Abbreviations
OiB: Odling i Balans
Eider example: the Weidelandschaft Eidertal project
Single letters H,T,J,B refer to the interviewee

2.9.2 Information availability and relevancy

Much of the information about environmental solutions is generated by the scientific community, and this information needs to be available to implementation-level stakeholders who are starting up or involved in an agri-environmental project (Uetake et al. 2013). As well as this information being communicated (and therefore accessible), it also needs to be practical (Uetake et al. 2013); this need for practical research is also brought to attention by Janse (2008) when supplying policy-makers with information. The need for the clear communication of information by scientists to layman or the implementation-level also occurs in the literature (Welp et al. 2006), seen between scientists and policy-makers (Janse 2008; Janse 2006; Guldin 2003) and in participatory processes (Reed 2008). Relating to this science/ implementation-level divide is the need of research processes to incorporate valuable local and implementation-level knowledge held by implementation-level stakeholders (Welp et al. 2006). Janse (2006) also highlights the importance of professional/ technical information, which is essentially practical knowledge held by a professional in their field. The incorporation of this knowledge into the research process is highly valuable; not only does it ensure the production of practically and “real-world” relevant research outcomes (Welp et al. 2006; Janse 2006), but the regular and early involvement of stakeholders in the research process promotes a sense of “ownership” of both the research outcomes and the process (Welp et al. 2006). Research generated in this way is more likely to be implemented and used by the stakeholders (Welp et al. 2006).

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Essentially within this "knowledge and information access" section of communication, the areas of interest are problems involving the following; the first problem area is pertaining to the availability of information, basically whether a communication process is occurring at all. The second concerns the "message" from the scientific community pertaining to agri-environmental research, this encompasses the relevancy of the message's informational content. Lack of relevancy of information provided by the scientific community highlights a basic misunderstanding of what information is needed by the implementation-level stakeholders. The third and final area concerns the need to incorporate implementation-level input and knowledge into the research process, as this is highlighted in the literature as needing to be addressed. This may indicate a lack of a two-way communication process, the implementation of which, however, is seen as a key to good stakeholder-scientist dialogues (Welp et al. 2006). It is a possibility that addressing the need to include valuable knowledge originating from the stakeholders themselves in the research process, would in turn address the problem of practical relevancy of research provided, and perhaps also the need for clearer communication from scientists.

4.3.3 Scientific cultural problems

(Super-theme 1. *Professional Cultural Differences*)

The theme *scientific cultural problems* encompasses problems relating to both scientific culture and the scientific language barrier. This theme was not specifically outlined in the introduction and arose as an area of interest during the coding process. It encompasses research questions relating to the introduction topic "Information availability and relevancy" as the information in question here is that provided by the scientific community to implementation-level stakeholders. In the introduction section the research questions to be addressed were; 1. the availability of information; 2. the practical relevance of this information provided; 3. the inclusion of implementation-level knowledge in research processes. These were classified as codes in the template, during the template analysis, and fall under this theme (as well as that of the *inter-stakeholder group language barrier*). Several codes relating to the "Incentive" section of the introduction also fall under this theme. As

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outlined in the introduction, problems with information availability and practical relevance of information were present in in some examples (findings outlined below), and in one example the inclusion of implementation level stakeholders in the research process was used as a solution to both of these problems (as outlined in the description of OiB).

Problems in the interface between policy and science, due to scientific culture are outlined by Janse (2008), where research is undertaken but not used due to incomprehensibility or non-relevancy, indicating a failure in the supply and demand needs for scientific information. This problem can be seen in the farmer- scientist interface as well, as shown in the findings below. A problem with the attitude among scientists is also described; reward is provided by research institutions based on publications, and there is a lack of incentive for the uptake of new research topics (Janse 2008). This supports the findings below.

Scientific cultural problems definition: These problems arise due to the professional culture of the scientific community, specifically the traditional structure by which research is undertaken and published; research is typically funding driven and theoretical, which renders it, most often, not very practically implementable; this is further exacerbated by publication occurring in scientific language in journals with limited accessibility.

At this stage the research process ends, and research which has the potential to be useful at implementation level is often not carried any further than a theoretical or laboratory based study, and this is then shared with the scientific world via journals which are often not accessible to the public.
Really there should be a continuation of the research process, by which information is rendered practically implementable (through farm testing and implementation); after which this information needs to be distributed in an easily understandable form (language) and made accessible to other stakeholder groups.

However, there is no incentive for this, because of the structure of traditional scientific culture and the research process.

Scientific cultural problems encompass the interface between the scientific community and other stakeholder groups; this interface is made up of scientist- stakeholder relations and scientist- stakeholder language barrier. It can therefore be viewed as a hybrid between the two previous themes: inter-stakeholder group relations problems and the inter-stakeholder group language barrier.

As such, many of the conditional and process codes seen within *scientific cultural differences* are those that fall under *inter-stakeholder group relations problems* and the *inter-stakeholder group language barrier*. It must be noted that these shared codes may affect the two aspects (relations or language barrier) of scientific cultural problems differently, as according to the relationships of the codes and the relevant theme.

For example, the presence of the code *reputation, respect and trust* will greatly affect the relations between the scientific community and other stakeholder groups but will not directly affect the scientific language barrier, although it may slightly lower it indirectly through its positive affect on relations.

Therefore condition/processes codes that affect the state of *theme inter-stakeholder group relations problems* one way will affect *scientific cultural problems* similarly. However if this code is only a result of and not an influence on the *inter-stakeholder group language barrier,* it will still influence the relations within the *scientific cultural problems* but not the scientific language barrier itself.
Within the scope of this study, *scientific cultural problems* that occur between the scientific community and implementation-level stakeholders were those of most interest.

Even though *scientific cultural problems* are a hybrid of two themes, it has been categorised as its own theme, because differences between scientific professional culture and that of other stakeholders gives rise to a unique set of condition and process codes that represent the challenges within the interface between scientists and other stakeholder groups, not seen

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within either *inter-stakeholder group relations problems* or the *inter-stakeholder group language barrier*.

Influences: *Scientific cultural problems* influence the following themes*: inter-stakeholder group relations problems, the inter-stakeholder group language barrier, traditional role problems* and *policy and legislation problems*. It must be noted that the two aspects that make up *scientific cultural problems* (relations and the scientific language barrier) may each influence the other themes with different emphases.

Affected by: The state of *scientific cultural problems* is greatly affected by both *inter-stakeholder group relations problems, the inter-stakeholder group language barrier,* and affected by *traditional role problems* and *policy and legislation problems*. It may also be influenced by *intra-stakeholder group communication problems* within the scientific community, however this falls beyond the scope of this study. It must be noted that the two aspects of *scientific cultural problems* (relations and the scientific language barrier) may be affected with different emphases by these themes.

Scientific cultural problems in the Examples

OiB has addressed scientific cultural problems by developing a relationship with the Swedish University of Agricultural Sciences, a process which took 10-12 years. H says "OiB has a good relationship with the University, where they can send projects to be undertaken by students, and OiB has a two-way communication process with them," indicating that the information flow is not only from the research community to OiB, but that they have facilitated a two-way exchange of valuable information. H also states that "There is no problem obtaining research, understanding research or with the practicality and relevance of research, because OiB is the instigator of the research, and is part of the research process with the university. When the research is nearing the end of a project, OiB uses their input, to influence how they formulate or present their results, to make it easy to communicate with farmers and politicians etc." Thus this two-way communication has addressed the problem of obtaining practically implementable research. OiB renders the results and information understandable and it is

presented in a common language. The incentive for scientists to collaborate is in that they can use the pilot farms, which are set up to measure all inputs and outputs, to collect data, take measurements and test projects; this is the benefit for the researchers who are involved in OiB.

Again there is use of the "farm is like a box" metaphor where all inputs and outputs on the farm are measured, making it easy to communicate the changes made by the implementation of a process on the farm. Using this OiB bridges the gap between the scientific community and the farmers; information is distributed through the advisory boards and the scientific language barrier has been lowered.

This statement from the interview provides a summary of the state of *scientific cultural problems* in OiB "OiB is the bridge, trying to find new solutions, new ideas which are tried on the farms, and if the idea is something that's really interesting to spread, we send it to the University or some other institution, to work on, often as an exjob for students who continue to work on it."

In contrast to OiB, in the Latvian J feels that "there is no problem with the correct research being undertaken; the main problem is that the research is not accessible. Research needs to be shared. There is a problem with research being undertaken for example in Denmark and then the same research being undertaken in Latvia," J believes "This is just to make money." He also shows disillusionment with the research process and is frustrated with the repetition and lack of distribution of information. He characterises the source of this problem as "the issue (being) communication within the scientific environment." This highlights his view of a problem with *intra-stakeholder group communication* within the scientific community, which is a possibility.

The statements discussed under the *inter-stakeholder group relations* theme regarding J's opinions about researchers "getting all these grants" and "using and abusing" farmers in order to undergo farm tests which are not carried out thoroughly enough, and finally

repetition of research which has been undergone elsewhere purely to make money, are worrying with regards to this theme was well. These statements either quantify just how deep the funding-driven scientific culture runs, especially with regards to Latvia, and how isolated the scientific community is from reality; or alternatively if entirely untrue, this demonstrates that the communication between the scientific and farming communities (in Latvia) are in a very poor state indeed, or possibly no communication is taking place at all. If communication is taking place, then the language barrier is a major problem. Again the truth of these statements is beyond the scope of this thesis to ascertain, but this can be viewed on a continuous scale; that is to say these statements may be exacerbated by preconceptions, but these preconceptions may not be entirely based on false-truths.

Zanda Kruklite and Maira Dzelzkaleja with the Latvian Farmers' Parliament are involved in helping to translate information from scientific language in collaboration with J. He feels that "research provided needs to be in "common language" easier to understand, not dumbed-down, but presented better. It needs to be in a language that is not so scientific, with so much industry jargon. ...Scientists need to make research easily understood, simple and not overcomplicated; scientists like to make things overcomplicated just to show they are smart." This clearly highlights the need for language barrier elimination. With regards to practical relevance of research J states "...scientific research needs to be done in the field in reality, not in the lab because the lab is nothing like the environment and not comparable to reality. There needs to be demonstration farms on which this occurs and other farmers can view how solutions are implemented. There has to be a farmer implementing these, not a governmental organisation or a farm owned by the government." On a separate occasion he emphasises his belief that "Scientists should not be working entirely in labs; they need to step outside of their comfort zones; everyone should step out of their comfort zones a little."

J's suggests "The best way to solve the scientific language barrier and research applicability is to facilitate better communication with the scientists and/or the bureaucratic circle. There needs to be emphasis on communicating person to person and less emphasis on the theory. There also needs to be more demonstrations and practicals."

It must be noted that J completed his tertiary education as and worked as a veterinarian; he is therefore not unacquainted with scientific culture, or the idea of scientific language; this should therefore lend some weight to his statements.

In the Eider example, scientific information was supplied to the implementation-level stakeholders by B, who herself has a scientific background. She sourced relevant wetland restoration information through her personal contacts (with the Ernst-Moritz-Arndt-Universität Greifswald) as well as those of the project (the Christian-Albrechts-Universität zu Kiel). She mentions the work of Prof. Succow (Ernst-Moritz-Arndt-Universität Greifswald) as being especially relevant in terms of practical implementability and in making research available.

The projects relations with the scientific community were well maintained as various researchers were involved in the project.

However B does acknowledge that "there is a working language barrier, with scientists using Latin names for plants etc." and that she "worked as the bridge between the scientific world and the farmers and community, providing information and options for the community, working in the role of translator, raising awareness and opening the community's eyes to new ideas." She believes there needs to be more people bridging this gap and supplying information to the farmers. She also states that "the topic of correct research being undertaken is a sensitive one, however in general I wish that the research undertaken was more practical; the people involved are nice and open to connecting with the areas, however sometimes the research provided was not that useful." At round tables she noticed that "when there is someone who only talks about theoretical things the local people cannot relate, and feel that it doesn't relate or apply to the practical, application on farm-level. Scientists believe that if it is not theoretical then it is not scientific enough." This indicates a need for better communication and two-way communication processes in general.

The more press and television coverage wetland restoration received, the lower the language barrier with the farmers and the communities became, as the environmental awareness was raised through media that used common language and not necessarily scientific language.

In summary B believes that "For the future of the agri-environmental sector there needs to be more people involved in communication and connection as bridges and translators, and research needs to have a practical approach and be implementable as opposed to theoretical.... It is important to have people who understand both scientific (biological) level information and farm-level information. This is the first step towards respecting each other." Over time the scientific language barrier was lowered through raising environmental awareness and the project's constant focus on communication. The long duration of this project should be noted, and therefore the timescale upon which this problem was rectified.

Excerpts from:

Communication in bottom-up Agri-environmental projects: Problems, Influences and Suggestions

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