A new IT-system is not a requirement from EU, however a good working IT-system will help solving audit criticism. According to Svensson, Sweden has previously, received audit criticism based on the difficulty in following a case from first contact before the application to the actual choosing. There seem to be a lack of documentation regarding this process. Another problem, according to Svensson, is linked to regulations and how one can combine the national-and EU supports through co-financing (LOVA), along with the fact that there are State aid rules with a maximum amount that simply does not support bigger projects. There is still a lot of work to be done, Svensson concludes. For an overview of questions, see appendix 2.

9. Discussion

Analysis

For the literature review it became clear that the national regulations towards wetlands are overall well-constructed, however, there seem to be, on occasion, a clash between national regulations and EU-regulations. One of the reasons for this might be that EU-regulations have several countries to consider when constructing new regulations; hence these regulations might not be optimum for each country. According to Svensson (2015) there is still a lot of work to be done on how one can go about combining the national-and EU supports through co-financing (LOVA), adding to the fact that there is a need to create a better solution for EU-regulations and national regulations to coincide. In order to regain the trust among farmers, the bureaucracy has to improve. The Environmental Objectives connected to water bodies such as wetlands, all fall under the category of objectives that will not be reached by 2020. This is a clear sign that not enough is being done at the moment to ensure the future of wetlands. However, the fact that “thriving wetlands” has become a national objective is a step in the right direction and a sign that Sweden is well aware of the problem. The interest in constructing/restoring wetlands has increased over the years; however, the numbers of projects that are actually approved and built are not up to set standards. The question is then, if the criteria for receiving funding today are appropriate or perhaps too strict? Today projects in the southern parts of Sweden receive a higher amount of funding as the areas with excessive nutrient leakage are greater. Wetland projects acting as nutrient sinks have a higher
priority than those built to increase biodiversity or irrigation. The fact that there is no special criteria for good ecological status, as mentioned by Andersson (2012) in section 4.3, might be a sign that the amount of funding available these days is not sufficient, hence the original concept of the environmental aspect being fundamental, seem to have been lost on the way. Wetlands are multifunctional; however, being that the majority is being built with a single purpose, this in turn leads to the question whether wetlands are cost-efficient enough to attract farmers in investing their time and money in projects like these? How can you motivate farmers to construct wetlands on productive arable land with a guaranteed income for maintenance lasting only for 5-years?

The literature review based on the scientific articles revealed just how important it is to create an interest for knowledge among landowners; however, one must also take into account conditions such as location and choice of participants when analyzing all articles. The study “Farmers’ perceptions of biodiversity and their willingness to enhance it through agri-environment schemes” (Herzon & Mikk, 2006) was performed on participants already practicing-or applying for agri-environment schemes; hence this inclines that the participants were already open-minded towards projects like these. Furthermore, the study “Landowners’ incentives for constructing wetlands in an agricultural area in south of Sweden” (Hanson et al., 2012) was performed with participants living in a small area in the south of Sweden, Halland County, hence the result does not necessarily apply on a national level. The study concluded that by being more involved in the construction process and the work afterwards, such as obtaining information about how much the wetland actually contribute to nutrient reduction, gives the farmers a sense of satisfaction of having done something good for the environment, showing that the feeling of pride and self-satisfaction is indeed a key factor. Establishing follow-up schemes as a way of providing feedback to landowners regarding just how much their wetland contribute to nutrient removal and biodiversity could contribute to a lasting confidence in wetland construction among landowners and help promote new projects in the future.

The concept of paying farmers for the amount of nutrients removed in their wetlands could solve the problem with whether wetlands are cost-efficient enough to attract farmers. This way the farmers are not only motivated to construct a wetland that “performs well”, it also provide the farmer with information about the actual use of the wetland, which is something that seem to be missing today and solves the problem with farmers feeling overlooked once
the construction process is over. These nutrient removal credits could, according to the study “Nutrient farming: The business of environmental management” (Hey L et al., 2004), “be bought, sold or traded on an open market or through long-term contracts”. Nutrient farming would create new financial opportunities for farmers, giving the wetland a multifunctional purpose.

The Rural Development Programme is the main financial support available today for wetland construction. The main problem with the program is that the amount of places eligible for support are difficult to find as farmers are reluctant to transform productive land, hence not as many wetlands are being constructed as hoped for. Some counties want to offer compensation for pre-investigations or project related costs for projects that could, for various reasons, not be completed. This could serve as strong incentives for farmers. Another problem with the programme is the fact that the commitment for support stretches out over a long period; hence, some landowners are still under the “old” support when a new programme begins. This creates some confusion for the farmer. A solution to this problem could be to make the contract more flexible by, for example, shorten the length of the contract or include a release-option that can be used should the farmer choose to. This suggestion came up during the midterm evaluation of the RDP 2007-2013, along with a proposal to make wetlands more cost-efficient by providing site-specific payments rather than general. Here the evaluator mean that it is the “environmental effects that should determine how the measures/payments are designed”, which might involve offering a higher/lower payment. According to the result, farmers are willing to trade off payments for less burdensome paperwork and shorter contracts. The evaluator believes this would increase participation rates, without increasing government expenses to the schemes. The effect on the environment was ranked as less important, while flexibility ranked high, making a release-option when it comes to the contract, an attractive incentive for farmers.

Based on the information gained from the interviews, it became clear that bureaucracy again is a problematic factor, causing confusion not only for farmers, but also for SJV. While the financial support is an important factor indeed, the smaller things like recreation or “peers’ good experience” was a more common factor than expected. The simple fact that “I want what my neighbor has” or “it is good to have a place in the winter for the kids to go ice-skating”, were in several cases, the deciding factor to start the application process. It became clear that farmers do appreciate wetlands as nice features in the landscape and the biodiversity
it creates; however, farming is a business and without the financial support, farmers are not willing to invest the time and effort it takes to maintain a wetland.

Regarding the questionnaire “the support grants available for implementation of wetlands on arable land”, the goal was to receive 10 replies, however, only 8 was received with the primary motivation “lack of time” among the participants, hence information from the CAB in Västra Götaland is missing. This should not have a greater impact on the result, as the advisory agency in Västra Götaland participated in the questionnaire, thereby contributing with information applicable to that specific county.

The Questionnaires added to the fact that the bureaucracy is a recurrent trouble for farmers, along with bad administration and not good-enough financial incentives. However, the participants came up with several suggestions on improvement, showing that there is an interest among the CABs and advisors to provide good service and support for farmers. Lack of knowledge among the CABs can be solved with mandatory courses for the administrators dealing with wetlands, by generating funds for the work of finding suitable areas for wetlands of interested farmers would help make the whole process more effective. A key factor identified in the questionnaire was the statement “you rather do things voluntarily than through legislation”. When the farmer is coerced to take measures via legislation, the feeling of being overlooked is increased and the chances of the farmer wanting to invest in wetland projects voluntarily are greatly diminished. It is essential to establish a good connection between CABs and farmers in order to increase the amount of wetlands projects being constructed and finalized. Another evident problem was that of farmers wanting to use land with low consumption value for constructing wetlands. Unfortunately, in most cases, this land does not have the highest amount of nutrient leaching; hence, the CAB would not approve the location. This show that the incentives for constructing a wetland on productive land are not good enough, therefore the following measures are proposed in the Future research section.

**Future research**

Can farmers make an income by restoring or implementing wetlands? What can we do to provide the farmer with reassurance that investing in wetlands is not a financial risk, but an investment for a sustainable society? The concept of “nutrient farming” is highly interesting, as it provides the farmer with an opportunity to make a profit of the wetland. The concept of “nutrient credits” can by developed further by adding credits for ecosystem services, such as recreation, will help increase the value of the wetland. According to the American Wetlands
Initiative, working towards developing the implementation of wetlands in America, another way of increasing the value of a wetland is to have so-called Ecosystem service markets. By establishing markets such as these, the financial value of wetlands is recognized (The Wetlands Initiative, 2014). The challenge is to quantify the value of these services and establish a marketplace value for these benefits (Ibid.).

Another interesting and highly relevant concept is the expression “Mitigation banking”. In this case the wetland would serve as a bank, where companies that propose construction that will damage or destroy wetlands elsewhere can compensate by purchasing “credits” from the owner of the restored wetland (Coleman, 2013). In order for this to work, the process should be similar to that of the implementation process of wetlands we have in Sweden today, where each project is evaluated before given permission. According to the system currently in use in the States today, a landowner is allowed to sell one credit per acre of land; however, if part of a proposed mitigation area is already a functioning wetland and cannot benefit from enhancement or restoration, no credits will be received (Ibid.). The number of credits a company must purchase depends on the quantity and quality of the wetlands destroyed. Is mitigation a win-win solution then? The success of mitigation banking, as of any plan adopted for wetland conservation, will depend in the long run on commitment to the future of wetlands of landowners and companies after the money is made.

This study was conducted by the request of IVL Swedish Environmental Research Institute’s office in Beijing, China, with the objective to draw lessons from Sweden’s financial support system. Could a financial support system for wetlands be implemented in China? What sort of effect on the environment could wetlands have on a country of such a size as China? What sort of problems might occur if this financial support system is implemented in China? There has been little research done within this field, hence it is difficult to tell whether this financial support system could work in China. The difference in legislations should be considered as the main hindrance, as the Environmental law differs in China and does not carry the same structure as EU Environmental law. Furthermore, the proportions of China as a country and the different governance in each province require a financial support system that is more complicated than the Swedish system. The idea of providing financial support when constructing/restoring wetlands is a concept that is well worth investigating further in China. Should a system of this kind be implemented, this would lead to great improvements on the environment as a whole in China.
Conclusion

The objectives of this study were: To analyze and draw lessons from Sweden’s financial support system regarding the implementation of wetlands in agriculture and identify key enabling and disabling factors that make farmers want/not want to implement wetlands on their lands.

The ideal wetland has to generate some sort of profit for the farmer, while fulfilling its original purpose. The idea of nutrient farming is highly interesting and is a concept that is worth exploring further, as it not only provides an economic incentive, but also solves the problem with lack of knowledge and the feeling of being overlooked once the construction process is finished. However, too much focus on nutrients, limits the amount of projects suitable for financial support, hence a balance is needed in order to make sure that the amount of wetlands being constructed will not diminish. The “smaller” incentives as “peers’ good experience” or “nice feature in the landscape” is something that the CABs should use when trying to attract farmers, while flexible contracts and a better co-existence between national and EU-regulations are required in order to reach an optimized financial system. The study concludes that it is possible to implement wetlands in a way that is beneficial to the farmer while maintaining a sustainable society, mainly by adopting concepts like “nutrient farming” or “ecosystem service markets”, making wetlands profitable for farmers and the society in the end. Drawing on these lessons, the following factors are suggested for a continuous successful implementation of wetland projects:

- Put more effort into developing long-term relationships with farmers, a satisfied farmer is more likely to invest in more projects.
- Provide more information about the wetland to the landowner; how efficient is its nutrient removal?
- Create more flexible contracts; more farmers would be willing to invest if the contracts are adjustable.
- Establish nutrient “credit” system; provides the farmer with an opportunity to make money of the wetland.
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Appendix 1 (1/5)
Questionnaire regarding the support grants available for implementation of wetlands on arable land

**Question 1**
What do you feel has worked well with previous support systems for the implementation of wetlands in agriculture?

**Question 2**
What do you feel has worked poorly with previous support systems for the implementation of wetlands for agriculture?

**Question 3**
What do you feel can be improved for the new Rural Development Program 2014-2020?

**Question 4**
What do you think are the key factors that make farmers not want to implement wetlands on agricultural land?

**Question 5**
What do you think are the key factors that make farmers want to implement wetlands on agricultural land?
Appendix 2 (2/5)
Questions sent to Emma Svensson, Swedish Board of Agriculture regarding current and previous national support grants

Question 1
What is the primary reason that EU support for agriculture ceased 2014-2015? As I have understood, the support disappeared a period, only to start again this year. Was the economic situation a key factor?

Question 2
How come the support for the implementation of wetlands varies in Sweden? Why do counties like Halland and Skåne receive more money in support, than counties in the north?

Question 3
I have not found much information about the farmers' opinions on the support system, are there are previous studies (made by the Swedish Board of Agriculture) regarding this?

Question 4
Who decides the rules of the new Rural Development Program and how does the decision making process work?

Question 5
What do you feel can be improved with the new Rural Development Programme?
Appendix 3 (3/5)
Questions sent to Rolf Lindholm, crop-and EU-advisor, March 20th

Question 1
What is required of the applicant in the application process?

Question 2
Is it a long process?

Question 3
What is your part in the process?

Question 4
What happens if the application is sent in past deadline?

Question 5
What happens if there is something wrong in the application?
Appendix 4 (4/5)
Interview with John Strand, wetland adviser, Halland County, March 10th 2015

**Question 1**
How much knowledge does the applicant generally possess about the implementation of wetlands and their functions?

**Question 2**
Is it normal for the applicant to have false perceptions about wetlands?

**Question 3**
How do you feel about the previous Rural Development Programs?

**Question 4**
What do you think are the key factors that make farmers want to implement wetlands on agricultural land?

**Question 5**
Can you explain the application process step by step? What are your personal opinions regarding the application process?
Appendix 5 (5/5)
Interview with Hans Bjuringer, February 19th 2015, Official in the Rural Development Unit, Halland County

Question 1
Does each County have different support grants?

Question 2
What is your role in the application process?

Question 3
What is the primary reason that EU support for agriculture ceased? As I have understood, the support disappeared a period, only to start again this year. Was the economic situation a key factor?

Question 4
How do the applicants feel about the support grants? Do they feel the sum is appropriate?